Bonderite LOCTITE Teroson

Product Selector

Industrial Adhesives, Sealants and Surface Treatment Solutions

Henkel Excellence is our Passion

Issue 2

Henkel – Your Expert for Industrial Adhesives, Sealants and Surface Treatment Solutions

Nowadays, if you want to create added value, an excellent product portfolio simply is not good enough. You need a partner who understands your business and your products, who develops new production techniques, optimises your processes together with you and designs tailor-made system solutions.

A partner who can make a real contribution to long-lasting value creation for you:
Henkel – the worldwide market leader in adhesives, sealants and surface treatment. Get access to our unique and comprehensive product portfolio, benefit from our expertise and guarantee your highest process reliability. The General Industry Business fulfils specific industry and maintenance needs from one source.

Bonderite

Innovative pretreatment technology to improve your production process

LOCTITE®

High performance engineering adhesives and sealants

Teroson

Advanced flexible bonding and sealing solutions

Partner

- Experienced sales and technical engineers are available around the clock
- Extensive technical support and certified testing methods provide the most effective and reliable solutions
- Advanced training programmes tailored to your specific needs will help you become the expert
- A strong distribution network puts our complete product range close to your operation, ensuring a high level of worldwide product availability
- Identify potential cost savings and process improvements for your operations

Innovation

- Advanced solutions to increase your innovation power
- Set new industry standards for sustainability and health and safety in your processes
- Create the basis for the development of new product design opportunities

Empowering your Business

Technology

- Access to a complete product portfolio delivering superior performance for an extensive number of applications
- Use products that have been designed to meet the specific challenges of your industry
- Trust in state-of-the-art technologies and sustainable products

Brands

- The preferred global brands for high-performance adhesive, sealant and surface treatment solutions in industrial manufacturing and maintenance
- Loctite®, Teroson and Bonderite are known all over the world for proven high reliability and performance

Whatever You Build, Assemble or Repair...

Henkel's Product Portfolio across the entire Value Chain

Henkel offers you more than state-of-the-art adhesives, sealants and surface treatment products. We give you access to our unique expertise covering the entire value chain. So whatever you build, assemble and repair, our technical consultancy and expert training will complement our engineering solution to achieve our main goals:

- **Optimise your production line process**
- **Enhance your product**

Technical Consultancy	Metal Working	Cleaning	Pre-Treatment	Bonding
• Technical advice (calculation, design selection)	• Cutting Fluids	• General Cleaners	• Conversion Coatings	• Engineering Applications
• Process simulation	• Stamping and Drawing Fluids	• Cleaning Specialities	• Surface Preparation	• General Bonding
• Line design and engineering				• Structural Bonding
• Testing				

Find the Right Product!

Sealing	Filling & Protecting	Coating	Lubricating	Expert Training
• Engineering Applications • General Sealing	• Filling • Protecting	• Removal of Paint • Functional Coatings	• Anti-Seizes • Dry Film and Oils • Greases	• Tech-days tailored to customer needs • Process assessment and final user training

Equipment

- Process Control
- Dispensing & Curing Equipment

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Cleaning

Lubricating

Pre-Treatment

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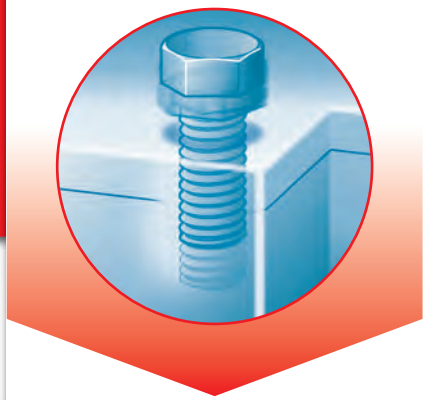
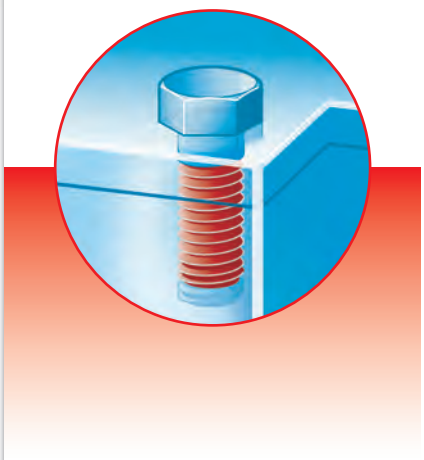
Threadlocking Adhesives

Locking of Threaded Fasteners





Why use a Loctite® Threadlocker?

Loctite® threadlocking products prevent self-loosening and secure any threaded fastener against vibration and shock loads. They are easy-flowing liquids or semi-solid adhesives which completely fill the gaps between mating threads. When used to assemble threaded fasteners, Loctite® Threadlockers permanently secure threaded assemblies and eliminate fretting corrosion by creating a unitised assembly.

Loctite® Threadlockers are much superior to traditional mechanical locking methods:

- Mechanical devices, e.g. split pins, tab washers: Only used to prevent the loss of nuts and bolts
- Friction devices: add to absolute elasticity and/or increase friction; but will not ensure permanent threadlocking under dynamic loads
- Locking devices, like tooth flanged and ribbed flanged bolts, nuts and washers: They prevent self-loosening, but are expensive and need larger flange-bearing surfaces; and they may damage the surfaces.

Loctite® Threadlockers are single-component liquid and semi-solid adhesives. They cure at room temperature to a hard solid thermoset plastic when applied between steel, aluminium, brass and most other metal surfaces. They cure in the absence of air. The adhesive completely fills the gaps between mating threads to lock threads and joints.

Advantages of Loctite® Threadlockers as compared to traditional mechanical locking devices:

- Prevent unwanted movement, loosening, leaks, and corrosion
- Resist vibration
- Single-component – clean and easy to apply
- Can be used on all sizes of fasteners – reduces inventory costs
- Seal threads – allow through-hole tapping

Choose the right Loctite® Threadlocker for your application:

Loctite® Threadlockers are available in varying viscosities and strengths and can be used for a wide range of applications.

Low Strength:

Removable with standard hand tools, good for adjustment screws, calibration screws, meters and gauges, for thread size up to M80.

Medium Strength:

Removable with hand tools, but more difficult to disassemble; good for machine tools and presses, pumps and compressors, mounting bolts, gear boxes, for thread size up to M80.

Surface Preparation

Correct surface preparation is the most important factor to assure the total success of any adhesive performance.

- Degrease, clean and dry threads prior to applying the adhesive – use Loctite® 7063 (see Cleaning on page 102)
- If the parts were in contact with aqueous washing solutions or cutting fluids which leave a protective layer on the surface, wash with hot water
- If the adhesive is applied below 5°C, pre-treatment with Loctite® 7240 or Loctite® 7649 is advised (see Surface Preparation on page 124)
- For locking of plastic fasteners: see Instant Adhesives on pages 32-39

Dispensing Equipment

Loctite® products are used for a wide variety of threadlocking applications. For some jobs it is sufficient to dispense adhesives and sealants manually from the bottle or cartridge onto the surfaces to be joined. In other cases, however, more precise hand-held or stationary automated dispensing is required. Loctite® dispensing equipment is specially designed to make application and use of our products fast, precise, clean and economical:

Semi-Automatic Dispensing Equipment
Loctite® 97009 / 97121 / 97201
Loctite® Semi-Automatic Dispensing Equipment combines a controller and reservoir into a single unit for valve dispensing of many Loctite® Threadlockers. Provides digital timing control, empty and end-of-cycle signal. Pinch Valve suitable for stationary or hand-held mode. The reservoirs are large enough to accept up to 2kg bottles, and units can be equipped with low level sensing.

97009 / 97121 / 97201

Hand-Held Applicator
Loctite® 98414 Peristaltic Hand Pump, 50ml bottle
Loctite® 97001 Peristaltic Hand Pump, 250ml bottle
These hand-held applicators mount easily on any anaerobic Loctite® 50ml or 250ml bottle, converting the bottle into a portable dispenser. They are designed to dispense at any angle in drop sizes from 0.01 to 0.4ml, without leaks or product waste (suitable for viscosities up to 30,000 mPa·s).

97001 / 98414

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook.

High Strength:

Very difficult to disassemble with standard hand tools; may require localised heat for removal. Good for permanent assemblies on heavy equipment, studs, motor and pump mounts, for thread size up M80.

Wicking:

Very difficult to disassemble with standard hand tools; may require localised heat for removal. For preassembled fasteners, instrumentation or carburettor screws.

Non-liquids (semi-solid):

Medium and high strength semi-solid Threadlocker Sticks that can be used on thread size up to M50.

Threadlocking Adhesives

Product table

Are the metal parts already assembled?

Yes

Wicking grade

Medium/High

Liquid

Low

Liquid

Solution	Loctite® 290	Loctite® 222
Size of thread	Up to M80	Up to M80
Functional strength after[1]	3 h	6 h
Breakaway torque M10 bolts	10 Nm	6 Nm
Service temperature range	-55 to +150°C	-55 to +150°C
Pack sizes	10ml, 50ml, 250ml, 2lt	10ml, 50ml, 250ml
Equipment[2]	97001, 98414, 97009, 97121, 97201	97001, 98414

Handy Hints:

- Degrease, clean and dry surfaces prior to applying the adhesive – use Loctite® 7063 (see Cleaning on page 102)
- If the adhesive is applied below 5°C, pre-treatment with Loctite® 7240 or Loctite® 7649 is advised (see Surface Preparation on page 124)
- For plastic part(s) please refer to Instant Adhesives on pages 32-39

Loctite® 290

- Ideal for locking preassembled fasteners, e.g. instrumentation screws, electrical connectors and set screws

Loctite® 222

- Ideal for low-strength threadlocking of adjusting screws, countersunk head screws and set screws
- Good on low strength metals which could break during disassembly, e.g. aluminium or brass

P1 NSF Reg. No.: 123002

[1] Typical value at 22°C
[2] For detailed information see pages 142-151

No

What strength do you require?

Medium		High	
Liquid	**Liquid**	**Liquid**	**Liquid**
Loctite® 243	**Loctite® 2400**	**Loctite® 270**	**Loctite® 2700**
Up to M80	Up to M80	Up to M80	Up to M80
2 h	2 h	3 h	3 h
26 Nm	20 Nm	33 Nm	20 Nm
-55 to +180°C	-55 to +150°C	-55 to +180°C	-55 to +150°C
10ml, 50ml, 250ml, 2lt	50ml, 250ml	10ml, 50ml, 250ml, 2lt	50ml, 250ml
97001, 98414, 97009, 97121, 97201	97001, 98414	97001, 98414, 97009, 97121, 97201	97001, 98414

Loctite® 243
- Works on all metals, including passive substrates (e.g. stainless steel, aluminium, plated surfaces)
- Proven to tolerate slight contaminations of industrial oils, e.g. engine oils, corrosion prevention oils and cutting fluids
- Prevents loosening on vibrating parts, e.g. pumps, gear boxes or presses
- Permits disassembly with hand tools for servicing

P1 NSF Reg. No.: 123000

Loctite® 2400
- Leading in health and safety
- No hazard symbols, risk or safety phrases
- "White" Material Safety Data Sheet – no entries in sections 2, 3, 15 and 16 of MSDS acc. to (EC) No. 1907/2006 – ISO 11014-1
- Excellent chemical and thermal resistance of cured product
- To be used where regular disassembly with hand tools for servicing is required

WRAS Approval (BS 6920): 1104507

Loctite® 270
- Suitable for all metal fasteners, including stainless steel, aluminium, plated surfaces and chrome-free coatings
- Tolerates slight contaminations of industrial oils, e.g. engine oils, corrosion prevention oils, cutting fluids
- Ideal for permanently locking studs on engine blocks and pump housings
- To be used if regular removal for maintenance is not required

P1 NSF Reg. No.: 123006

Loctite® 2700
- Leading in health and safety
- No hazard symbols, risk or safety phrases.
- "White" Material Safety Data Sheet – no entries in sections 2, 3, 15 and 16 of MSDS acc. to (EC) No. 1907/2006 – ISO 11014-1
- Excellent chemical and thermal resistance of cured product
- For applications where disassembly is not required

WRAS Approval (BS 6920): 1104508

Threadlocking Adhesives

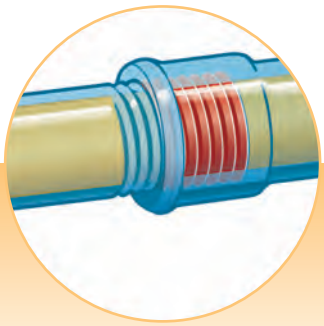
Product list

Product	Chemical basis	Colour	Fluorescence	Max. thread size	Service temperature range	Strength	Breakaway torque	Thixotropy
Loctite® 221	Methacrylate	Purple	Yes	M80	-55 to +150°C	Low	8.5 Nm	No
Loctite® 222		Purple	Yes	M80	-55 to +150°C	Low	6 Nm	Yes
Loctite® 241		Blue opaque	Yes	M80	-55 to +150°C	Medium	11.5 Nm	No
Loctite® 242		Blue	Yes	M80	-55 to +150°C	Medium	11.5 Nm	Yes
Loctite® 243		Blue	Yes	M80	-55 to +180°C	Medium	26 Nm	Yes
Loctite® 245		Blue	Yes	M80	-55 to +150°C	Medium	13 Nm	Yes
Loctite® 248 Stick		Blue	Yes	M50	-55 to +150°C	Medium	17 Nm	N.A.
Loctite® 262		Red	Yes	M80	-55 to +150°C	Medium/high	22 Nm	Yes
Loctite® 268 Stick		Red	Yes	M50	-55 to +150°C	High	17 Nm	N.A.
Loctite® 270		Green	Yes	M80	-55 to +180°C	High	33 Nm	No
Loctite® 271		Red	Yes	M80	-55 to +150°C	High	26 Nm	No
Loctite® 272		Red-orange	No	M80	-55 to +200°C	High	23 Nm	Yes
Loctite® 275		Green	Yes	M80	-55 to +150°C	High	25 Nm	Yes
Loctite® 276		Green	Yes	M80	-55 to +150°C	High	60 Nm	No
Loctite® 277		Red	Yes	M80	-55 to +150°C	High	32 Nm	Yes
Loctite® 278		Green	No	M80	-55 to +200°C	High	42 Nm	No
Loctite® 290		Green	Yes	M80	-55 to +150°C	Medium/high	10 Nm	No
Loctite® 2400		Blue	Yes	M80	-55 to +150°C	Medium	20 Nm	Yes
Loctite® 2700		Green	Yes	M80	-55 to +150°C	High	20 Nm	No
Loctite® 2701		Green	Yes	M80	-55 to +150°C	High	38 Nm	No

	Viscosity in mPa·s	Fixture time steel	Fixture time brass	Fixture time stainless steel	Pack sizes	Comments
	100 – 150	25 min.	20 min.	210 min.	250ml	Low strength, low viscosity, small threads
	900 – 1,500	15 min.	8 min.	360 min.	10ml, 50ml, 250ml	Low strength, general purpose
	100 – 150	35 min.	12 min.	240 min.	250ml	Medium strength, low viscosity, small threads
	800 – 1,600	5 min.	15 min.	20 min.	250ml	Medium strength, medium viscosity, general purpose
	1,300 – 3,000	10 min.	5 min.	10 min.	10ml, 50ml, 250ml, 2lt	Medium strength, general purpose, oil tolerant
	5,600 – 10,000	20 min.	12 min.	240 min.	50ml, 250ml	Medium strength, medium viscosity, large threads
	Semi-solid	5 min.	–	20 min.	9g, 19g	Medium strength, positioning: MRO/distribution
	1,200 – 2,400	15 min.	8 min.	180 min.	250ml	Medium/high strength, general purpose
	Semi-solid	5 min.	–	5 min.	19g	High strength, positioning: MRO/distribution
	400 – 600	10 min.	10 min.	150 min.	10ml, 50ml, 250ml, 2lt	High strength, general purpose, oil tolerant
	400 – 600	10 min.	5 min.	15 min.	50ml	High strength, low viscosity
	4,000 – 15,000	40 min.	–	–	50ml, 250ml	High strength, high temperature resistant
	5,000 – 10,000	15 min.	7 min.	180 min.	250ml, 2lt	High viscosity, high strength, large threads
	380 – 620	3 min.	3 min.	5 min.	50ml	High strength, especially for nickel surfaces
	6,000 – 8,000	30 min.	25 min.	270 min.	50ml, 250ml	High viscosity, high strength, large threads
	2,400 – 3,600	20 min.	20 min.	60 min.	50ml, 250ml	High strength, high temperature resistant
	20 – 55	20 min.	20 min.	60 min.	10ml, 50ml, 250ml, 2lt	Medium/high strength, wicking grade
	225 – 475	10 min.	8 min.	10 min.	50ml, 250ml	Medium strength, no labelling, white MSDS
	350 – 550	5 min.	4 min.	5 min.	50ml	High strength, no labelling, white MSDS
	500 – 900	10 min.	4 min.	25 min.	50ml, 250ml, 2lt	High strength, especially for chromated surfaces

Thread Sealants

Sealing of Threaded Components



Why use a Loctite® Thread Sealant?

Loctite® Thread Sealants, are available in liquid form or as a sealing cord, they prevent the leakage of gases and liquids. Designed for low and high pressure applications, they fill the space between threaded parts and provide an instant, low pressure seal. When fully cured, they seal to the burst strength of most pipe systems.

Loctite® Sealants are much superior to traditional sealant types:

- Solvent-based sealing compounds: Shrink during cure as solvents evaporate. Fittings must be re-torqued to minimise voids. They lock the assembly by a combination of friction and deformation.
- PTFE tape: Lubricates allowing fittings to loosen under dynamic loads and resulting in loss of clamping force and leakage. Dynamic loads may accelerate creep, causing leakage over time. The lubricating effect of PTFE frequently results in over-tightening of fasteners, adding stress or causing breakage of parts. Application requires good professional skills to avoid stressing fittings or castings.
- Hemp & Paste: Slow to apply and require a lot of expertise, are messy to assemble, and interfere with the torque needed to obtain the correct pre-stress. Frequently require re-work to achieve a 100% seal of the assembly.

Advantages of Loctite® Thread Sealants as compared to traditional sealant types:

- Single-component – clean and easy to apply
- Does not creep, shrink or block systems
- Can be used on any size of pipe fitting
- Replaces all types of tape and hemp/paste sealants
- The seal resists vibration and shock loads
- Grades with several approvals, e.g. Loctite® 55 Sealing Cord: Potable water (KTW) and Gas (DVGW) approvals
- Protect mated threaded areas against corrosion

Choose the right Loctite® Thread Sealants for your application:

Sealants must be chosen for reliable long-term sealing performance. Pipes must remain leak-free under the severest vibration, chemical attack, heat or pressure surges. When choosing a thread sealant, the substrates to be sealed are a key criterion. Are we dealing with plastic threads, metal threads or a combination of both? Plastic threads usually require a different sealant than metal threads. The following explanations should help you identify which technology should be selected for each type of pipe fitting material:

Anaerobic:

Technology:
Loctite® anaerobic thread sealants cure in the absence of air and by contact with metals when confined within the threads of pipe connections.

Application area:
Any type of metal fittings.

Surface Preparation

Correct surface preparation is the most important factor to assure the total success of any sealant performance. Without suitable surface preparation, Loctite® thread sealing applications can fail.

- Degrease, clean and dry surfaces prior to applying the sealant – use Loctite® 7063 (See Cleaning – page 102)
- If anaerobic sealants are applied below 5°C, pre-treatment with Activator Loctite® 7240, Loctite® 7471 or Loctite® 7649 is required
- For Sealing Cord Loctite® 55: Clean parts with Loctite® 7063 and roughen smooth threads

Dispensing Equipment

Anaerobic Sealants:
Loctite® anaerobic sealants can be applied by hand or with automatic or semi-automatic equipment. Excess material can be wiped away.

Hand-Held Applicator
Loctite® 98414 Peristaltic Hand Pump will with stand for the Loctite® 50ml bottle, and Loctite® 97001 Peristaltic Hand Pump for the Loctite® 250ml bottle. They are designed to dispense at any angle in drop sizes from 0.01 to 0.4ml with viscosities up to 30,000 mPa·s, without post-dripping or product waste.

97001 / 98414

Loctite® 97002 Pneumatic Cartridge Dispenser
Hand-held unit for 300ml cartridges tubes. With integrated pressure regulator and quick pressure relief valve. No run-on.

97002

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook.

Silicone:

Technology:
Loctite® silicone thread sealant polymerises at room temperature, reacting with ambient moisture (RTV = Room Temperature Vulcanising)

Application area:
Ideal for use on threaded plastic or plastic/metal substrate combinations

Sealing cord – Loctite® 55:

Technology:
Loctite® 55 Sealing Cord is a non-curing, coated multifilament cord that seals out water, gas and most industrial oils. (Potable water (KTW) and gas (DVGW) approvals)

Application area:
Recommended for sealing metal and plastic tapered threads. Loctite® 55 allows for post assembly adjustments.

Thread Sealants

Product table

Are the parts metal or plastic?

Metal, plastic or a combination of both

Do you need to make post assembly adjustments?

	Yes	No	Fine
	Cord	Gel	Liquid
Solution	**Loctite® 55**	**Loctite® 5331**	**Loctite® 542**
Substrate to be sealed	Metal, plastic or both	Metal, plastic or both	Metal
Maximum pipe size	Tested to 4"	3"	3/4"
Disassembly strength	Low	Low	Medium
Instant low pressure seal	Yes (full pressure)	Yes	No
Service temperature range	-55 to +130°C	-50 to +150°C	-55 to +150°C
Pack sizes	50m, 150m cord	100ml	10ml, 50ml, 250ml
Equipment[1]	N.A.	N.A.	97001, 98414

Handy Hints:

- Degrease, clean and dry surfaces prior to applying the adhesive – use Loctite® 7063 (see Cleaning on page 102)
- If the anaerobic sealant (Loctite® 542, 561, 572, 577 or 586) is applied below 5°C, pre-treatment with Loctite® 7240 or Loctite® 7649 is advised (see Surface Preparation on page 124)

Loctite® 55

- General purpose, threaded pipe and fitting sealant
- Non curing, immediate, full pressure seal
- For a quick, easy and reliable seal

WRAS listed, meets BS 6920 for potable water: 0808533
DVGW/KTW approval for gas and potable water
Tested in accordance with EN 751-2 Class ARp and DIN 30660 Certified to NSF/ANSI, Standard 61

Loctite® 5331

- Ideal for use on threaded plastic or plastic/metal fittings carrying hot or cold water e.g. industrial and agricultural plastic water pipe systems or drainage systems

WRAS listed, meets BS 6920 for potable water: 0706521
DVGW approval, tested in accordance with EN 751-1 P1 NSF Reg. No.: 123620

Loctite® 542

- Ideal for fine threads as used in hydraulic, pneumatic & general fittings

DVGW approval (EN 751-1): NG-5146AR0855

[1] For detailed information see pages 142-151

Metal

Are the threads fine or coarse?

Medium	Coarse		
Gel	**Gel**	**Gel**	**Gel**
Loctite® 586	**Loctite® 577**	**Loctite® 5776**	**Loctite® 5400**
Metal	Metal	Metal	Metal
2"	3"	3"	3"
Medium	Medium	Medium	Medium
No	Yes	Yes	Yes
-55 to +150°C	-55 to +150°C	-55 to +150°C	-55 to +150°C
Not available in the U.K.	50ml, 250ml, 2lt, 2lt BIB	50ml, 250ml	50ml, 250ml
N.A.	97002, 97124	97002	97002
			
Loctite® 586 • Slow curing, high strength sealant • Especially suitable for copper and brass fittings	**Loctite® 577** • General purpose sealant for all coarse metal threads • Suitable for fast applications at low temperatures, e.g. outdoor plant maintenance **P1 NSF Reg. No.: 123001** **DVGW Approval (EN 751-1): NG-5146AR0621** **WRAS Approval (BS 6920): 0711506**	**Loctite® 5776** • General purpose sealant for all coarse metal threads • Suitable for fast applications at low temperatures, e.g. outdoor plant maintenanc • Ideal for drinking water applications up to 60°C **DVGW Approval (EN 751-1): NG-5146BU0527** **KTW Approval: KA 297/11**	**Loctite® 5400** • Leading in health and safety • No hazard symbols, risk or safety phrases. • "White" Material Safety Data Sheet – no entries in sections 2, 3, 15 and 16 of MSDS acc. to (EC) No. 1907/2006 – ISO 11014-1 • Slow curing, medium strength thread sealant • Excellent chemical and thermal resistance of cured product

Thread Sealants

Product list

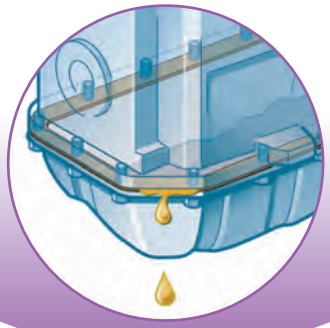
Product	Chemical basis	Colour	Fluorescence	Max. thread size	Service temperature range	Disassembly strength	Breakaway torque
Loctite® 55	PA-multi-filament	White	No	R4"	-55 to +130°C	N.A.	N.A.
Loctite® 511	Methacrylate	White to off-white	No	M80/R3"	-55 to +150°C	Low	6 Nm
Loctite® 542	Methacrylate	Brown	No	M26/R3/4"	-55 to +150°C	Medium	15 Nm
Loctite® 549	Methacrylate	Orange	No	M80/R3"	-55 to +150°C	High	20 Nm
Loctite® 561 Stick	Methacrylate	Orange	No	M80/R3"	-55 to +150°C	Low	2 Nm
Loctite® 567	Methacrylate	Off-white	No	M80/R3"	-55 to +150°C	Low	1.7 Nm
Loctite® 570	Methacrylate	Opaque Silver brown	No	M80/R3"	-55 to +150°C	Low	5.5 Nm
Loctite® 572	Methacrylate	White to off-white	No	M80/R3"	-55 to +150°C	Medium	7 Nm
Loctite® 577	Methacrylate	Yellow	Yes	M80/R3"	-55 to +150°C	Medium	11 Nm
Loctite® 582	Methacrylate	Blue	Yes	M56/R2"	-55 to +150°C	Medium	8.5 Nm
Loctite® 586	Methacrylate	Red	Yes	M56/R2"	-55 to +150°C	High	15 Nm
Loctite® 5331	Silicone	White	No	M80/R3"	-55 to +150°C	Low	1.5 Nm
Loctite® 5400	Methacrylate	Yellow	Yes	M80/R3"	-55 to +150°C	Medium	19 Nm
Loctite® 5772	Methacrylate	Yellow	Yes	M80/R3"	-55 to +150°C	Medium	11 Nm
Loctite® 5776	Methacrylate	Yellow	Yes	M80/R3"	-55 to +150°C	Medium	9 Nm

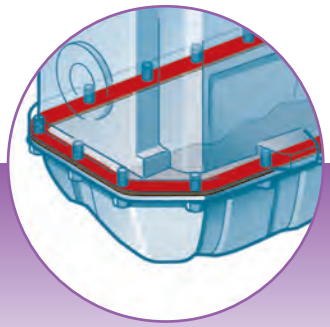
* For detailed information see www.loctite.co.uk
** Measured with cone and plate equipment – corresponds with viscosity of Loctite® 577 (based on Brookfield)

	Viscosity in mPa·s	Thixotropy	Approval*	Pack sizes	Comments
	Cord	–	DVGW, KTW, NSF	50m, 150m cord	For plastic and metal, esp. gas and water pipes, not curing
	9,000 – 22,000	Yes	DVGW	50ml, 250ml	For metal, low strength, general purpose
	400 – 800	No	DVGW, WRAS	10ml, 50ml, 250ml	For metal, esp. hydraulic pipes
	20,000	Yes	–	250ml	For metal, high strength, slow curing
	Semi-solid	–	NSF	19g	Stick, for metal threads, MRO/Distribution
	280,000 – 800,000	Yes	UL	50ml, 250ml	For metal, low strength, coarse threads
	16,000 – 24,000	Yes	–	Not available in the U.K.	For metal, low strength, very slow curing
	14,400 – 28,600	Yes	–	50ml, 250ml	For metal, slow curing
	16,000 – 33,000	Yes	DVGW, NSF, BAM	50ml, 250ml, 2lt	For metal, general purpose
	4,500 – 5,500	No	–	Not available in the U.K.	For metal, medium strength, fast curing
	4,000 – 6,000	Yes	BAM	Not available in the U.K.	For metal, high strength, excellent on brass
	50,000	Yes	DVGW, WRAS, NSF	100ml	For plastic and metal
	5,000 – 20,000	Yes	–	50ml, 250ml	For metal, no labelling, white MSDS
	16,000 – 33,000	Yes	PMUC	50ml	For metal, especially for nuclear power plants
	1,000 – 6,000**	Yes	DVGW, KTW	50ml, 250ml	For metal, especially gas and water pipes, fast curing

Gasketing Products

Sealing of Flanges





Why use a Loctite® Gasketing Product?

Gaskets are used to prevent leakage of fluids or gases by forming impervious barriers. For successful gasketing, it is necessary that the seal must remain intact and leak-free over a long period of time. The gasket must be resistant to fluids and/or gases, and withstand the operating temperatures and pressures to which it is subjected. Loctite® Gasketing products are self-forming gaskets that provide a perfect seal between components, with maximum face-to-face contact, eliminating flange face corrosion. A low-pressure seal is formed immediately on assembly, with full cure in 24 hours giving a joint that won't shrink, crack or relax.

Loctite® Gasketing Products offer a much higher performance and provide numerous benefits over traditional sealing systems such as pre-cut gaskets:

The major causes of failure and leakage of compression gaskets are:

- Surface contact: Compression gaskets do not provide total contact between the gasket and the flange surfaces. Therefore minor leakages may occur (weeping).
- Compression set: Compression gaskets relax under dynamic loads and decrease in thickness, with subsequent loss of bolt tension in the flange joint resulting in leakage
- Extrusion: Gaskets can be squeezed out between flanges
- Bolt hole distortion: High stresses are transferred to the gasket material under the bolt head, causing the gasket to crack, tear, rupture or extrude.

Advantages of Loctite® Gasketing Products as compared to conventional pre-cut compression gaskets:

- Single-component – easy and clean to apply
- Replace conventional gaskets – reduce inventory
- Fills all voids
- No need for retorquing
- Excellent instant seal
- High resistance to solvents
- Resists high pressure when fully cured

Choose the right Loctite® Gasket for your application:

Many factors influence gasket choice. Henkel offers a variety of gasketing materials:

Anaerobic products for rigid flanges:

They remain liquid when exposed to air, but cure when confined between mating flanges. Loctite® anaerobic gasketing products are best suited for rigid metal-to-metal assemblies where the sealing gap is zero or small.

Surface Preparation

Components should be clean and free from contamination such as grease, oil, gasket and sealant residues, etc.

- Degrease, clean and dry surfaces prior to applying the sealant – use Loctite® 7063 (See Cleaning on page 102)
- For maintenance and repair, remove residues of old gaskets with Loctite® 7200 Gasket Remover and clean surfaces with Loctite® 7063 (see Cleaning on page 102)
- If the anaerobic sealant is applied below 5°C, pre-treatment with Loctite® 7240, Loctite® 7471 or Loctite® 7649 is advised (see Surface Preparation on page 124)

Dispensing Equipment

Loctite® Cartridge Dispensers are ergonomically designed for the hand delivery of Loctite® sealants. Whether manual or pneumatic, each item is designed for simple, clean, hand-held dispensing of Loctite® Gasketing Products:

Cartridge Gun
Staku 142240
- Hand-held, manually operated dispenser for all standard 300ml cartridges
- Rapid loading system to make cartridge changes clean and easy

142240

Cartridge Gun
Loctite® 97002 Pneumatic Cartridge Dispenser
- Hand-held unit for 300ml cartridges and 250ml squeeze tubes
- Integrated pressure regulator
- Quick pressure relief, to minimise run-on effect

97002

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook.

Silicone products for flexible flanges:

Loctite® silicone gasketing materials include products with specific properties including excellent fluid resistance and formulations for high operating temperatures. They are best suited for large gap applications and assemblies where flange movement occurs.

Loctite® Gasketing Products:

Loctite® gaskets can be used on almost every flange type. They are applied as a liquid sealant to one of the flange surfaces before the parts are assembled. After the assembly the gasket spreads and cures between the flanges, filling gaps, scratches, and surface irregularities to provide a durable seal.

Gasketing Products

Product table

What gap must the sealant fill?

	Up to 0.25 mm		
	Metals		
	Paste	Gel	Paste
Solution	**Loctite® 574**	**Loctite® 518**	**Loctite® 5188**
Flange type	Rigid	Rigid	Rigid
Cure method	Anaerobic	Anaerobic	Anaerobic
Oil resistance	Excellent	Excellent	Excellent
Water/Glycol resistance	Excellent	Excellent	Excellent
Service temperature range	-55 to +150°C	-55 to +150°C	-55 to +150°C
Pack size	50ml, 160ml cartridge, 250ml, 2lt	50ml, 65ml, 300ml cartridge, 850ml	50ml, 300ml, 850ml, 2lt
Equipment[1]	97002, 91124	142240, 97002	142240, 97002, 97124

Handy Hints:

- Remove residues of old gaskets with Loctite® 7200 Gasket Remover
- Degrease, clean and dry surfaces prior to applying the adhesive – use Loctite® 7063 (See Cleaning on page 102)
- If the anaerobic sealant is applied below 5°C, pre-treatment with Loctite® 7240 or Loctite® 7649 is advised (See Surface Preparation on page 124)

Loctite® 574

- Ideal for use on rigid metal parts, e.g. cast iron components and pump housings

Loctite® 518

- Ideal for use on rigid iron, steel and aluminium flanges

P1 NSF Reg. No.: 123758

Loctite® 5188

- Ideal for sealing all kinds of rigid metal flanges, especially aluminium flanges
- Excellent in demanding applications
- Excellent chemical resistance, highly flexible
- Superior adhesion, can tolerate slight oil contamination on the flange surface

[1] For detailed information see pages 142

		Greater than 0.25 mm			
		Plastic, metals or combination of both			
	Gel	Paste	Paste	Paste	Paste
	Loctite® 5800	Loctite® 510	Loctite® 5926	Loctite® 5699	Loctite® 5970
	Rigid	Rigid	Flexible	Flexible	Flexible
	Anaerobic	Anaerobic	Moisture	Moisture	Moisture
	Excellent	Excellent	Good	Good	Excellent
	Excellent	Excellent	Good	Excellent	Good
	-55 to +180°C	-55 to +200°C	-55 to +200°C	-60 to +200°C	-60 to +200°C
	50ml, 300ml cartridge	50ml, 160ml, 250ml	40ml tube	80ml, 300ml cartridge, 20lt	300ml cartridge, 20lt
	142240, 97002	142240, 97002	N.A.	142240, 97002	142240, 97002
					
	Loctite® 5800 • Leading in health and safety: No hazard symbols, risk or safety phrases • "White" Material Safety Data Sheet – no entries in sections 2, 3, 15 and 16 of MSDS • Excellent chemical and thermal resistance of cured product	**Loctite® 510** • Ideal for use on rigid flanges where high temperature and chemical resistance is necessary **P1 NSF Reg. No.: 123007**	**Loctite® 5926** • Multi purpose flexible silicone sealant. Can be used on metal, plastic and painted parts • Resists vibration, thermal expansion and contraction	**Loctite® 5699** • Ideal for sealing all types of flanges including stamped sheet metal where water glycol resistance is required • Tack-free after 10min. **P1 NSF Reg. No.: 122998**	**Loctite® 5970** • Replacement for cork and paper cut gaskets on flanges and stamped • sheet metal covers Ideal for use where high vibration or flexing occurs • Can be used with plastic and painted parts • Tack-free after 25min.

Gasketing Products

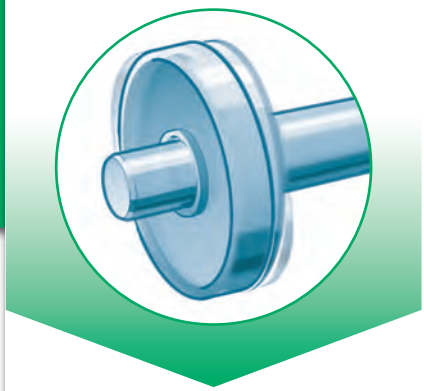
Product list

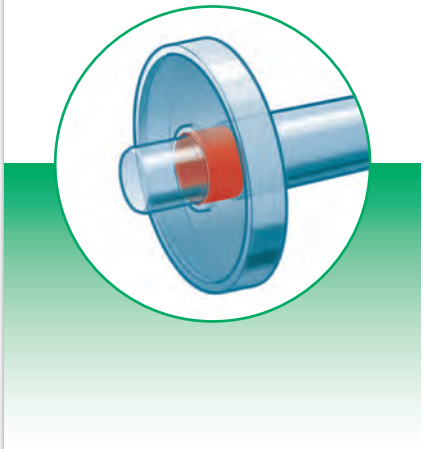
Product	Chemical basis	Colour	Fluorescence	Service temperature range	Strength	Viscosity in mPa·s	Tensile shear strength in N/mm²	
Loctite® 510	Methacrylate	Pink	No	-55 to +200°C	Medium	40,000 – 140,000	5	
Loctite® 515		Dark purple	Yes	-55 to +150°C	Medium	150,000 – 375,000	6	
Loctite® 518		Red	Yes	-55 to +150°C	Medium	500,000 – 1,000,000	7.5	
Loctite® 573		Green	Yes	-55 to +150°C	Low	13,500 – 33,000	1.3	
Loctite® 574		Orange	Yes	-55 to +150°C	Medium	23,000 – 35,000	8.5	
Loctite® 5188		Red	Yes	-55 to +150°C	Medium	11,000 – 32,000	7	
Loctite® 5203		Red	Yes	-55 to +150°C	Very low	50,000 – 100,000	1	
Loctite® 5205		Red	Yes	-55 to +150°C	Medium	30,000 – 75,000	3	
Loctite® 5208		Red	Yes	-55 to +150°C	Medium	12,000 – 27,000	6	
Loctite® 5800		Red	Yes	-55 to +180°C	Medium	11,000 – 32,000	7.5	
Loctite® 128068		Dark purple	Yes	-55 to +150°C	Medium	300,000 – 1,000,000	6	
						Extrusion rate in g/min		
Loctite® 5699	Silicone	Grey	No	-60 to +200°C	Low	200	1.7	
Loctite® 5900		Black	No	-55 to +200°C	Low	20 – 50	1.2	
Loctite® 5910		Black	No	-60 to +200°C	Low	300	1.2	
Loctite® 5920		Copper	No	-60 to +350°C	Low	275	1.4	
Loctite® 5926		Blue	No	-55 to +200°C	Low	550	–	
Loctite® 5970		Black	No	-55 to +200°C	Low	40 – 80	1.5	
Loctite® 5980		Black	No	-55 to +200°C	Low	120 – 325	1.5	

	Max. gap in mm	Fixture time steel	Fixture time aluminium	Pack sizes	Comments
	0.25	25 min.	45 min.	50ml, 160ml, 250ml	For machined, rigid metal flanges – high temperature resistance
	0.25	30 min.	30 min.	50ml, 300ml	For machined, rigid metal flanges – medium cure speed
	0.3	25 min.	20 min.	50ml, 65ml, 300ml cartridge, 850ml	For machined, rigid metal flanges – semi-flexible
	0.1	9 h	12 h	250ml	For machined, rigid metal flanges – slow curing
	0.25	15 min.	45 min.	50ml, 160ml cartridge, 250ml, 2lt	For machined, rigid metal flanges – general purpose
	0.25	25 min.	10 min.	50ml, 300ml, 850ml, 2lt	For machined, rigid metal flanges – highly flexible
	0.125	10 min.	20 min.	300ml	For machined, rigid metal flanges – easy disassembly
	0.25	25 min.	25 min.	50ml, 300ml, 850ml	For machined, rigid metal flanges – semi-flexible
	0.125	12 min.	30 min.	250ml	For machined, rigid metal flanges – semi-flexible
	0.25	25 min.	20 min.	50ml, 300ml cartridge	For machined, rigid metal flanges – no labelling, white MSDS
	0.1	1 h	3 h	300ml, 850ml	For machined, rigid metal flanges – semi-flexible, very slow curing
		Skin over time	**Cure through volume in 24 h**		
	1	30 min.	2.5 mm	80ml, 300ml cartridge, 20lt	For flexible flanges, machined or casted surfaces, metal or plastic, excellent in water/glycol
	1	15 min.	2.5 mm	50ml, 300ml, 20lt	Thixotropic paste, black, excellent in engine oils
	1	40 min.	2.75 mm	300ml cartridge, 80ml tube	For flexible flanges, machined or casted surfaces, metal or plastic
	1	40 min.	2.5 mm	80ml tube, 300ml cartridge, 20lt	For flexible flanges, machined or casted surfaces, high temperature resistant
	1	60 min.	2.5 mm	40ml tube	For flexible flanges, machined or casted surfaces, metal or plastic
	1	25 min.	2.5 mm	300ml cartridge, 20lt	For flexible flanges, machined or casted surfaces, metal or plastic
	1	30 min.	1 mm	200ml rocep can	Flange sealant, black, big gaps, label-free

Retaining Compounds

Cylindrical Assemblies





Why use a Loctite® Retaining Compound?

Loctite® Retaining Compounds secure bearings, bushes and cylindrical parts into housings or onto shafts. They achieve maximum load transmission capability and uniform stress distribution and eliminate fretting corrosion. Applied as a liquid, they form a 100% contact between mating metal surfaces, eliminating the need for expensive replacement parts, time consuming machining or the use of mechanical methods. Loctite® Retaining Compounds fill the inner space between components and cure to form a strong precision assembly.

Loctite® Retaining Compounds are much superior to conventional assembly methods:

- Pins, key/keyway assemblies: Have uneven distribution of mass, an imbalance that can lead to vibration at high speeds.
- Splines and serrations: They cause high stresses due to the "notch effect" that occurs in the area of a key. High machining costs.
- Clamp rings, press fits, shrink fits, and taper fits: They rely on friction alone to transmit torque, therefore they are limited by material, surfaces and design. Close tolerances are needed to obtain specific load capacities, leading to high production costs. Interference fitting creates stresses in the components that can lead to failure, particularly when combined with operational stresses.
- Welding and soldering: Only compatible metals can be joined, the parts can be distorted by the high temperatures required. Heating of the material can lead to residual stresses and structural degradation. Disassembly can also be difficult or impossible.

Advantages of Loctite® Retaining Compounds as compared to conventional assembly methods:

- High-strength products can carry high loads
- Fill all voids to prevent corrosion and fretting
- 100% contact – load and stress is distributed evenly over the joint

Advantages of Loctite® Retaining Compounds in combination with shrink fits or press fits:

- Higher load transmission and performance with existing design and geometry solutions
- Equal performance by lower interference/lighter construction

Key factors to consider when choosing the right Loctite® Retaining Compound:

1. Gap size between parts:

Typically, low viscosity retaining compounds (125 to 2,000 mPa·s) are used for gaps up to 0.15 mm. For gaps greater than 0.15 mm, retaining compounds with higher viscosities (>2,000 mPa·s) should be used.

2. Temperature resistance:

Most Loctite® Retaining Compounds are capable of withstanding temperatures up to 150°C . For applications that require resistance to higher temperatures Henkel has developed a special range of retaining products that can withstand up to 230°C .

Surface Preparation

Components should be clean and free from contamination such as grease, oil, cutting fluids, protective coatings, etc.

- Degrease, clean and dry surfaces prior to applying the sealant – use Loctite® 7063 (See Cleaning on page 102)
- If the adhesive is applied below 5°C, pre-treatment with Activator Loctite® 7240 or Loctite® 7649 is advised (see Surface Preparation on page 124)
- The cure speed of the retaining compound can be increased by use of Activator Loctite® 7649 or Loctite® 7240 (see Surface Preparation on page 124).

Dispensing Equipment

Loctite® Retaining Compounds can be applied with automated process equipment or dispensed manually.

Semi-Automatic Dispensing Equipment
Loctite® 97009 / 97121 / 97201
Loctite® Semi-Automatic Dispensing Equipment combines a controller and reservoir into a single unit for valve dispensing of many Loctite® products. Provides digital timing control, empty and end-of-cycle signal. Pinch Valve suitable for stationary or hand-held setup mode. The reservoirs are large enough to accept 2kg bottles, and units can be equipped with low level sensing.

97009 / 97121 / 97201

Hand-Held Applicator
Loctite® 98414 Peristaltic Hand Pump, 50ml bottle
Loctite® 97001 Peristaltic Hand Pump, 250ml bottle
These hand-held applicators mount easily on any anaerobic Loctite® 50ml or 250ml bottle, converting the bottle into a portable dispenser. They are designed to dispense at any angle in drop sizes from 0.01 to 0.04ml, without leaks or product waste (suitable for viscosities up to 30,000 mPa·s).

97001/98414

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook.

3. Bond strength:

A high-strength retaining compound is recommended for applications that require a permanent bond. If parts will need to be taken apart for maintenance, it is better to use a medium strength product because shear strength is lower.

4. Cure speed:

Many production applications require retaining compounds with fast cure speed to optimise production rates. On the other hand, some applications call for a slower cure so that adjustments can be made after the parts have been assembled. Our range of Loctite® Retaining Compounds offers a wide choice of cure speed options.

Retaining Compounds

Product table

Is the assembly very loose or badly worn?

Yes

Disassembly required

Up to +230°C

Solution	Loctite® 660 (with Activator 7240 or 7649)	Loctite® 641	Loctite® 620
	Gel	Liquid	Liquid
Diametrical clearance	Up to 0.5 mm	Up to 0.1 mm	Up to 0.2 mm
Strength required	High	Medium	High
Handling strength after[1]	15 min.	25 min.	80 min.
Service temperature range	-55 to +150°C	-55 to +150°C	-55 to +230°C *
Pack size	50ml	10ml, 50ml, 250ml	250ml
Equipment[2]	142240	97001, 98414	97001, 98414

Handy Hints:

- Degrease, clean and dry surfaces prior to applying the adhesive – use Loctite® 7063 (See Cleaning on page 102)
- If the adhesive is applied below +5°C, pre-treatment with Loctite® 7240 or Loctite® 7649 is advised (See Surface Preparation on page 124)
- Use in conjunction with existing designs to increase their strength

Loctite® 660

- Ideal for repairing worn coaxial parts without remachining
- Enables re-use of worn bearing seats, keys, splines or tapers
- Suitable for retaining shims

P1 NSF Reg. No.: 123704

Loctite® 641

- Ideal for parts that need subsequent dismantling, i.e. retention of bearings onto shafts and into housings

Loctite® 620

- High temperature resistance
- Ideal for retaining pins in radiator assemblies, sleeves into pump housings and bearings in auto transmissions

DVGW approval (EN 751-1): NG-5146AR0622

[1] At room temperature on steel joints.
[2] For detailed information see page 142
* After heat cure +180°C for 30 min.

No

No disassembly required

What service temperature is required?

Up to +175°C			Up to +150°C	
			Gap ≤ 0.25 mm	Gap ≤ 0.1 mm
Liquid	Liquid	Liquid	Liquid	Liquid
Loctite® 648	**Loctite® 6300**	**Loctite® 640**	**Loctite® 638**	**Loctite® 603**
Up to 0.15 mm	Up to 0.15 mm	Up to 0.1 mm	Up to 0.25 mm	Up to 0.1 mm
High	High	High	High	High
3 min.	10 min.	24 h	4 min.	8 min.
-55 to +175°C	-55 to +175°C	-55 to +175°C	-55 to +150°C	-55 to +150°C
50ml, 250ml, 2lt	50ml, 250ml	250ml	3ml, 50ml, 250ml, 2lt	10ml, 50ml, 250ml, 1lt
97001, 98414, 97009, 97121, 97201	97001, 98414	97001, 98414	97001, 98414, 97009, 97121, 97201	97001, 98414, 97009, 97121, 97201
				
Loctite® 648 • Increased temperature resistance • Ideal for retaining of parts with a clearance or interference fit, i.e. retaining bushes, bearings, seals, fans, and liners **WRAS Approval (BS 6920): 0808532**	**Loctite® 6300** • Leading in health and safety • No hazard symbols, risk or safety phrases • "White" Material Safety Data Sheet (no entries in sections 2, 3, 15 and 16 of MSDS) • Good thermal resistance	**Loctite® 640** • Slow cure • Ideal for parts with longer positioning time, e.g. larger diameters • Also for active metals, like brass components • Heat shrinking	**Loctite® 638** • Best resistance to dynamic, axial and radial loads • Ideal for shafts, gears, pulleys and similar cylindrical parts **P1 NSF Reg. No.: 123010** **DVGW Approval (EN 751-1): NG-5146AR0619** **WRAS Approval (BS 6920): 0511518**	**Loctite® 603 (improved Loctite® 601)** • Ideal for retaining close fitting cylindrical parts • For use on cylindrical fitting parts where thorough degreasing is not possible • Approved for use on bearings **P1 NSF Reg. No.: 123003** **WRAS Approval (BS 6920): 0910511**

Retaining Compounds

Product list

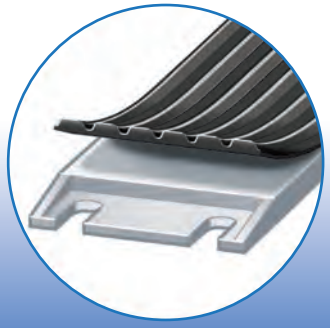
Product	Chemical basis	Colour	Fluorescence	Service temperature range	Tensile shear strength in N/mm²	Thixotropy	Viscosity in mPa·s
Loctite® 601	**Methacrylate**	Green	Yes	-55 to +150°C	> 15	No	100 – 150
Loctite® 603		Green	Yes	-55 to +150°C	> 22.5	No	100 – 150
Loctite® 620		Green	No	-55 to +230°C**	> 24.1	Yes	5,000 – 12,000
Loctite® 638		Green	Yes	-55 to +150°C	> 25	No	2,000 – 3,000
Loctite® 640		Green	Yes	-55 to +175°C	22	No	450 – 750
Loctite® 641		Yellow	No	-55 to +150°C	> 6.5	No	400 – 800
Loctite® 648		Green	Yes	-55 to +175°C	> 25	No	400 – 600
Loctite® 649		Green	Yes	-55 to +175°C	> 15	No	550 – 950
Loctite® 660		Silver	No	-55 to +150°C	> 17.2	Yes	150,000 – 350,000
Loctite® 661		Amber	No	-55 to +175°C	> 15	No	400 – 600
Loctite® 662		Amber	No	-55 to +150°C	> 25	No	1,750 – 3,250
Loctite® 675		Green	No	-55 to +150°C	20	No	100 – 150
Loctite® 6300		Green	Yes	-55 to +175°C	> 15	No	250 – 550
Loctite® 121078		Green	Yes	-55 to +175°C	> 20	Yes	3,000 – 5,000

* In combination with activator
** After heat cure +180°C for 30 min.

	Fixture time on steel	Maximum diametrical clearance	Pack sizes	Comments
	25 min.	0.1 mm	250ml	High strength, low viscosity, small gaps
	8 min.	0.1 mm	10ml, 50ml, 250ml, 1lt	High strength, oil tolerant
	80 min.	0.2 mm	250ml	High strength, high temperature resistance
	4 min.	0.25 mm	3ml, 50ml, 250ml	High strength, general purpose
	2 h	0.1 mm	250ml, 2lt	High strength, good temperature resistance, slow curing
	25 min.	0.1 mm	10ml, 50ml, 250ml	Medium strength, if disassembly is required
	3 min.	0.15 mm	50ml, 250ml, 2lt	High strength, good temperature resistance
	10 min.	0.1 mm	250ml	High strength, no acrylic acid
	15 min.	0.5 mm*	50ml	High strength, gap fill for repair
	4 min.	0.15 mm	250ml	High strength, low viscosity, also UV-curing
	7 min.	0.25 mm	Not available in the U.K.	High strength, medium viscosity, also UV-curing
	45 min.	0.1 mm	250ml, 2lt	High strength, slow curing
	10 min.	0.15 mm	50ml, 250ml	High strength, white MSDS, good temperature resistance
	3 min.	0.25 mm	250ml, 1lt, 2lt	High strength, good temperature resistance, high viscosity. thixotropic

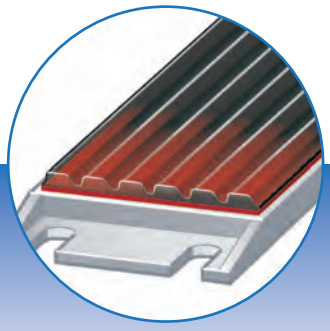
Instant Adhesives

For small to medium size parts



Why use a Loctite® Instant Adhesive?

Instant adhesives, or cyanoacrylates, cure very quickly when confined between surfaces. Surface humidity on the substrates triggers the cure reaction, which moves from the substrate surfaces towards the middle of the adhesive joint. Cyanoacrylates are chosen for bonding small parts to achieve extremely fast fixturing. Due to their limited gap filling capacity they require close fitting surfaces, although Loctite® 3090 2 component cyanoacrylate will fill gaps up to 5mm. Their adhesion to most substrates is excellent and the bonding strength in shear and tensile mode is very good. They should not be used on float glass or glazed ceramics, but can be used on GRP plastics. Bonds continuously exposed to water need proper adhesive selection and aging evaluation.



Advantages of Loctite® Instant Adhesives:

- Clean and easy to apply
- Very fast positioning and fixturing of parts
- Joining a wide variety of dissimilar materials
- Excellent adhesion on a wide range of substrates, especially plastics and rubbers. Special formulations are available for bonding metals or porous substrates. Primer Loctite® 770 offers improve adhesion on difficult-to-bond materials such as PP, PE, POM, PTFE, or silicone
- High strength on very small bond faces
- Free of solvents
- Do not require complex part geometries, e.g.snap-fits

Choosing the right Loctite® Instant Adhesive:

Loctite® Instant Adhesives come in a variety of types optimised for specific application requirements, e.g. the parts to be bonded, the loads to be resisted, the joint geometry, the process parameters, etc.

The following explanations should help you identify which technology is best suited for any particular application.

Instant adhesives for bonding porous or acidic substrates:

These formulations are specially tailored to porous and acidic substrates, e.g. paper or galvanised metals, to achieve fast cure and fixturing.

Shock and impact resistant instant adhesives:

Elastomer-modified instant adhesives achieve very good shock and impact resistance. In addition, they offer improved thermal performance and resistance of metal bonds in humid environments.

High temperature instant adhesives:

These instant adhesives are resistant to temperatures up to 120°C, for short periods even up to 140°C.

Surface Preparation

Correct surface preparation is a key factor to assure the total success of any adhesive performance.

- The surfaces to be bonded should be clean, dry and free of grease. If necessary, clean the parts with Loctite® 7063 or Loctite® 7070 and allow to dry (see Cleaning on page 102)
- For faster fixture time, apply Loctite® Activator to one of the mating surfaces (see Surface Preparation on page 124)
- To improve adhesion to difficult-to-bond materials (PP, PE, PTFE etc.), coat these bond faces completely with Primer Loctite® 770 (see Surface Preparation on page 124)

Dispensing Equipment

Loctite® Instant Adhesives are used for a wide variety of bonding applications. For some jobs it is sufficient to dispense the product manually from bottles designed specifically for easy and accurate dispensing.

In other cases, however, more precise hand-held or stationary automated dispensing is required. Loctite® dispensing equipment is designed to make application and use of our products fast, precise, clean and economical:

Peristaltic Dispenser Loctite® 98548
The peristaltic motion of the rotor provides volumetric dispensing of the adhesive directly from the bottle. The unit is designed mainly for manual work stations, but can also be integrated into automatic production lines. A precise amount of product can be set and high repetition accuracy is ensured.

98548

Semi-Automatic Dispensing System Loctite® 1388646
The system is suitable for dispensing dots or beads of low to medium viscosity Loctite® Instant Adhesives. It is designed for integration into automated assembly lines. The diaphragm valve provides high-resolution stroke adjustment and achieves no-drip dispensing. The controller actuates valve, reservoir and start of operation via footswitch, keyboard or higher ranking PLC.

1388646

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook.

Flexible instant adhesives:

Where bonded components are subjected to bending loads, flexible instant adhesives will reduce localised stress concentrations or encourage a more homogeneous deformation.

Low bloom, low odour instant adhesives:

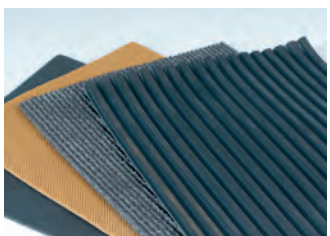
Specially formulated low-bloom instant adhesives are recommended for cosmetically sensitive applications and/or very low odour.

2-component instant adhesives:

Innovative, two-component technology provides fast cure independent of gap. This applies especially for assemblies which are not a perfect fit, or where excess adhesive may be present.

Light curing instant adhesives:

Light curing formulations are recommended for bonding clear and transparent substrates with good aesthetic finish, or for curing of excess fillets (see Light Cure Adhesives on page 40).



Instant Adhesives

Product table

Are you bonding "difficult to bond" rubbers or plastics, e.g. PE, PP, PTFE, silicone?

Yes

Undefined gaps?

Is the bond going to be

Yes

Solution	Low viscosity	Clear	Black	Bendable joints
	Loctite® 406 (with Primer 770)	**Loctite® 435**	**Loctite® 480**	**Loctite® 4850**
Fixture time	2 – 10 sec.	10 – 20 sec.	20 – 50 sec.	3 – 10 sec.
Viscosity	20 mPa·s	200 mPa·s	150 mPa·s	400 mPa·s
Colour	Colourless	Colourless	Black	Colourless
Service temperature range	-40 to +120°C	-40 to +100°C	-40 to +100°C	-40 to +80°C
Pack sizes	20g, 50g, 500g, 2kg	20g, 500g	20g, 500g	20g, 500g

Handy Hints:

- In combination with Loctite® Instant Adhesives: a) to improve adhesion of difficult to bond materials use Loctite® 770 b) to increase cure speed use Activator Loctite® 7458, 7452 or 7457 (see Surface Preparation on page 124)
- For difficult to bond plastics (PE and PP) see Loctite® 3038 on page 63

Loctite® 406

- Rapid bonding of plastics, rubbers, including EPDM, and elastomers
- Loctite® 770 Polyolefin Primer improves bonding on difficult to bond substrates

Loctite® 435

- High resistance to impact and shock loads, high peel strength
- Bonding of plastics, rubber, metals, porous and absorbent substrates and acidic surfaces
- Good resistance in humid environments

Loctite® 480

- For applications where shock resistance is required or shock or peel loads are present
- Ideal for bonding metal to metal, to rubber or magnets
- Good resistance in humid environments

Loctite® 4850

- For bonding materials subjected to bending or distortion, as well as flexible components
- For porous and absorbent substrates and acidic surfaces

No

Varying gaps? Larger gaps?

Defined small gaps < 0.15 mm

Subjected to shock or impact loads?

No

Gaps up to 5 mm

Low viscosity	Medium viscosity	Gel, non drip	Low bloom, low odour	Low bloom
Loctite® 401	**Loctite® 431**	**Loctite® 454**	**Loctite® 460**	**Loctite® 3090**
3 – 10 sec.	5 – 10 sec.	5 – 10 sec.	5 – 20 sec.	90 – 150 sec.
100 mPa·s	1,000 mPa·s	Gel	40 mPa·s	200 mPa·s
Colourless	Colourless	Colourless	Colourless	Colourless
-40 to +120°C	-40 to +80°C	-40 to +120°C	-40 to +80°C	-40 to +80°C
3g, 20g, 50g, 500g	20g, 500g	10g, 20g, 300g	20g, 50g, 500g	10g, 50g

Loctite® 401
- General purpose
- For acidic surfaces such as chromated or galvanised surfaces
- For porous substrates such as wood, paper, leather, cork and fabric

P1 NSF Reg. No.: 123011

Loctite® 431
- General purpose
- For acidic surfaces such as chromated or galvanised surfaces
- For porous substrates such as wood, paper, leather, cork and fabric

Loctite® 454
- General purpose gel
- Ideal when non-dripping is required, or for use on vertical or overhead surfaces
- Bonding paper, wood, cork, foam, leather, card, metals and plastics

P1 NSF Reg. No.: 123009

Loctite® 460
- For applications where cosmetic aspects and low bloom is required
- For low odour during use
- For porous substrates such as wood, paper, leather, cork and fabric

Loctite® 3090
- For applications with gaps up to 5 mm or excess of adhesive
- For applications where cosmetic aspects and low bloom is required
- For porous substrates such as wood, paper, leather, cork and fabric

Instant Adhesives

Product list

Product	Chemical basis	Viscosity in mPa·s	Colour	Fixture time	Substrates			
					Plastics/ Polyolefines	Rubbers	Metals	
Loctite® 382	Ethyl	5,000	Colourless transparent	20 – 40 sec.	● / ●*	●	●	
Loctite® 401	Ethyl	100	Colourless transparent	3 – 10 sec.	● / ●*	●	●	
Loctite® 403	Alkoxy ethyl	1,200	Colourless transparent	5 – 20 sec.	● / ●*	●	●	
Loctite® 406	Ethyl	20	Colourless transparent	2 – 10 sec.	● ● / ● ●*	● ●	●	
Loctite® 407	Ethyl	30	Colourless transparent	5 – 20 sec.	● / ●*	●	● ●	
Loctite® 408	Alkoxy ethyl	5	Colourless transparent	5 – 10 sec.	● / ●*	●	●	
Loctite® 409	Ethyl	Gel	Colourless transparent	20 – 60 sec.	● / ●*	●	●	
Loctite® 410	Ethyl	3,000	Black	30 – 60 sec.	● / ●*	●	●	
Loctite® 414	Ethyl	90	Colourless transparent	2 – 10 sec.	● / ●*	●	●	
Loctite® 415	Methyl	1,200	Colourless transparent	20 – 40 sec.	● / ●*	●	● ●	
Loctite® 416	Ethyl	1,200	Colourless transparent	20 – 40 sec.	● / ●*	●	●	
Loctite® 420	Ethyl	2	Colourless transparent	5 – 20 sec.	● ● / ●*	●	●	
Loctite® 422	Ethyl	2,300	Colourless transparent	20 – 40 sec.	● / ●*	●	●	
Loctite® 424	Ethyl	100	Colourless transparent	2 – 10 sec.	● ● / ● ●*	● ●	●	
Loctite® 431	Ethyl	1,000	Colourless transparent	5 – 10 sec.	● / ●*	●	●	
Loctite® 435	Ethyl	200	Colourless transparent	10 – 20 sec.	● ● / ●*	● ●	● ●	
Loctite® 438	Ethyl	200	Black	10 – 20 sec.	● / ●*	●	● ●	
Loctite® 454	Ethyl	Gel	Colourless transparent	5 – 10 sec.	● / ●*	●	●	
Loctite® 460	Alkoxy ethyl	40	Colourless transparent	5 – 20 sec.	● / ●*	●	●	
Loctite® 480	Ethyl	200	Black	20 – 50 sec.	● / ●*	● ●	● ●	
Loctite® 493	Methyl	3	Colourless transparent	10 – 30 sec.	● / ●*	●	● ●	
Loctite® 495	Ethyl	30	Colourless transparent	5 – 20 sec.	● / ●*	●	●	
Loctite® 496	Methyl	125	Colourless transparent	10 – 30 sec.	● / ●*	●	● ●	
Loctite® 3090	Ethyl	200	Colourless transparent	90 – 150 sec.	● / ●*	● ●	●	
Loctite® 4011[Med]	Ethyl	100	Colourless transparent	3 – 10 sec.	● / ●*	●	●	
Loctite® 4014[Med]	Ethyl	2	Colourless transparent	10 – 30 sec.	● / ● ●*	●	●	

Med = Certified according to ISO 10993 for medical device manufacturing

●● well suited for
● suited for
* in combination with Primer Loctite® 770

	Porous and/or acidic surfaces	Service temperature range	Properties: Low odour/cosmetic appearance	Properties: Flexible/impact resistance	Pack sizes	Comments
		-40 to +80°C		– / ●	20g, 500g, 2kg, Kit	General purpose, gel
	● ●	-40 to +120°C			3g, 20g, 50g, 500g	Universal, low viscosity
	● ●	-40 to +80°C	● ● / ● ●		20g, 50g, 500g	Low bloom, low odour, medium viscosity
		-40 to +120°C			20g, 50g, 500g, 2kg	Plastics and rubber, low viscosity
		-40 to +100°C			50g	High temperature, low viscosity
	● ●	-40 to +80°C	● ● / ● ●		20g, 500g	Low bloom, low odour, capillary
		-40 to +80°C			20g	General purpose, gel
		-40 to +80°C		● / ● ●	20g	Toughened, black, high viscosity
		-40 to +80°C			20g	General purpose, low viscosity
		-40 to +80°C			20g, 50g, 500g	Metals, medium viscosity
		-40 to +80°C			20g, 50g, 500g	General purpose, medium viscosity
		-40 to +80°C			20g, 500g, 2kg	General purpose, capillary
		-40 to +80°C			20g, 50g, 500g	General purpose, high viscosity
		-40 to +80°C			20g, 500g	Plastics and rubber, low viscosity
	● ●	-40 to +80°C			20g, 500g	Universal, medium viscosity
	● ●	-40 to +100°C		● / ● ●	20g, 500g	Toughened, clear
	● ●	-40 to +100°C		● / ● ●	20g, 500g	Toughened, black, fast
	● ●	-40 to +120°C			10g, 20g, 300g	Universal, gel
	● ●	-40 to +80°C	● ● / ● ●		20g, 50g, 500g	Low bloom, low odour, low viscosity
		-40 to +100°C		● / ● ●	20g	Toughened, black, slow
		-40 to +80°C			50g, 500g	Metals, capillary
		-40 to +120°C			20g, 50g, 100g, 500g	General purpose, low viscosity
		-40 to +80°C			20g, 50g, 100g, 500g	Metals, low viscosity
	● ●	-40 to +80°C	● / ● ●		10g, 50g	Gap filling, 2-component, low bloom
	● ●	-40 to +80°C			20g, 454g	Universal, low viscosity
		-40 to +80°C			20g	Plastics and rubber, capillary

Instant Adhesives

Product list

Product	Chemical basis	Viscosity in mPa·s	Colour	Fixture time	Substrates			
					Plastics/ Polyolefines	Rubbers	Metals	
Loctite® 4031[Med]	Alkoxy ethyl	1,200	Colourless transparent	20 – 60 sec.	• / •*	•	•	
Loctite® 4061[Med]	Ethyl	20	Colourless transparent	2 – 10 sec.	•• / •*	••	•	
Loctite® 4062	Ethyl	2	Colourless transparent	2 – 5 sec.	•• / •*	••	•	
Loctite® 4204	Ethyl	4,000	Colourless transparent	10 – 30 sec.	• / •*	•	••	
Loctite® 4601[Med]	Alkoxy ethyl	40	Colourless transparent	20 – 60 sec.	• / •*	•	•	
Loctite® 4850	Ethyl butyl	400	Colourless transparent	3 – 10 sec.	•• / •*	••	•	
Loctite® 4860	Ethyl butyl	4,000	Colourless transparent	3 – 10 sec.	• / •*	•	•	

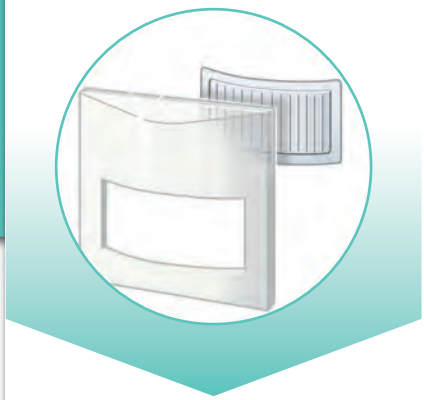
Med = Certified according to ISO 10993 for medical device manufacturing

•• well suited for
• suited for
* in combination with Primer Loctite® 770

	Porous and/or acidic surfaces	Service temperature range	Properties: Low odour/cosmetic appearance	Properties: Flexible/impact resistance	Pack sizes	Comments
		-40 to +80°C	● ● / ● ●		454g	Low bloom, low odour, medium viscosity
		-40 to +80°C			20g, 454g	Plastics and rubber, low viscosity
		-40 to +80°C			20g, 50g, 500g	Plastics and rubber, capillary
		-40 to +120°C		● / ● ●	20g, 500g	High temperature, good impact resistance
		-40 to +80°C	● ● / ● ●		20g	Low bloom, low odour, low viscosity
	● ●	-40 to +80°C		● ● / –	20g, 500g	Flexible, bendable, low viscosity
	● ●	-40 to +80°C		● ● / –	20g, 500g	Flexible, bendable, high viscosity

Light Cure Adhesives

For fast processing



Why use a Loctite® Light Cure Adhesive?

In addition to their excellent bonding characteristics and transparency, light cure adhesives also provide unique processing advantages and compelling process cost reduction benefits. When exposed to sufficient light of the appropriate wavelength, they cure very rapidly and allow fast production cycles, in-line quality control and fast cycling to subsequent process steps. For best performance, light cure adhesives are available in various adhesive families.

Loctite® Light Cure Equipment is engineered to match the adhesives with respect to intensity and radiation spectrum, and suit specific part size and manufacturing process requirements.

Loctite® Light Cure Adhesive Technologies

- Light cure acrylics offer the most extensive variety of properties of all light cure chemistries.They feature a transparency equal to glass or clear plastics, and versatile adhesion
- Light cure silicones, which cure into soft, flexible thermoset elastomers, are excellent for elastic bonding, sealing and leak proofing
- Light cure cyanoacrylates offer outstanding plastic bonding capabilities combined with rapid cure at low intensity light irradiation
- Light cure anaerobics show excellent metal bonding capabilities and offer outstanding chemical resistance combined with shadow cure

Advantages of Loctite® Light Cure Adhesives:

Cure on demand
- Material remains liquid until exposed to light systems, then cures in seconds
- Allows time to align parts precisely prior to cure
- Choice of cure system determines cure time

High speed of cure
- Achieves high process speeds for maximum throughput
- Fast cycling to subsequent process steps

Optical clarity
- Ideal for bonding clear and transparent substrates with perfect aesthetic finish
- Greatly expands the design options

Quality assurance
- Product presence monitoring by fluorescence
- Fast snap cure allows 100% in-line inspection
- Monitoring functions for cure parameters

One part systems
- Automated accurate dispensing
- No need to measure or mix, no working life concerns
- Solvent-free

Choosing the right Loctite® Light Cure Adhesive:

To ensure reliable cure it is essential that the light reaches the adhesive. At least one of the bonded parts must be transparent to the curing wavelength of the adhesive selected. For UV-stabilised plastics, for example, visible light cure adhesives should be chosen.

Dual cure capability, effected by heat or activator, as moisture or anaerobic cure, can also be provided to cure adhesives in shadowed areas. Dual cure expands the benefits of light cure technology to non-transparent substrates, other adhesive technologies and application areas.

The targeted radiation wavelength is another key factor. Visible light offers a safer working environment. Light cure adhesives are designed to cure solely with low energy light in the visible spectrum. This eliminates the need for ventilation, reduces energy usage, and saves money due to fewer replacements, as well as reduced maintenance and repair.

Loctite® AssureCure® Detecting System

The Loctite® AssureCure® system is a combination of newly developed adhesives, equipment and software that together allow you to:

- Quickly, accurately and precisely determine that your adhesive is fully cured in your bond line
- Use with a range of Loctite® AssureCure® Adhesives so that your application is matched with the right adhesive performance specifically for your needs
- Benefit from less scrap, less QC testing time, faster production and the confidence of verified full cure

Surface Preparation

Correct surface preparation is a key factor to the total success of any adhesive performance.

- The surfaces to be bonded should be clean, dry and free of grease. If necessary, clean the parts with Loctite® 7063 or Loctite® 7070 and allow to dry (see Cleaning on page 102)

Dispensing Equipment and Light Cure Systems

For some jobs it is sufficient to dispense the product manually from the bottle onto the parts to be bonded. In other cases, however, more precise hand-held or stationary automated dispensing is required. Loctite® dispensing equipment is specially designed to make application and use of our products fast, precise, clean and economical:

Semi-Automated Dispensing System Loctite® 1388647

The system is suitable for dispensing dots or beads of low to medium viscosity Loctite® light cure adhesives, and is designed for integration into automated assembly lines.The reservoir accommodates up to 1.0 litre Loctite® bottles. The controller actuates the valve, reservoir and start of operation via footswitch, keyboard or higher ranking PLC. An airline filter/regulator is included to provide filtered air supply.

1388647

Light Cure Systems

Loctite® Light Cure Systems are available for manual workstatons as well as for production line integration. Various bulb and LED technologies ensure the wavelength is perfectly matched to the adhesive selected and the transparency of the parts to be bonded (for more details see Light Cure Equipment on page 148).

97055

For information on semi- or fully automated dispensing equipment, available valves, spare parts, accessories and dispensing tips, please refer to page 142 or the Loctite® Equipment Sourcebook or contact your local equipment engineer.

Light Cure Adhesives

Product table

Is a shadow area created by a non-transparent substrate? Is a secondary cure needed for shadow areas?

No

Are you bonding glass?

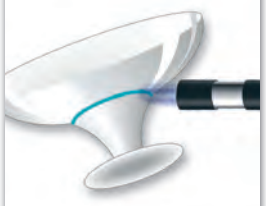
Glass and other substrates

High strength &

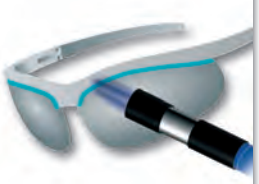
	Capillary	Ultra clear	Fast cure	Low viscosity
Solution	**Loctite® 3081**	**Loctite® 3491**	**Loctite® 3494**	**Loctite® 3922**
Chemistry	Acrylic	Acrylic	Acrylic	Acrylic
Viscosity	100 mPa·s	1,100 mPa·s	6,000 mPa·s	300 mPa·s
Colour	Clear	Clear	Clear	Transparent, colourless
Fluorescence	Yes	No	No	Yes
Service temperature range	-40 to +120°C	-40 to +130°C	-40 to +120°C	-40 to +130°C
Pack sizes	25ml, 1lt	25ml, 1lt	25ml, 1lt	25ml, 1lt

Loctite® 3081
- UV-light curing acrylic
- Low viscosity, wicking grade for post assembly applications
- For bonding glass, plastics, metals, etc.

Loctite® 3491
- UV-light curing acrylic
- Low yellowing in sunlight environment
- For bonding glass, plastics, metals, etc.



Loctite® 3494
- UV-light and/or visible light curing acrylic
- Low yellowing in sunlight environment
- For bonding glass, plastics, metals, etc.



Loctite® 3922
- UV-light and/or visible light curing acrylic
- Low yellowing in sunlight environment
- For bonding plastics, metals, etc.

* more products with secondary cure mechanism, please see table on page 44

Yes*

No glass

bendable/deformable | High strength | High strength | Highly elastic

High viscosity | Toughened | Very fast | Instant adhesive | Silicone

	Loctite® 3926	Loctite® 3525	Loctite® 3555	Loctite® 4304	Loctite® 5091
	Acrylic	Acrylic	Acrylic	Cyanoacrylate	Silicone
	5,500 mPa·s	15,000 mPa·s	1,000 mPa·s	20 mPa·s	5,000 mPa·s
	Transparent, colourless	Clear	Transparent, yellow	Transparent, pale green	Translucent, slightly milky
	Yes	No	Yes	No	No
	-40 to +150°C	-40 to +140°C	-40 to +100°C	-40 to +100°C	-60 to +180°C
	25ml, 1lt	25ml, 1lt	25ml, 1lt	28g, 1lb	300ml

Loctite® 3926
- UV-light and/or visible light curing acrylic
- Low yellowing in sunlight environment
- For bonding plastics, metals, etc.
- Heat Cure

Loctite® 3525
- UV-light and/or visible light curing acrylic
- Low yellowing in sunlight environment
- For bonding plastics, metals, etc.

Loctite® 3555
- Very fast light cure acrylic
- Cures with UV-light and visible light
- For bonding plastics, metals etc.

Loctite® 4304
- UV-light and/or visible light curing cyanoacrylate
- Cures in bond gaps by surface humidity
- For bonding plastics, metals, paper etc.

Loctite® 5091
- UV-light curing silicone with secondary RTV cure
- For elastic sealing and bonding applications
- Good adhesion on metals, glass and most plastics

Light Cure Adhesives

Product list

Product/grade	Chemical basis	Suitable wavelengths for cure	Secondary cure system	Viscosity in mPa·s	Service temperature range in °C	Depth of cure in mm	Colour	Fluorescence
Loctite® 322	Acrylic	UV	No	5,500	-40 to +100	4	Transparent, light amber	No
Loctite® 350	Acrylic	UV	No	4,500	-40 to +120	4	Transparent, light amber	No
Loctite® 352	Acrylic	UV	Activator 7075	15,000	-40 to +150	4	Transparent, amber	No
Loctite® 3011[Med]	Acrylic	UV	No	110	-40 to +100	4	Transparent, light amber	No
Loctite® 3081[Med]	Acrylic	UV	No	100	-40 to +120	4	Clear	Yes
Loctite® 3211[Med] **Loctite® 3103**	Acrylic	UV/VIS	No	10,000 thixo.	-40 to +140	>13	Transparent, amber	No
Loctite® 3301[Med]	Acrylic	UV/VIS	No	160	-40 to +130	>13	Transparent, colourless	No
Loctite® 3311[Med] **Loctite® 3105**	Acrylic	UV/VIS	No	300	-40 to +130	>13	Transparent, colourless	No
Loctite® 3321[Med] **Loctite® 3106**	Acrylic	UV/VIS	No	5,500	-40 to +150	>13	Transparent, light yellow	No
Loctite® 3341[Med]	Acrylic	UV/VIS	No	500	-40 to +100	>13	Transparent, light yellow	Yes
Loctite® 3345[Med]	Acrylic	UV	No	1,500	-40 to +120	4	Transparent, light amber	No
Loctite® 3381[Med]	Acrylic	UV	No	5,100	-40 to +130	4	Translucent, colourless	No
Loctite® 3491	Acrylic	UV	No	1,100	-40 to +130	4	Clear	No
Loctite® 3494	Acrylic	UV/VIS	No	6,000	-40 to +120	>13	Clear	No
Loctite® 3525	Acrylic	UV/VIS	No	15,000	-40 to +140	>13	Clear	Yes

Med = Certified according to ISO 10993 for medical device manufacturing

* cured with Loctite® 97055, 100 mW/cm^2 at 365 nm
** irradiated with 6 mW/cm^2 at 365 nm

	Tack-free time* in sec.	Fixturing time** in sec.	Shore hardness	Substrates				Pack sizes	Comments
				Glass	Plastics	Metals	Ceramics		
	4	10	D 68	●	● ●	●	●	250ml, 1lt	Fast surface cure
	20	15	D 70	● ●	●	● ●	●	50ml, 250ml	High humidity and chemical resistance
	17	10	D 60	● ●		● ●	● ●	50ml, 250ml	High humidity and chemical resistance, toughened
	8	10	D 68		● ●	●	●	Not available in the U.K.	Fast surface cure
	8	10	D 74	● ●	● ●	●	●	25ml, 1lt	Fast surface cure
	>30	12	D 51	●	● ●	● ●	●	25ml, 1lt	For stress-sensitive plastics
	>30	12	D 69	●	● ●	● ●	●	25ml	For stress-sensitive plastics
	>30	12	D 64	●	● ●	● ●	●	25ml, 1lt	For stress-sensitive plastics
	>30	12	D 53	●	● ●	● ●	●	25ml, 1lt	For stress-sensitive plastics
	15	8	D 27		● ●	●	●	1lt	Highly flexible, for soft PVC
	30	15	D 70	● ●	●	● ●	●	Not available in the U.K.	High humidity and chemical resistance
	>30	30	A 72	●	● ●	●	●	25ml, 1lt	Highly flexible, high thermal cycle resistance
	15	12	D 75	● ●	● ●	● ●	●	25ml, 1lt	High transparency, low yellowing
	>30	8	D 65	● ●	● ●	● ●	●	25ml, 1lt	High transparency, low yellowing
	10	5	D 60	●	● ●	● ●	●	25ml, 1lt	High strength, toughened

●● well suited for
● suited for

Light Cure Adhesives

Product list

Product/grade	Chemical basis	Suitable wavelengths for cure	Secondary cure system	Viscosity in mPa·s	Service temperature range in °C	Depth of cure in mm	Colour	Fluorescence	
Loctite® 3555[Med]	Acrylic	UV/VIS	No	1,000	-40 to +100	>13	Transparent, yellow	Yes	
Loctite® 3556[Med]	Acrylic	UV/VIS	No	5,000	-40 to +100	>13	Transparent, yellow	Yes	
Loctite® 3921[Med]	Acrylic	UV/VIS	No	150	-40 to +130	>13	Transparent, colourless	Yes	
Loctite® 3922[Med]	Acrylic	UV/VIS	No	300	-40 to +130	>13	Transparent, colourless	Yes	
Loctite® 3924AC	Acrylic	UV/VIS	No	800 – 1,400	-40 to +100	>13	Transparent, to hazy liquid	Yes	
Loctite® 3926[Med]	Acrylic	UV/VIS	No	5,500	-40 to +150	>13	Transparent, colourless	Yes	
Loctite® 3936[Med]	Acrylic	UV/VIS	No	11,000	-40 to +140	>13	Transparent, colourless	Yes	
Loctite® 3972	Acrylic	UV/VIS	No	4,600	-40 to +100	>13	Transparent, light amber	Yes	
Loctite® 4304[Med]	Cyano-acrylate	UV/VIS	Surface moisture	20	-40 to +100	>13	Transparent, pale green	No	
Loctite® 4305[Med]	Cyano-acrylate	UV/VIS	Surface moisture	900	-40 to +100	>13	Transparent, pale green	No	
Loctite® 5083	Silicone	UV	Atmospheric moisture	Thixo. paste	-60 to +200	5	Translucent, slightly milky	No	
Loctite® 5088 / Loctite® 5248[Med]	Silicone	UV	Atmospheric moisture	65,000	-60 to +200	1.5	Translucent, straw coloured	No	
Loctite® 5091	Silicone	UV	Atmospheric moisture	5,000	-60 to +180	4	Translucent, slightly milky	No	

Med = Certified according to ISO 10993 for medical device manufacturing

* cured with Loctite® 97055, 100 mW/cm^2 at 365 nm
** irradiated with 6 mW/cm^2 at 365 nm

	Tack-free time* in sec.	Fixturing time** in sec.	Shore hardness	Substrates				Pack sizes	Comments
				Glass	Plastics	Metals	Ceramics		
	10	5	D 77	•	••	•	•	25ml, 1lt	Fast cure, for coloured transparent substrates
	10	5	D 68		••	•	•	25ml, 1lt	Fast cure, for coloured transparent substrates
	>30	3	D 67	•	••	•	•	25ml, 1lt	For stress-sensitive plastics
	>30	5	D 66	•	••	•	•	25ml, 1lt	For stress-sensitive plastics
	>60	<5	D 60	••	••	••		Not available in the U.K	Verifiable full cure, high speed production
	>30	3	D 57	•	••	•	•	25ml, 1lt	For stress-sensitive plastics
	>30	12	D 55	•	••	•	•	25ml, 1lt	For stress-sensitive plastics
	5	5	D 68		••	••		Not available in the U.K.	Fast cure, high adhesion to soft PVC
	<5	2	D 72		••	•	•	28g, 1lb	High plastic adhesion, low intensity cure
	<5	2	D 77		••	•	•	28g, 454g	High plastic adhesion, low intensity cure
	20	>30	A 55	••	•	••	••	10.8oz, 18kg	Highly flexible, acetoxy silicone
	>30	>30	A 30	••	•	••	••	Not available in the U.K.	Highly flexible, alkoxy silicone
	30	>30	A 34	••	•	••	••	300ml	Highly flexible, acetoxy silicone

•• well suited for
• suited for

Hotmelt Adhesives

Solutions for fast processing applications

Why use a Henkel Hotmelt Adhesive?

Hotmelt adhesives are available in solid form as granules, cubes or sticks. They are based on various raw material groups, such as ethylene vinyl acetate copolymer (EVA), polyamide (PA), polyolefin copolymer (PO).

Reactive hotmelt adhesives based on polyurethane (PU hotmelt) undergo an additional crosslinking reaction after cooling.

- Hotmelts are used for rapid initial strength
- Are applied by means of special equipment or hot melt guns

Hotmelt adhesives were developed to bond a variety of substrates, including difficult-to-bond plastics. These adhesives can handle today's toughest applications in a broad range of industries. Hotmelts are ideal for applications that require high-speed manufacturing, bonding versatility, very large gap filling, fast green strength, and minimal shrinkage.

Hotmelt adhesives offer many benefits – open times ranging from seconds to minutes, eliminating the need for clamps or fixtures, long-term durability and excellent resistance to moisture, chemicals, oils, and temperature extremes.

Hotmelt products are solvent-free.

Advantages Hotmelt in general

- High manufacturing speed (short setting time)
- Process can be easily automated
- Combination of adhesives and sealants

Advantages Polyamide Hotmelts (PA)

- Good resistance against oils
- High temperature resistance
- Good flexibility at lower temperatures

Advantages Polyolefin Hotmelts (PO)

- Good adhesion to PP (without corona or similar pretreatment)
- Good chemical resistance against acids, alcohols
- Higher temperature resistance than EVA

Advantages Polyurethane Hotmelts (PU)

- Low application temperature
- Long open time
- MicroEmission products available

Advantages Pressure-sensitive Hotmelts (PSA)

- Permanently tacky
- Self adhesive coating
- Coating and assembly can be separated

Advantages Ethylene Vinyl Acetate Hotmelts (EVA)

- Low viscosity
- Fast melting
- High application speed

Key factors to consider when choosing the right product

Temperature resistance
Hotmelt systems covering different service temperature ranges. Temperature resistance up to +150°C can be achieved.

Adhesion to different substrates
There are hotmelt systems available for bonding polar and/or non-polar substrates. They will bond different plastics, metals, wood and paper.

Chemical resistance
Hotmelt systems also provide excellent chemical resistance. Products are available for use in contact with oils, cleaners and even battery acid.

Strengths
Thermoplastic hotmelts reach their final strength immediately after cooling. At elevated temperatures they soften again. In addition, they can be used as resins in hotmelt moulding processes. Polyurethane hotmelts are cross-linked with moisture to form a thermoset plastic that cannot be melted and re-shaped after it is cured.

Product safety of reactive hotmelts
Purmelt ME (MicroEmission) is a PU hotmelt adhesive innovation. These products do not need to be labeled as hazardous material.

They contain less than < 0.1% of monomeric isocyanate. This is below the limit currently specified as harmful to human health under legislation of the EU member states.

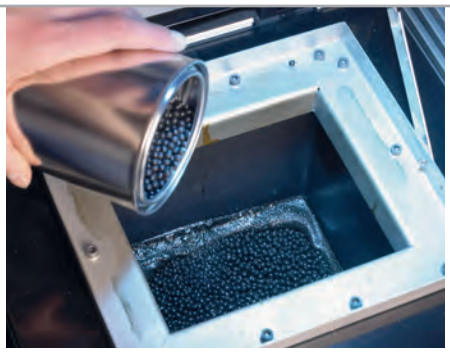
Purmelt ME is a new PU hotmelt adhesive product line.

Surface Preparation

Surfaces should be clean and free from grease. Corona or plasma pre-treatment will improve adhesion to plastic substrates. Metal substrates can be preheated to improve adhesion.

Equipment

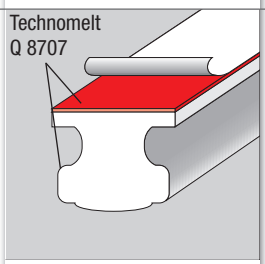
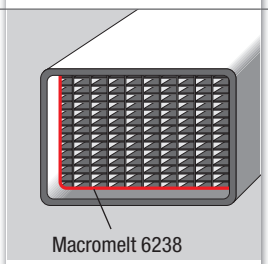
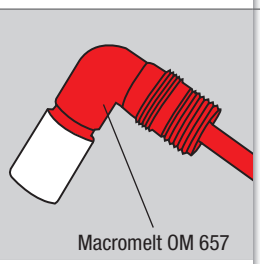
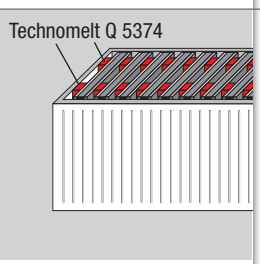
Glue guns for processing sticks, cartridges or granules offer simple hand-held application solutions. A wide range of different melting units is available for semi- or fully automated production environments. Drum unloaders and adhesive extruders are recommended for very high volume applications. Roller coaters are suitable for applying hotmelt coatings.



Equipment cleaning
- PU and PO: PurMelt Cleaner (2 or 3 or 4) for inside cleaning of equipment
- PA: Macromelt 0062 for inside cleaning of equipment
- Melt-O-Clean (PU, PO and PA) for cleaning machine surfaces, application units and general machinery

Hotmelt Adhesives

Product table

	Thermoplastic setting			
	Chemical base			
	Rubber	Polyamide		Polyolefin
	Pressure-sensitive	Wide range of adhesion	Macromelt moulding	Primerless PP adhesion
Solution	**Technomelt Q 8707**	**Macromelt 6238**	**Macromelt OM 657**	**Technomelt Q 5374**
Density	1.0 g/cm³	0.98 g/cm³	0.98 g/cm³	0.95 g/cm³
Softening temperature	+105 to +115°C	+133 to +145°C	+150 to +165°C	+92 to +104°C
Application temperature range	+150 to +180°C	+180 to +220°C	+180 to +230°C	+160 to +200°C
Open time	Pressure-sensitive	Short	Short	Medium
Melt viscosity in mPa·s at +130°C	–	–	–	–
Melt viscosity in mPa·s at +160°C	–	21,000 – 33,000	–	–
Melt viscosity in mPa·s at +180°C	3,200 – 4,800	10,000 – 16,000	8,600	2,250 – 2,950
Pack sizes	ca. 15kg carton (cushion)	20kg bag (granules)	20kg bag (granules)	ca. 13.5kg carton (cushion)
				
	Technomelt Q 8707 • Solvent-free • Permanently tacky • Good adhesion to a variety of substrates • Good temperature resistance	**Macromelt 6238** • Solvent-free • Good adhesion to metals and plastics • Suitable for plasticised PVC • Oil resistance • Based on renewable raw materials	**Macromelt OM 657** • Solvent-free • Macromelt moulding • Oil resistance • High service temperature • Based on renewable raw materials	**Technomelt Q 5374** • Solvent-free • PP bonder • Long open time

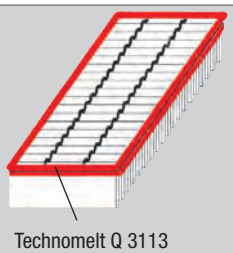
Handy Hints:

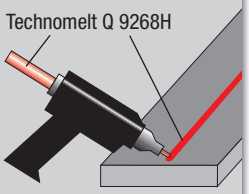
To improve adhesion on metal substrates we recommend to preheat surfaces.
For further information please refer to the TDS.

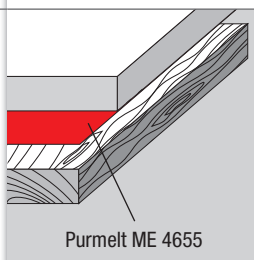
* MicroEmission (ME), contains less than 0.1% isocyanate monomer and reduces isocyanate vapours up to 90%

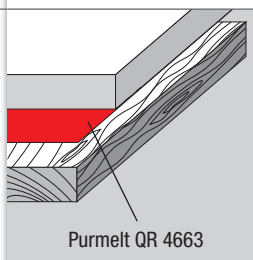
Thermoplastic setting & Chemical post cure

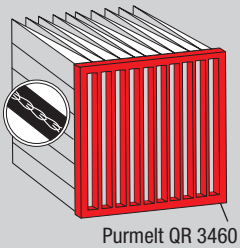
Chemical base	**Ethylene vinyl acetate**	**Polyurethane**		
		Long open time		**Short open time**
		MicroEmission	**Standard**	
	Granules	**Sticks**	**Multi purpose**	**Multi purpose**	**Fast setting**
	Technomelt Q 3113	**Technomelt Q 9268H**	**Purmelt ME 4655***	**Purmelt QR 4663**	**Purmelt QR 3460**
	1.0 g/cm³	1.0 g/cm³	1.15 g/cm³	1.13 – 1.23 g/cm³	1.18 g/cm³
	+99 to +109°C	+82 to +90°C	–	–	–
	+160 to +180°C	+170 to +190°C	+130 to +150°C	+110 to +140°C	+100 to +140°C
	Very short	Short	4 – 8 min.	4 – 8 min.	1 min.
	17,000 – 23,000	–	10,000	6,000 – 12,000	6,000 – 15,000
	6,600 – 8,800	24,000 – 30,000	–	–	–
	3,800 – 5,800	–	–	–	–
	25kg bag (granules)	10kg stick (11.3mm diameter)	16kg	2kg candle, 190kg drum	300g cartridge, 2kg candle, 20kg pail, 190kg drum


Technomelt Q 3113




Purmelt ME 4655


Purmelt QR 4663


Purmelt QR 3460

Technomelt Q 3113
- Solvent-free
- BHT-free
- Low fogging
- Short setting time
- Low shrinkage on cooling

Technomelt Q 9268H
- Solvent-free
- Hotmelt sticks
- Wide range of adhesion
- Long open time
- Good impact strength

Purmelt ME 4655
- Solvent-free
- Long open time
- Low application temperature
- High temperature resistance

Purmelt QR 4663
- Solvent-free
- Long open time
- Low application temperature
- High temperature resistance
- Flame retardant (IMO FTCP Part 5)

Purmelt QR 3460
- Solvent-free
- Medium open time
- Low application temperature
- High temperature resistance

Hotmelt Adhesives

Product list

Product	Chemical basis	Colour	Density in g/cm³ (approx.)	Viscosity in mPa·s at	Open time
Macromelt OM 652	Polyamide	Amber	0.98	9,500 at +180°C	Very short
Macromelt OM 657	Polyamide	Black	0.98	8,600 at +180°C	Very short
Macromelt OM 673	Polyamide	Amber	0.98	3,000 at +210°C	Very short
Macromelt OM 678	Polyamide	Lack	0.98	3,300 at +210°C	Very short
Macromelt 6208 S	Polyamide	Black	0.98	3,500 at +210°C	Very short
Macromelt 6238	Polyamide	Amber	0.98	7,000 at +200°C	Very short
Technomelt PS-M 8783	Pressure-sensitive	Amber	1	25,000 – 45,000 at +180°C	Permanently tacky
Technomelt Q 3113	Ethylene vinyl acetate	White	1	3,800 – 5,800 at +180°C	Very short
Technomelt Q 3183	Ethylene vinyl acetate	Yellowish	1	500 – 800 at +180°C	Short
Technomelt Q 4203	Polyolefine	Opaque	0.89	32,000 – 44,000 at +180°C	Short
Technomelt Q 4209	Polyolefine	Opaque	0.89	27,000 – 39,000 at +180°C	Short
Technomelt Q 5374	Polyolefine	Amber	0.95	2,250 – 2,950 at +170°C	Short
Technomelt Q 8707	Pressure-sensitive	Amber	1	3,200 – 4,800 at +180°C	Permanently tacky
Technomelt Q 9268 H	Ethylene vinyl acetate	White	1	24,000 – 30,000 at +160°C	Medium
Purmelt ME 4655*	Polyurethane (reactive)	Yellowish	1.15	10,000 at +130°C	Long
Purmelt QR 3460	Polyurethane (reactive)	Light ivory	1.18	7,000 – 13,000 at +130°C	Short
Purmelt QR 4661	Polyurethane (reactive)	Yellowish	1.15	5,000 – 13,000 at +130°C	Long
Purmelt QR 4663	Polyurethane (reactive)	Light ivory	1.13 – 1.23	6,000 – 12,000 at +130°C	Long

* MicroEmission (ME), contains less than 0.1% isocyanate monomer and reduces isocyanate vapours up to 90%

	Softening point	Application temperature	Pack sizes	Comments
	+155°C	+180 to +230°C	20kg bag	Macromelt moulding, UL- listing (V-0)
	+155°C	+180 to +230°C	20kg bag	Macromelt moulding, UL- listing (V-0)
	+185°C	+210 to +230°C	20kg bag	Macromelt moulding, UL- listing (V-0)
	+185°C	+210 to +230°C	20kg bag	Macromelt moulding, UL- listing (V-0)
	+155°C	+180 to +230°C	20kg bag	Wide range of adhesion
	+139°C	+180 to +220°C	20kg bag	Wide range of adhesion
	+132 to +142°C	+160 to +180°C	8kg carton	Pressure sensitive adhesive, high temperature resistance
	+99 to +109°C	+160 to +180°C	25kg bag	Filtration, pleat stabilisation, sealing
	+103 to +113°C	+160 to +180°C	25kg bag	Filtration, sealing of sewing holes
	+160 to +170°C	+180 to +200°C	20kg bag	Filtration, high temperature resistance
	+155 to +165°C	+180 to +200°C	25kg bag	Filtration, high temperature resistance
	+99 to +109°C	+160 to +200°C	ca. 13.5kg carton	General assembly, good adhesion to Polypropylene
	+105 to +115°C	+150 to +180°C	ca. 15kg carton	Pressure sensitive adhesive, good adhesion to rigid PVC
	+82 to +90°C	+170 to +190°C	10kg stick (11.3 mm diameter)	Hotmelt sticks
	–	+130 to +150°C	16kg	Panel bonding, MicroEmmision, long open time
	–	+100 to +140°C	300g cartridge, 2kg candle, 20kg pail, 190kg drum	General assembly, short open time
	–	+110 to +140°C	2kg candle, 190kg drum	Good adhesion to metal
	–	+110 to +140°C	2kg candle	Panel bonding, long open time, IMO approval 653 part 5

Solvent-based / Water-based Adhesives

Contact adhesive with good initial strength

Solvent-based adhesives

Solvent-based adhesives (polychloroprene) are formulated with raw material groups including natural and synthetic rubbers and suitable resin combinations (naphthas, ketones, esters or aromatics). Adhesive films will be formed upon evaporation of solvents. Assemblies may be made by contact bonding (adhesive application to both surfaces) or wet bonding (applied to one of the bond faces).

Most of the contact adhesives are-based on polychloroprene rubber. They display good initial strength and achieve high strengths on numerous substrates.

Terokal 2444

Terokal 2444 can be applied by brush and spatula. It is used to bond rubber to different surfaces e.g. metal, wood and to itself. Terokal 2444 offers high initial bond strength and contactability. The bondline is flexible and provides good temperature resistance up to 90°C.

Macroplast B 2140

Macroplast B 2140 is a solvent-based contact adhesive based on polychloroprene. The product exhibits good high-temperature strength and the ability to bond various substrates to one another. Macroplast B 2140 is suitable for spray application and is particularly useful when bonds have to withstand temperatures up to 120°C.

Water-based products with improved bonding characteristics

Water-based or “dispersion adhesives“ contain insoluble resins which are finely distributed as solid particles in water. These adhesives set by evaporation of water. Crosslinking of the dispersed particles is achieved by adding mainly basic catalysts. As a result, the resistance of the bonded joint to water and heat is greatly improved.

As a rule, dispersion adhesives do not contain solvents or other problematic chemicals, they are not harmful to the environment and less critical with regard to health and safety at work. Dispersion adhesives are applied by means of rollers or handguns. Setting of the adhesives can be accelerated by applying additional heat incl. air ventilation.

Adhesin A 7088

Adhesin A 7088 is a water-based dispersion. It is used for bonding plasticised PVC films and painted surfaces to paper and cardboard. It also provides good bonding properties on alu-laminated PVDC-coated surfaces as well as polystyrene films.

Adhesin J 1626

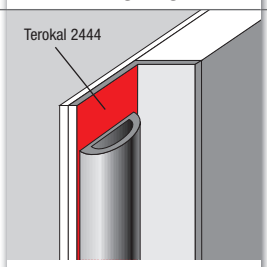
Adhesin J 1626 is a water-based dispersion based on acrylic ester. It is a highly concentrated, fast setting dispersion adhesive and therefore suitable for high line speeds. Adhesin J 1626 is used as pressure-sensitive adhesives to paper, fabric and plastics films/sheets, for coating aluminium and plastics signboards, screens and indicating dials for the electrical/phono industries and bonding aluminium foil to aluminium sheet.

	Solvent-based adhesive		Water-based adhesive	
	Hand application	Spray application	Tack-free	Pressure sensitive
	High strength			
Solution	**Terokal 2444**	**Macroplast B 2140**	**Adhesin A 7088**	**Adhesin J 1626**
Technology	Solvent-based adhesive	Solvent-based adhesive	Water-based adhesive	Water-based adhesive
Chemical base	Polychloroprene	Polychloroprene	Dispersion	Acrylate dispersion
Solids contents	ca. 30%	15 – 18%	57 – 61%	65.5 – 68.5%
Viscosity	ca. 3,000 mPa·s	ca. 140 – 300 mPa·s	4,000 – 6,000 mPa·s	2,000 – 3,400 mPa·s
pH-value	–	–	3 – 5	6 – 8
Service temperature range	-30 to +90°C (100°C)	-30 to +120°C (130°C)	–	–
Usage	150 – 300 g/m²	150 – 250 g/m²	–	–
Density	ca. 0.89 g/cm³	0.78 – 0.88 g/cm³	–	ca. 1.0 g/cm³
Colour	Beige	Beige	White	White
Pack sizes	340g, 5kg	Not available in the U.K.	30kg	Not available in the U.K.

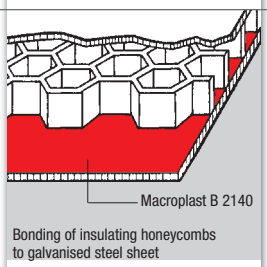
Handy Hints:

Solvent-based Adhesives
- To improve adhesion on rubber it`s recommended to abrade and clean the surfaces prior to bonding

Water-based Adhesives
- Working tools can be cleaned with water

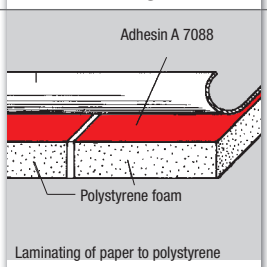


Terokal 2444
- Good adhesion to rubber
- High strength
- High contactability



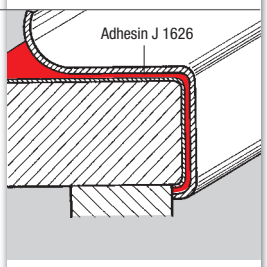
Bonding of insulating honeycombs to galvanised steel sheet

Macroplast B 2140
- Good sprayability
- High temperature resistance



Laminating of paper to polystyrene

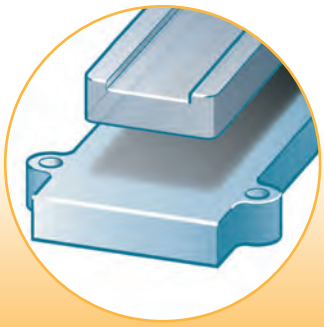
Adhesin A 7088
- Good adhesion to plasticised PVC and polystyrene foils
- Soft elastic dry film

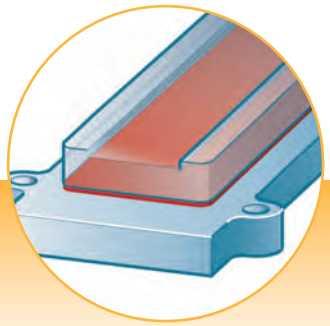


Adhesin J 1626
- Good surface tackiness
- High cohesion

Structural Bonding

For demanding requirements





Why use a Henkel Adhesive for Structural Bonding?

The Henkel range of Structural Bonding products offers a wide choice of solutions to meet the various requirements and conditions that apply to industrial design and construction.

Bonding:

Adhesive bonding is a process in which two similar or dissimilar materials are permanently joined using an adhesive.

Adhesives build ”bridges“ between the surfaces of substrates to be joined.

To achieve the optimal bonding result, the following prerequisites must be met:

- Compatibility of the adhesive with the materials to be bonded
- Compatibility of the adhesive with the specified requirements
- Correct application and curing of the adhesive

Advantages of bonding compared to conventional joining methods:

More uniform stress distribution over the entire bond face:
This has a very positive effect on the static and dynamic strength achieved. Where welding and riveting result in localised stress peaks, adhesive bonding achieves a more uniform distribution of stress loads.

No change in surface and structure of the joined materials:
Welding temperatures may change the structure and therefore the mechanical properties of materials. In addition, welding, riveting and bolting all affect the visual appearance of the parts.

Weight saving:
Adhesives are particularly popular for light-weight components as the load is spread across the bond area and distortion under load is minmised

Sealed joints:
Adhesives also act as sealants, preventing loss of pressure or liquids, blocking the penetration of condensation water and protecting against corrosion.

Joining dissimilar materials and reducing the risk of corrosion:
The adhesive forms an insulating film to prevent contact corrosion when different types of metals are joined. It also acts as electrical and thermal insulator.

Choosing the right Henkel Structural Bonding Adhesive:

The following key points should be observed for the design of bonded joints:

- The bond areas and joints geometry should be as large as possible for maximum load transmission capability
- Forces acting on the joint should be distributed across the entire bond line

Joint designs suitable for adhesive bonding:

All designs with shear, tensile or compressive load e.g. single and double lap joint, single and double cover plate, tapered overlap and double overlap.

Joint designs unfavourable for adhesive bonding:

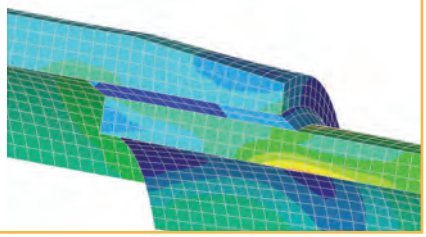
Butt joint, cleavage loading and peel loading.

Rigid Bonding

Rigid adhesives are mainly used for high load transmission to replace common mechanical joining methods. Two parts bonded with such an adhesive could be considered as structurally linked. Mechanical characteristics like high strength, high modulus and high adhesion have proven to be effective for customer applications in demanding industries like aerospace and automotive.

Rigid bonding offers significant benefits for the users:

- Simplifies construction by increasing strength/rigidity for load transmission
- Prevents material fatigue and failure by achieving more uniform transmission of loads (stress distribution) and by maintaining the structural integrity (no thermal or mechanical weakening of parts)
- Saves production costs by replacing conventional mechanical fasteners (screws, rivets or welding)
- Saves material cost and saves weight by reducing material thickness while maintaining load transmission characteristics
- Allows varied substrate combinations, e.g. metal/plastics, metal/glass, metal/wood etc.



Stress analysis of bonded pipe joint

Elastic Bonding

Elastic adhesives are selected mainly for their capability to elastically absorb and tolerate dynamic stresses, in addition to the load transmission properties of the adhesive assembly. Besides their elastic properties, many elastic adhesives from Henkel exhibit a high inherent strength (cohesion) and a relatively high modulus, achieving friction-locked joints which, at the same time, have elastic properties.

Elastic bonding offers significant benefits for the users:

- Simplifies construction by increasing strength/rigidity to withstand dynamic loads
- Prevents material fatigue and failure by achieving uniform transmission of the load (stress distribution) and by maintaining the structural integrity (no thermal or mechanical weakening of parts)
- Saves production costs by replacing conventional mechanical fasteners (screws, rivets or welding)
- Allows varied substrate combinations, e.g. metal/plastics, metal/glass, metal/wood etc.
- Reduces and/or compensates stress caused by differential thermal expansion of joint substrates

Photovoltaic module mounting

Available Technologies

Epoxies

- Rigid bonding
- 1- or 2-component
- Capability to fill large gaps
- Very high strength
- For small to medium bond surfaces
- Very good chemical resistance

Acrylics

- Rigid to slightly flexible bonding
- 1- or 2-component
- For small bond surfaces surfaces
- Very high strength
- Good chemical resistance

Polyurethanes

- Slightly flexible bonding
- 1- or 2-component
- Capability to fill large gaps
- High strength
- For medium to large bond surfaces
- Good chemical resistance

Silicones

- Flexible bonding
- 1- or 2-component
- Very high temperature resistance
- Very good chemical resistance

Silane Modified Polymers

- Flexible bonding
- 1- or 2-component
- Bond most substrates
- For medium to large bond surfaces

Structural Bonding – Epoxies

Product table

What is your focus?

	General bonding		Fast curing
	High viscosity	Flowable	Clear
Solution	**Loctite® Hysol® 3423 A&B**	**Loctite® Hysol® 9483 A&B**	**Loctite® Hysol® 3430 A&B**
Description	2K-Epoxy	2K-Epoxy	2K-Epoxy
Mix ratio by volume (A:B)	1:1	2:1	1:1
Mix ratio by weight (A:B)	100:70	100:46	100:100
Working life	45min.	30min.	7min.
Fixture time	180min.	210min.	15min.
Colour	Grey	Ultra clear	Ultra clear
Viscosity	300,000mPa·s	7,000mPa·s	23,000mPa·s
Shear strength (GBMS)	17N/mm²	23N/m²	22N/mm²
Peel strength (GBMS)	2.7N/mm	1.5N/mm	3N/mm
Service temperature range	-55 to +120°C	-55 to +150°C	-55 to +100°C

Loctite® Hysol® 3423 A&B
- Non-sag paste
- Medium working life
- Excellent chemical resistance

Loctite® Hysol® 3423 A&B is a general purpose, 2K-Epoxy adhesive, suitable for gap filling and vertical applications. Ideal for bonding metal components.

Loctite® Hysol® 9483 A&B
- Flowable
- Ultra clear
- Low moisture absorption

Loctite® Hysol® 9483 A&B is a general purpose, 2K-Epoxy adhesive, suitable for bonding and potting where optical clarity and high strength are required. Ideal for bonding decorative panels and displays.

Loctite® Hysol® 3430 A&B
- Medium viscosity
- Ultra clear
- Toughened
- Water resistant

Loctite® Hysol® 3430 A&B is a five-minute, 2K-Epoxy adhesive, suitable for applications requiring an optically clear bond line. Ideal for bonding glass, decorative panels and displays and general DIY applications.

* Gel time @ +120°C
** Cure time @ +120°C or higher: see technical data sheet

Food contact

Food approved

High technical performance

Toughened

High temperature resistant

Loctite® Hysol® 9480 A&B	Loctite® Hysol® 9466 A&B	Loctite® Hysol® 9514	Loctite® Hysol® 9497 A&B
2K-Epoxy	2K-Epoxy	1K-Epoxy	2K-Epoxy
2:1	2:1	–	2:1
100:46.5	100:50	–	100:50
110min.	60min.	5min.*	3h
270min.	180min.	30min.**	8h
Off-white	Yellowish	Grey	Grey
8,700mPa·s	35,000mPa·s	45,000mPa·s	12,000mPa·s
24N/mm²	37N/mm²	46N/mm²	20N/mm²
0.4N/mm	8N/mm	9.5N/mm	–
-55 to +120°C	-55 to +120°C	-55 to +200°C	-55 to +180°C

Loctite® Hysol® 9480 A&B
- Good chemical resistance
- Toughened
- Good adhesion on stainless steel

Loctite® Hysol® 9480 A&B is a food approved 2K-Epoxy adhesive, suitable for bonding metals and most of plastic parts in and around food processing area.

KTW approval for potable water, Fraunhofer approval for incidental food contact

Loctite® Hysol® 9466 A&B
- Medium viscosity
- Low density – SG = 1.0
- High strength

Loctite® Hysol® 9466 A&B is a toughened, 2K-Epoxy adhesive, suitable for multi purpose applications requiring long open time and high bonding strength. Ideal for a wide variety of substrates like metals, ceramic and most plastics.

Loctite® Hysol® 9514
- Suitable for induction curing
- High shear and peel strength
- Excellent chemical resistance
- High temperature resistant (+200°C)

Loctite® Hysol® 9514 is a toughened, 1K-Epoxy adhesive, suitable for gap filling and resistance to high operating temperatures. Ideal for applications requiring toughness such as filter and magnet bonding.

Loctite® Hysol® 9497 A&B
- Medium viscosity
- High thermal conductivity
- High compression strength
- High temperature resistant (+180°C)

Loctite® Hysol® 9497 A&B is a thermally conductive, 2K-Epoxy adhesive for high temperature filling and bonding applications. Ideal for heat dissipation.

Structural Bonding – Epoxies

Product list

Product	Technology	Colour mix	Viscosity in mPa·s	Mix ratio by volume	Working life	Fixture time	Service temperature range
Loctite® Hysol® 3421	2K-Epoxy	Clear amber	37,000	1:1	30 – 150min.	240min.	-55 to +120°C
Loctite® Hysol® 3423	2K-Epoxy	Grey	300,000	1:1	30 – 60min.	180min.	-55 to +120°C
Loctite® Hysol® 3425	2K-Epoxy	Yellow / white	1,350,000	1:1	55 – 105min.	240min.	-55 to +120°C
Loctite® Hysol® 3430	2K-Epoxy	Ultra clear	23,000	1:1	5 – 10min.	15min.	-55 to +100°C
Loctite® Hysol® 3450	2K-Epoxy	Grey	35,000	1:1	4 – 6min.	15min.	-55 to +100°C
Loctite® Hysol® 3455	2K-Epoxy	Grey	Pasty	1:1	40min.	120min.	-55 to +100°C
Loctite® Hysol® 9450	2K-Epoxy	Translucent	200,000	1:1	2 – 7min.	13min.	-55 to +100°C
Loctite® Hysol® 9461	2K-Epoxy	Grey	72,000	1:1	40min.	240min.	-55 to +120°C
Loctite® Hysol® 9464	2K-Epoxy	Grey	96,000	1:1	10 – 20min.	180min.	-55 to +120°C
Loctite® Hysol® 9466	2K-Epoxy	Yellowish	35,000	2:1	60min.	180min.	-55 to +120°C
Loctite® Hysol® 9480	2K-Epoxy	Off-white	8,700	2:1	110 – 190min.	270min.	-55 to +120°C
Loctite® Hysol® 9483	2K-Epoxy	Ultra clear	7,000	2:1	25 – 60min.	210min.	-55 to +150°C
Loctite® Hysol® 9489	2K-Epoxy	Grey	45,000	1:1	60 – 120min.	300min.	-55 to +120°C
Loctite® Hysol® 9492	2K-Epoxy	White	30,000	2:1	15min.	75min.	-55 to +180°C
Loctite® Hysol® 9497	2K-Epoxy	Grey	12,000	2:1	165 – 255min.	480min.	-55 to +180°C
Loctite® Hysol® 9514	1K-Epoxy	Grey	45,000	–	–	Heat curing	-55 to +200°C
Loctite® Dubble Bubble	2K-Epoxy	Clear	35,000	1:1	3min.	5min.	-55 to +100°C
Macroplast EP 3032 / 5032	2K-Epoxy	Grey	80,000	1:1	120min.	480min.	-55 to +80°C
Macroplast EP 3250 / 5250	2K-Epoxy	White	45,000	3:1	9min.	12min.	-55 to +150°C
Macroplast EP 3640 / 5640	2K-Epoxy	Light yellow	3,000	2.3:1	120min.	480min.	-55 to +80°C
Macroplast ESP 4108	1K-Epoxy	Silver	170,000	–	–	Heat curing	-55 to +180°C
Terokal 5055	2K-Epoxy	Grey	A: 145,000; B: 75,000	1:1	75 min	270 min	-55 to +100°C

	Tensile strength N/mm²	Peel strength N/mm	Pack sizes	Comments
	28	2 – 3	50ml, 200ml, 1kg	Structural adhesive, general purpose, long open time
	24	2 – 3	50ml, 1kg	Multiple purpose bonder, excellent for metals, good humidity resistance
	27	1.5 – 2.5	50ml, 200ml	Multiple purpose bonder, excellent for metals, for large surfaces, thixotropic
	36	3	24ml, 50ml, 200ml, 400ml	Multiple purpose bonder, fast, ultra clear
	–	–	25ml	Structural adhesive, fast cure, ideal for metal repair
	–	–	Not available in the U.K.	Structural adhesive, fast, high viscosity
	17	0.6	50ml, 200ml, 1kg	Multiple purpose bonder, fast (5min.), gap filling, translucent
	30	10	50ml, 400ml, 1kg, 20kg	Structural adhesive, toughened, gap filling
	–	7 – 10	50ml, 400ml, 1kg	Structural adhesive, toughened, gap filling, fast cure
	32	8	50ml, 400ml	Toughened multiple purpose bonder, high bonding strength for all substrates
	47	0.4	50ml, 400ml	Multiple purpose bonder, approved for incidental food contact and potable water
	47	1.5	50ml, 400ml, 1kg	Multiple purpose bonder, ultra clear, excellent for panels and displays
	14	2.2	50ml	Structural adhesive, general purpose, extended working life
	31	1.6	50ml, 400ml	Structural adhesive, high temperature resistant
	52.6	–	50ml, 400ml	High temperature resistant, thermally conductive, excellent for bonding metal components (thixotropic)
	44	9.5	300ml, 1kg	High temperature resistant, heat resistant bonding, toughened, high mechanical resistance
	–	–	3g	Multiple purpose bonder, very fast (3min.), clear, ideal for small and quick repairs
	–	–	25kg, 30kg, 250kg	Multiple purpose bonder, suitable for contact with potable water (approved to the Waters Byelaws Scheme)
	–	–	40kg, 300kg	Thixotropic, high temperature resistant, good chemical resistance, cream coloured, fast set
	–	–	Not available in the U.K.	Multiple purpose bonder, long working life, low viscosity
	–	–	7kg	Free flowing, high chemical resistance, looks like silver solder
	23	4	250ml	Crash resistant structural bonder for car panels

Structural Bonding – Acrylics

Product table

	1-component acrylic		
	General purpose	General purpose	High temperature
Solution	**Loctite® 330**	**Loctite® F246**	**Loctite® 3342**
Description	No mix	No mix	No mix
Activator	7388 or 7386	Ini No. 1, No. 5	7386
Mix ratio by volume (A:B)	–	–	–
Colour	Pale yellow	Off-white	Yellow opaque
Viscosity	67,500mPa·s	30,000mPa·s	90,000mPa·s
Working life	–	–	–
Fixture time	3min.	0.5 – 1min.	1 – 1.5min.
Shear strength (GBMS)	15 – 30N/mm²	35N/mm²	15 – 30N/mm²
Service temperature (up to)	+100°C	+120°C	+180°C
Pack sizes	50ml kit, 50ml tube, 315ml, 5lt, 200lt	50ml kit, 320ml, 5lt	300ml

Loctite® 330
- General purpose product
- Good impact resistance
- Ideal for bonding dissimilar substrates, like PVC, phenolic and acrylic compounds

Loctite® F246
- General purpose product
- Very fast curing with Ini. No.5
- High strength

Loctite® 3342
- High temperature resistance
- Good impact resistance
- Good humidity resistance

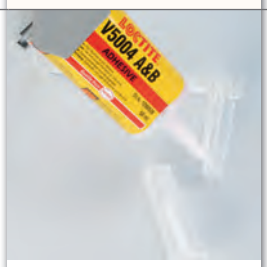
2-component acrylic

Glass bonding	Magnet bonding	General purpose	Clear bond line	Polyolefin bonder
Loctite® 3298	**Loctite® 326**	**Loctite® 3295**	**Loctite® V5004**	**Loctite® 3038**
No mix	No mix	Premix	Premix	Premix
7386	7649	–	–	–
–	–	1:1	1:1	1:10
Green-grey	Yellow to amber	Green	Pale mauve, clear	Yellow
29,000mPa·s	18,000mPa·s	17,000mPa·s	18,000mPa·s	12,000mPa·s
–	–	4min.	0.5min.	4min.
3min.	3min.	5 – 10min.	3min.	> 40min.
26 – 30N/mm²	15N/mm²	25N/mm²	21N/mm²	13N/mm² (PBT)
+120°C	+120°C	+120°C	+80°C	+100°C
300ml	50ml, 250ml	50ml, 600ml	50ml, 20lt	50ml, 490ml

Loctite® 3298
- Very good adhesion on glass
- High strength
- Good impact resistance

Loctite® 326
- Product for magnet bonding
- Medium viscosity (thixotropic)
- Good adhesion to different types of ferrites

Loctite® 3295
- 2-component general purpose product
- Good impact resistance
- Bonding of metals, ceramics and plastics



Loctite® V5004
- Clear bond line after curing
- Fast curing
- Medium strength
- Good adhesion to metals and plastics

Loctite® 3038
- Very good adhesion to polyolefin substrates (PP, PE)
- Good impact resistance
- Good adhesion to e-coated metals

Structural Bonding – Acrylics

Product list

Product	Description	Activator	Mix ratio by volume (A:B)	Colour	Viscosity in mPa·s	Working life in min.
Loctite® 319	No mix	Loctite® 7649	–	Light amber	2,750	–
Loctite® 326	No mix	Loctite® 7649	–	Yellow to amber	18,000	–
Loctite® 329	No mix	Loctite® 7386	–	Light straw	26,500	–
Loctite® 330	No mix	Loctite® 7388	–	Pale yellow	67,500	–
Loctite® 366	No mix	Loctite® 7649	–	Yellow to amber	7,500	–
Loctite® 3038	Premix	–	1:10	Yellow	12,000	4
Loctite® 3295	Premix	–	1:1	Green	17,000	4
Loctite® 3298	No mix	Loctite® 7386	–	Green-grey	29,000	–
Loctite® 3342	No mix	Loctite® 7386	–	Yellow opaque	90,000	–
Loctite® 3504	No mix	Loctite® 7649	–	Amber	1,050	–
Loctite® F245	No mix	Ini No. 1, No. 5	–	Off-white	50,000	–
Loctite® F246	No mix	Ini No. 1, No. 5	–	Off-white	30,000	–
Loctite® V1305	Premix	–	1:1	Off-white	Thixotropic	2
Loctite® V1315	Premix	–	1:1	Off-white	Thixotropic	8
Loctite® V5004	Premix	–	1:1	Pale mauve, clear	18,000	0.5

	Fixture time in min.	Shear strength (GBMS) N/mm²	Service temperature (up to) °C	Pack sizes	Comments
	1	10	120	Not available in the U.K.	Glass-metal bonder
	3	15	120	50ml, 250ml	Magnet bonder
	1	20	100	315ml, 1lt, 5lt	Fast fixture
	3	15 – 30	100	50ml kit, 50ml tube, 315ml, 5lt, 200lt	General purpose
	N.A.	13.5	120	250ml	Additional UV cure
	> 40	13 (PBT)	100	50ml, 490ml	PO bonder
	5 – 10	25	120	50ml, 600ml	General purpose
	3	26 – 30	120	300ml	Glass bonding
	1 – 1.5	15 – 30	180	300ml	High temperature
	N.A.	22	120	50ml, 250ml	Additional UV cure
	0.5 – 1	25	100	320ml, 5lt	Low odour
	0.5 – 1	35	120	50ml kit, 320ml, 5lt	General purpose
	5	21	120	50ml	Faster version of Loctite® V1315
	15	15	120	50ml	Composite/plastic bonding
	3	21	80	50ml, 20lt	Clear bondline

Structural Bonding – Polyurethanes

Product table

Large surface bonding

Gap variation tolerance

1-component | **2-component**

General purpose | **Fast curing** | **General purpose**

Solution	Macroplast UR 7221	Macroplast UR 7228	Macroplast UK 8103
Technology	1K-PU	1K-PU	2K-PU
Viscosity	5,500 – 10,500mPa·s	5,500 – 10,500mPa·s	8,000 – 10,000mPa·s
Initial strength	2 – 4h	10 – 15min.	5 – 8h
Curing time	2d	1d	5 – 7d
Tensile shear strength	> 6N/mm²	> 6N/mm²	> 9N/mm²
Service temperature range (short exposure)	-40 to +80°C (+100°C)	-40 to +80°C (+100°C)	-40 to +80°C (+150°C)
Pack sizes	Not available in the U.K.	30kg jerry can	24kg pail

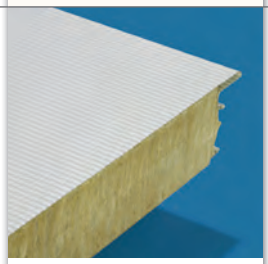
Handy Hints:

- Macroplast B 8040 is used for cleaning tanks, pumps, hoses and mixing heads of metering equipment
- Loctite® 7515 can be used to increase aging resistant of Polyurethane adhesives on metals in humid conditions. For further information please refer to the TDS.
- Refill working packs into new buckets to prevent applying unmixed adhesive from the bottom of the working pack

Macroplast UR 7221

- Long open time
- Multi purpose
- Foaming
- IMO approval

A 1K-PU adhesive which cures with humidity from the air or fine water spray to bond PVC and PU rigid foams to lacquered or (Epoxy) coated metal sheets. It has a good open time to press time relation.



Macroplast UR 7228

- Short fixture time
- Foaming
- IMO approval

A 1K-PU adhesive which cures with humidity from the air or fine water spray to bond PVC and PU rigid foams to lacquered or (Epoxy-primer) coated metal sheets. It provides very fast processing in panel bonding.

Macroplast UK 8103

- Multi purpose
- Different acceleration levels available
- Good flow properties
- IMO approval

A general purpose 2K-PU adhesive, easy to spread on big surfaces for bonding coated metals and PU foams especially in the shipbuilding industry.

* Drive away time

Structural bonding

Gap filling

1-component

2-component

Low temperature resistance	Elastic bonding	Primerless adhesion	Good adhesion to plastics	High strength
Macroplast UK 8202	**Terostat 8597 HMLC**	**Macroplast UK 8326 B30**	**Macroplast UK 1366 B10**	**Macroplast UK 1351 B25**
2K-PU	1K-PU	2K-PU	2K-PU	2K-PU
8,000 – 10,000mPa·s	Pasty	250,000 – 310,000mPa·s	400,000 – 500,000mPa·s	400,000 – 500,000mPa·s
8 – 10h	1 h/4h*	3 – 4h	40 – 60min.	1 – 2h
5 – 7d	5 – 7d	5 – 7d	2 – 3d	2 – 3d
> 12N/mm²	> 5N/mm² at 5mm layer	> 12N/mm²	> 10N/mm²	> 20N/mm²
-190 to +80°C (+150°C)	-40 to +90°C (+120°C)	-40 to +80°C (+150°C)	-40 to +80°C (+100°C)	-40 to +120°C (+150°C)
24kg pail	310ml cartridge, 400ml foil, 570ml foil, set	3.6kg combi pack	415ml twin cartridge	400ml twin cartridge

Macroplast UK 8202
- Good flexibility at low temperatures
- High strength

A low viscous 2K-PU adhesive suitable for the construction of panels for LNG/LPG tank ships complying with the regulations of American Bureau of Shipping (ABS).

Terostat 8597 HMLC
- High modulus
- Low conductivity
- Elastic
- Stress compensation

An elastic 1K-PU adhesive which cures by moisture from the air. Used for direct glazing in automotive industry and in joints where tension should be leveraged by the adhesive (elastic bonding).

Macroplast UK 8326 B30
- Primerless metal adhesion
- Good ageing stability
- Sag resistant

A sag-resistant 2K-PU adhesive which is suitable for vertical application combining primerless metal adhesion with good elastic and shock absorbent properties for use in trailer production.

Macroplast UK 1366 B10
- Short fixture time
- Good adhesion to plastics and metal
- Shock absorbent

A multi purpose, sag-resistant cartridge grade 2K-PU adhesive with a very good extrusion rate and outstanding adhesion to metals and plastics. Slightly elastic for good shock absorbance.

Macroplast UK 1351 B25
- GL approved
- High strength
- No tempering required

A cartridge grade 2K-PU adhesive with high strength and stiffness and good compression strength. It is certified by Germanischer Lloyd for bonding in wind power applications.

Structural Bonding – Polyurethanes

Product list (2-component)

Product	Technology	Viscosity in mPa·s	Mix ratio by weight	Working life at 20°C in min.	Initial strength	Tensile shear strength in N/mm²
Macroplast UK 1351 B25	2K-PU	400,000 – 500,000	2:1vol.	20 – 30	1 – 2h	> 20
Macroplast UK 1366 B10	2K-PU	400,000 – 500,000	4:1vol.	7 – 13	40 – 60min.	> 10
Macroplast UK 8101*	2K-PU	Liquid	4:1	50 – 70	5 – 8h	> 9
Macroplast UK 8103*	2K-PU	8,000 – 10,000	5:1	40 – 70	5 – 8h	> 9
Macroplast UK 8115-23*	2K-PU	700 – 1,200	5:1	80 – 105	6 – 8h	> 6
Macroplast UK 8126*	2K-PU	300 – 900	100:65	45 – 70	–	> 15
Macroplast UK 8160*	2K-PU	Pasty	5:1	60 – 90	5 – 8h	> 7
Macroplast UK 8202*	2K-PU	8,000 – 10,000	4:1	80 – 120	8 – 10h	> 12
Macroplast UK 8303 B60*	2K-PU	200,000 – 300,000	6:1	60 – 75	4 – 5h	> 12
Macroplast UK 8306 B60*	2K-PU	250,000 – 310,000	5:1	55 – 65	4 – 5h	> 12
Macroplast UK 8309*	2K-PU	850,000	5:1	40 – 60	3.5 – 4h	> 9
Macroplast UK 8326 B30*	2K-PU	250,000 – 310,000	5:1	25 – 35	3 – 4h	> 12
Macroplast UK 8436*	2K-PU	500 – 900	2:1	90 – 130s	50 – 60min.	–
Macroplast UK 8445 B1 W*	2K-PU	Liquid	100:22	70 – 74s	–	> 6
Teromix 6700	2K-PU	Pasty	1:1vol.	10	30min.	> 12
Terostat 8630 2C HMLC	2K-PU	Pasty	100:0.3vol.	25	2h***	> 4 at 5mm layer
Terokal 9225 SF	2K-PU	Pasty	1:1vol.	~2	6min.	13

* Macroplast UK 8XXX resins are generally used with hardener component Macroplast UK 5400 or Macroplast UK 5401. For more information, please refer to the TDS.

	Consumption per m^2	Service temperature range (short exposure)	Pack sizes	Comments
	–	-40 to +120°C (150°C)	400ml twin cartridge	Pasty/sag resistant, high strength, high compression strength, no tempering necessary, GL approved as Duromeric Adhesive according to Rules for Classification and Construction, II, Part 2
	–	-40 to +80°C (+100°C)	415ml twin cartridge	Pasty/sag resistant, short fixture time, cartridge grade, good adhesion to plastics and metal, shock absorbent
	200 – 400g	-40 to +80°C (+150°C)	Not available in the U.K.	Low viscous
	200 – 400g	-40 to +80°C (+150°C)	24kg pail	Low viscous, multi purpose, different acceleration levels available, good flow properties, IMO approval for shipbuilding (wheelmark, low flame spread)
	200 – 500g	-40 to +80°C (+150°C)	Not available in the U.K.	Low viscous, very long open time, hydrophobic, for large panel applications
	–	-40 to +80°C (+150°C)	Not available in the U.K.	Low viscous, good penetration properties for laminates e.g. in the ski and snowboard industry
	200 – 500g	-190 to +80°C (+150°C)	Not available in the U.K.	Very pasty, IMO approval for shipbuilding (wheelmark, low flame spread)
	200 – 400g	-190 to +80°C (+150°C)	24kg pail	Liquid, good flexibility at low temperatures, high strength, ABS type approval (shipbuilding), Bureau Veritas (type approval liquefied Gas Tanks)
	200 – 500g	-40 to +80°C (+150°C)	Not available in the U.K.	Multi purpose, pasty/sag resistant, DIN 4102 B1, IMO approval for shipbuilding (wheelmark, low flame spread)
	200 – 500g	-40 to +80°C (+150°C)	Not available in the U.K.	Pasty/sag resistant, high strength and good elasticity, different working life versions available
	200 – 500g	-40 to +80°C (+150°C)	30kg pail	Pasty/sag resistant, good workability used for truck bodies assembly
	200 – 500g	-40 to +80°C (+150°C)	3.6kg combi pack**	Pasty/sag resistant, primerless metal adhesion, good ageing stabillity
	–	-40 to +80°C (+120°C)	Not available in the U.K.	Good adhesion properties and excellent flowability
	–	-40 to +80°C (+150°C)	Not available in the U.K.	Liquid, fast setting for top lid bonding
	–	-40 to +80°C (+140°C)	50ml (2 x 25ml) cartridge, 250ml (2 x 125ml) cartridge, 620ml (2 x 310ml) cartridge	Easy to use
	–	-40 to +90°C (+120°C)	310ml cartridge, set	Warm applied, high modulus, low conductivity, 2-component material, 2 hours drive away time acc. to European standard
	–	-40 to +80°C (+140°C)	2 x 25ml twin cartridge	Developed for plastic repair

** Combi packs include hardener component Macroplast UK 5400
*** Drive away time

Structural Bonding – Polyurethanes

Product list (1-component)

Product	Technology	Viscosity in mPa·s	Open time at 23°C, 50% rh	Initial strength	Curing time	Tensile shear strength in N/mm²
Macroplast UR 7220	1K-PU	5,500 – 10,500	4 – 6h	6 – 10h	3d	> 6
Macroplast UR 7221	1K-PU	5,500 – 10,500	40 – 60min.	2 – 4h	2d	> 6
Macroplast UR 7225	1K-PU	5,500 – 10,500	20 – 25min.	50 – 70min.	1d	> 6
Macroplast UR 7228	1K-PU	5,500 – 10,500	7 – 9min.	10 – 15min.	1d	> 6
Macroplast UR 7388	1K-PU	3,000 – 5,000	7 – 9min.	10 – 15min.	1d	> 6
Macroplast UR 7395 B-21	1K-PU	2,000 – 4,000	12 – 15min.	20 – 30min.	1d	> 7
Macroplast UR 7396	1K-PU	2,000 – 4,000	25 – 35min.	60 – 90min.	1d	> 7
Terostat 8596	1K-PU	Pasty	25min.	6h*	5 – 7d	> 5 at 5mm layer
NEW **Terostat 8597 HMLC**	1K-PU	Pasty	20min.	1h / 4h*	5 – 7d	> 5 at 5mm layer
Terostat 8599 HMLC	1K-PU	Pasty	15min.	15min.*	5 – 7d	> 4 at 5mm layer
Terostat 9097 PL HMLC	1K-PU	Pasty	25min.	1h*	5 – 7d	> 5 at 5mm layer

Cleaner:
Macroplast B 8040 (viscosity - 3mPa·s) in 30kg pack. Rinsing and cleaning agent for 1K- and 2K-polyurethane adhesives / high dissolving capacity / low evaporation rate.

For further information please refer to the TDS and MSDS.

* Drive away time

	Consumption per m^2	Service temperature range (short exposure)	Pack sizes	Comments
	100 – 200g	-40 to +80°C (+100°C)	Not available in the U.K.	Very long open time for large panel applications, foaming
	100 – 200g	-40 to +80°C (+100°C)	30kg jerry can, 200kg drum,	Long open time, foaming, IMO approval for shipbuilding (wheelmark, low flame spread)
	100 – 200g	-40 to +80°C (+100°C)	1,000kg container	Medium open time, foaming, IMO approval for shipbuilding (wheelmark, low flame spread)
	100 – 200g	-40 to +80°C (+100°C)	30kg jerry can	Short fixture time, foaming, IMO approval for shipbuilding (wheelmark, low flame spread)
	100 – 200g	-40 to +80°C (+100°C)	Not available in the U.K.	Low viscous, fast setting
	100 – 200g	-40 to +80°C (+100°C)	Not available in the U.K.	Low viscous, thermally accelerated, IMO approval for shipbuilding (wheelmark, low flame spread)
	100 – 200g	-40 to +80°C (+100°C)	Not available in the U.K.	Low viscous, thermally accelerated, medium open time
	–	-40 to +90°C (+120°C)	310ml cartridge, set	6 hours drive away time acc. FMVSS
	–	-40 to +90°C (+120°C)	310ml cartridge, 400ml foil, 570ml foil, set	High modulus, low conductivity, 1 hour drive away time acc. FMVSS, 4 hours drive away time acc. to European standard
	–	-40 to +90°C (+120°C)	310ml cartridge, set	Warm applied, high modulus, low conductivity, 15 minutes drive away time acc. FMVSS
	–	-40 to +90°C (+120°C)	310ml cartridge, set	Primerless adhesion, high modulus, low conductivity, 1 hour drive away time acc. FMVSS

Structural Bonding – Silicones

Product table

Do you need a fast fixture / fast cure adhesive?

Yes

	Fast cure	Medium cure	Higher temperature resistance
Solution	**Loctite® 5615 A&B**	**Loctite® 5607 A&B**	**Loctite® 5612 A&B**
Description	2K Alkoxy silicone	2K Alkoxy silicone	2K Alkoxy silicone
Mix ratio by volume (A:B)	2:1	2:1	4:1
Colour	Black	Grey	Red
Mix tip working life (static mixer)	2 – 3min.	5 – 7min.	4 – 5min.
Skin formation time	–	–	–
Fixture time	10 – 15min.	50min.	25 – 30min.
Elongation at break	230%	140%	180%
Hardness shore A	34	43	45
Shear strength (GBMS)	1.3N/mm²	1.55N/mm²	2.0N/mm²
Service temperature (up to)	+180°C	+180°C	+220°C
Pack sizes	400ml, 17lt	400ml, 17lt	400ml, 17lt

Handy Hints:

- To improve adhesion on difficult to bond materials, we recommend to use cleaner / adhesion promoter Terostat 450 or Corona/Plasma treatment
- Using 2K-silicones with mixing nozzle:

1. After opening the cartridge press gun until both components come out of the cartridge. Do this without mounted mixer!

2. Mount the mixer and waste the first 5 cm of mixed product.

3. Pay attention to the "mix tip pot life". Make sure that the applied bead is smooth. If you see crumbles on the bead surface the product is already partly cured and the final properties will not be reached.

4. Change the mixer when you have not used the product for a longer time.

Loctite® 5615 A&B

- Fast cure 2-component silicone
- Suitable mix ratio 2:1
- Good adhesion to a wide range of substrates

Loctite® 5607 A&B

- Medium cure 2-component silicone
- Suitable mix ratio 2:1

Loctite® 5612 A&B

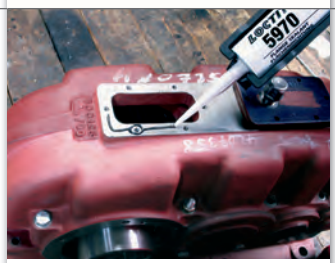
- Higher temperature resistant 2-component silicone
- Fast cure
- High elongation

No

General purpose	Electrical components	Oil resistance	High temperature resistance
Loctite® 5366	**Loctite® 5145**	**Loctite® 5970**	**Loctite® 5399**
1K Acetoxy silicone	1K Alkoxy silicone	1K Alkoxy silicone	1K Acetoxy silicone
–	–	–	–
Clear	Clear	Black	Red
–	–	–	–
5min.	70min.	25min.	5min.
–	–	–	–
530%	500%	200%	500%
25	25	44	33
2.5N/mm²	3.5N/mm²	1.5N/mm²	3.3N/mm²
+250°C	+200°C	+200°C	+300°C
50ml, 310ml	40ml	50ml, 300ml, 20lt	310ml, 20lt

Loctite® 5366
- General purpose 1-component silicone
- Clear colour
- Suitable for glass, metal, ceramics, etc.

Loctite® 5145
- Neutral curing 1-component silicone
- Non corrosive
- Especially for sealing and protecting electrical components



Loctite® 5970
- 1-component silicone with very good oil resistance
- Neutral curing
- Also used for gasketing applications (flange sealing)

Loctite® 5399
- High temperature resistant 1-component silicone
- For bonding and sealing glass, metal and ceramics e.g. industrial ovens, stove flues, etc.

Structural Bonding – Silicones

Product list

Product	Description	Mix ratio by volume A:B	Colour	Mix tip working life (static mixer) min.	Skin formation time min.	Fixture time min.
Loctite® 5145	1K Alkoxy silicone	–	Clear	–	5	–
Loctite® 5366	1K Acetoxy silicone	–	Clear	–	5	–
Loctite® 5367	1K Acetoxy silicone	–	White	–	5	–
Loctite® 5368	1K Acetoxy silicone	–	Black	–	5	–
Loctite® 5398	1K Acetoxy silicone	–	Red	–	8	–
Loctite® 5399	1K Acetoxy silicone	–	Red	–	5	–
Loctite® 5404	1K Heat curing silicone	–	White to grey	–	–	–
Loctite® 5607	2K Alkoxy silicone	2:1	Grey	5 – 7	–	50
Loctite® 5610	2K Alkoxy silicone	2:1	Black	1 – 2	–	5 – 7
Loctite® 5612	2K Alkoxy silicone	4:1	Red	4 – 5	–	25 – 30
Loctite® 5615	2K Alkoxy silicone	2:1	Black	2 – 3	–	10 – 15
Loctite® 5616	2K Alkoxy silicone	2:1	White	2 – 3	–	10 – 15
Loctite® 5940	1K Acetoxy silicone	–	Black	–	14	–
Loctite® 5970	1K Alkoxy silicone	–	Black	–	25	–
Loctite® 5980	1K Alkoxy silicone	–	Black	–	30	–
Terostat 33	1K Amine silicone	–	Transparent, grey, black, white	–	10	–
Terostat 58	1K Oxime silicone	–	Black	–	6	–
Terostat 63	1K Acetoxy silicone	–	Dark red	–	10	–
Terostat 140	1K Alkoxy silicone	–	White	–	10	–

Cleaner:
Terostat 450 – alcohol solution designed for cleaning and to improve adhesion (thin fluid, colourless)

	Elongation at break %	Hardness shore A	Shear strength (GBMS) N/mm²	Service temperature (up to) °C	Pack sizes	Comments
	500	25	3.5	200	40ml	For electrical components
	530	25	2.5	250	310ml	General purpose
	500	20	2	250	310ml	General purpose
	435	26	2.2	250	310ml	General purpose
	200	35	2	300	310ml	Flowable
	500	33	3.3	300	310ml	High temperature resistance
	65	60	1.3	N.A.	300ml	Thermal conductive
	140	43	1.55	180	400ml, 17lt	Medium curing speed
	210	40	1.35	180	400ml	Very fast curing
	180	45	2.0	220	400ml, 17lt	Higher temperature resistance
	230	34	1.3	180	400ml, 17lt	Fast curing
	200	30	1.0	180	Not available in the U.K.	White version of Loctite® 5615
	500	22	1.8	200	100ml	High elongation
	200	44	1.5	200	300ml, 20lt	Very good oil resistance
	290	27	1.4	-55 to +200	200ml	Excellent oil resistance, direct application, gun not required
	250	22	1.2	150	310ml	Primerless on metals
	250	40	2	200	Not available in the U.K.	Fast skin formation
	430	35	2.8	250	Not available in the U.K.	High temperature resistance
	750	10	N.A.	-50 to +120	Not available in the U.K.	Fungicidal properties

Structural Bonding – Silane Modified Polymers

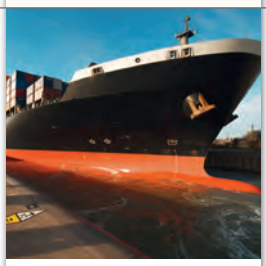
Product table

What main function are you looking for?

Solution	Elastic sealing		
	General purpose	High/medium resistance	
	Terostat MS 930	**Terostat MS 510**	**Terostat MS 935**
Colour	White, grey, black	Black	White, grey, black
Consistency	Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic
Hardness shore A (DIN EN ISO 868)	30	45	50
Depth of cure after 24 hr	4mm	3 – 4mm	3mm
Skin formation time	25 – 40min.	10 – 20min.	10 – 15min.
Tensile strength (DIN 53504)	1.0MPa	1.6MPa	2.8MPa
Elongation at break (DIN 53504)	250%	210%	230%
Service temperature range	-50 to +80°C	-50 to +100°C	-40 to +100°C
Pack sizes	310ml, 570ml, 18lt	Not available in the U.K.	310ml, 570ml

Handy Hints:

- To improve adhesion on materials difficult to bond please use cleaner/adhesion promoter Terostat 450 or Corona/Plasma treatment
- To increase cure speed all Terostat MS products (except MS 9399) can be accelerated by using the B-component Terostat MS 9371B with a mix ratio of 10:1
- Application of Terostat MS products on plastics such as PMMA or PC may cause stress cracking of the plastic -> suitability for these materials should be tested prior to use
- Bonding of transparent materials such as glass, PC or PMMA may require an additional UV protection of the bondline in case it is directly exposed to intense UV light through the transparent material



Terostat MS 930

- Soft-elastic
- UV and weathering resistant sealant
- Multi purpose

FDA Status, BSS 7239, UL Listing QMFZ2

Terostat MS 510

- Fast processing with accelerator Terostat MS 9371

Meets damp heat test according IEC 61215/61646/61730 > 3,000 h, UL Listing QMFZ2

Terostat MS 935

- Elastic sealant/ adhesive
- Easy smoothing
- Good environmental resistance
- Good overpaintabillity

Sensoric test acc. to DIN 10955

Declaration of no objection acc. to ISEGA DIN EN ISO 846 fungus resistance, IMO approval

Elastic bonding

Self spreading	General purpose	Flame retardant	High modulus	Two component rapid cure
Terostat MS 931	**Terostat MS 939**	**Terostat MS 939 FR**	**Terostat MS 9380**	**Terostat MS 9399**
White, grey, black	White, off-white, grey, black	Black	White, grey	White, grey, black
Self-levelling	Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic
25	55	> 50	> 65	60
3 – 4mm	3mm	3mm	3mm	2K-system
15 – 20min.	10min.	20min.	5 – 10min.	30min. (black) 20min. (white, grey)
0.8MPa	3.0MPa	3.5MPa	4.0MPa	3.0MPa
100%	250%	180%	120%	150%
-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C	-40 to +100°C
Not available in the U.K.	310ml, 570ml, 25kg	310ml, 25kg	310ml, 25kg	50ml*, 400ml**

Terostat MS 931
- Self-levelling/pourable
- Sprayable

Sensoric test acc. to DIN 10955

Terostat MS 939
- Very versatile
- Elastic bonding adhesive
- High strength
- Good elasticity

Meets damp heat tests acc. IEC 6125/ 61646/61730 > 3,000 h, UL Listing QOQW 2

Terostat MS 939 FR
- Elastic bonding adhesive
- High strength
- Good elasticity
- Flame retardant

Flame retardant approvals (railway), DIN 5510 S4, NF F 16-101 M1, ASTM E 162/E662

Terostat MS 9380
- High modulus
- Fast skin formation
- Gap filling
- High initial strength

GL (Germanischer Lloyd) approved elastomeric adhesive: meets damp heat test acc. IEC 61215/61646/61730 > 3,000 h

Terostat MS 9399
- 2-component cartridge grade
- High initial strength
- Short tack-free time
- Independent from air/ humidity
- Easy handling 2K-system

ASTM E 162/E662, NF F 16-101 M1, DIN EN ISO 846

*only available in white color
**available in white, grey, black

Structural Bonding – Silane Modified Polymers

Product list

Product	Colour	Consistency	Hardness shore A (DIN EN ISO 868)	Depth of cure in mm after 24h	Skin formation time in min	Tensile strength (DIN 53504) in MPa
Terostat MS 510	Black	Pasty, thixotropic	45	3 – 4	10 – 20	1.6
NEW **Terostat MS 647**	White, black	Pasty, thixotropic	60	3	15 – 25	2.8
Terostat MS 930	White, grey, black	Pasty, thixotropic	30	4	25 – 40	1.0
Terostat MS 931	White, grey, black	Self-levelling	25	3 – 4	15 – 20	0.8
Terostat MS 935	White, grey, black	Pasty, thixotropic	50	3	10 – 15	2.8
Terostat MS 937	White, grey, black	Pasty, thixotropic	50	4	10 – 15	3.0
Terostat MS 939	White, off-white, grey, black	Pasty, thixotropic	55	3	10	3.0
Terostat MS 939 FR	Black	Pasty, thixotropic	> 50	3	20	3.5
Terostat MS 9302	Grey, brown	Thixotropic	30	3 – 4	10	1.1
Terostat MS 9360	Black	Pasty, thixotropic	> 50	3	10	3.5
Terostat MS 9380	White, grey	Pasty, thixotropic	> 65	3	5 – 10	4.0
Terostat MS 9399	White, grey, black	Pasty, thixotropic	60	2K-system	30 (black) 20 (white, grey)	3.0

Cleaner:
Terostat 450 – alcohol solution designed for cleaning and to improve adhesion (thin fluid, colourless)

B-Component (Hardener) for 2-component curing:
Terostat MS 9371 B – accelerator paste for Terostat MS adhesives and sealants (pasty, thixotropic, white)

	Elongation at break (DIN 53504) in %	Service temperature range	Pack sizes	Comments / speciality
	210	-50 to +100°C	Not available in the U.K.	Unique fast curing as 2K, damp heat test acc. IEC 61215/61646/61730 > 3,000 h, UL Listing QMFZ2
	200	-40 to +90°C	Not available in the U.K.	Unique fast curing as 2K, damp heat test acc. IEC 61215/61646/61730 > 3,000 h
	250	-50 to +80°C	310ml, 570ml, 18lt	FDA, BSS 7239, UL Listing QMFZ2
	100	-40 to +100°C	Not available in the U.K.	Sensoric test acc. to DIN 10955
	230	-40 to +100°C	310ml, 570ml	Sensoric test acc. to DIN 10955, declaration of no objection acc. to ISEGA, DIN EN ISO 846 fungus resistance, IMO approval
	220	-40 to +100°C	310ml, 570ml, 18lt	DIN EN ISO 846 (VDI 6022)
	250	-40 to +100°C	310ml, 570ml, 25kg	UL Listing, QOQW2, damp heat test acc. IEC 61215/61646/61730 > 3,000 h
	180	-40 to +100°C	310ml, 25kg	Flame retardant approvals (railway), DIN 5510 S4, NF F 16-101 M1, ASTM E 162/E662
	250	-50 to +100°C	Not available in the U.K.	DIN EN ISO 846 (VDI 6022)
	200	-40 to +100°C	310ml, 25kg	ASTM E 662 ASTM E 162 BSS 7239
	120	-40 to +100°C	310ml, 25kg	GL (Germanischer Lloyd) approved elastomeric adhesive. Damp heat test acc. IEC 61215/61646/61730 > 3,000 h
	150	-40 to +100°C	50ml*,400ml**	ASTM E 162/E662, NF F 16-101 M1, DIN EN ISO 846

*only available in white colour,
**Available in white, grey, black

Butyls

Plastic sealants in different shapes

Why use a Henkel Butyl?

Plastic sealants

Like adhesives, sealants are employed in diverse areas of industry and crafts and have been steadily gaining in significance. Modern sealants ideally complement traditional joining and sealing techniques, such as the use of solid gaskets, and can often even replace them.

Fundamentals

Butyl and polyisobutylene (PIB) sealants have different chemical structures, but users will detect practically no differences in their properties when using them. Both groups of plastic sealants are 1-component products. As they need no hardener and no time to cure, their final properties are evident immediately after application. This, and the characteristics below, make butyl and PIB sealants interesting solutions for production and maintenance tasks in industry.

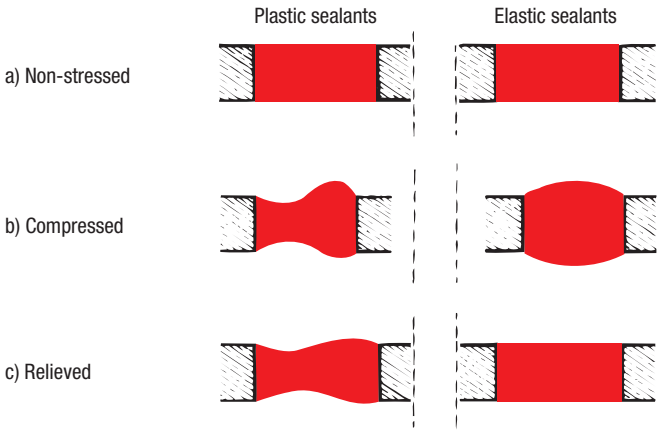
Properties

- Excellent adhesion to almost all substrates
- Final properties directly upon application
- Low permeability to water vapour and gases
- Good resistance to water and aging
- High flexibility even at low temperatures
- Self-welding

Due to their inherent tackiness, butyl and PIB sealants adhere to metals, glass, ceramics, mineral substrates, wood, PS, EPDM and other plastics. They even achieve excellent adhesion to substrates which are generally difficult to bond, such as PE, PP and POM.

Plastic vs. elastic

An important criterion in the selection of sealants is their mechanical behaviour under deformation. When exposed to forces, each sealant shows both a plastic (i.e. deformable) and an elastic (i.e. rubber-like) reaction. If the plastic reaction is dominant, the sealant is referred to as plastic. Two important groups of these plastic sealants are the products based on butyl rubber and/or polyisobutylene.



Plastic sealants

Wherever the term plastic sealants is used on the following pages, it refers to butyl and PIB sealants. Henkel breaks the plastic sealants down as follows:

• Profiles

The butyls are given their different shapes by means of extrusion at temperatures between 60 and 80°C. They are subsequently applied to backing paper and coiled. The backing paper is removed immediately before the profile is used. Profiles come in the form of flat profiles (tapes) or round profiles (cords) with a great variety of dimensions. They are either wound on reels or cut to length (pre-cut profiles). In order to increase their longitudinal dimensional stability, flat and round profiles are also available with a core made of cotton or synthetic yarn or with a fabric sheath. Laminating one side of the tapes to plastic films/sheets, nonwovens or aluminium composite foils achieves further special properties such as UV and weathering stability, tear resistance, or compatibility with plasters or paints. No application equipment or particular precautions are required for handling the profiles. They are easy, safe and clean to use. Thanks to our long experience and the excellent reliability of our production processes, profiles from Henkel have outstanding dimensional accuracy. This is ensured by uniform application of material during production, a feature which is constantly monitored by our Quality Assurance.

• Putties

Putties are easily shapeable sealants based on polyisobutylene. They are given the required shape by hand and then pressed into gaps, joints or openings. Putties from Henkel easily mould themselves to any kind of surface geometry. Having good adhesion as well as easy shapeability, they provide an excellent seal against water, moisture, gases and dust.

• Hotmelt butyls

At room temperature, hotmelt butyl sealants are highly viscous and very tacky. For processing, they are heated to 80 to 120°C, which considerably reduces their viscosity. As a result, they process easily and at high speed when applied using heatable equipment. Moreover, hotmelt butyls can be applied in very thin layers. As highly tacky sealants, these products can be used on a wide variety of profiles, tapes, foils/films and mouldings. Once applied, the sealant can be covered with a release paper for transport and storage. Hotmelt butyls remain highly tacky even at low temperatures, allowing them to be processed at near to freezing point. The products are available in hobbocks and drums. They can be applied from these containers using equipment with screw extruders, piston pumps, gear pumps or rotary pumps.

• Gun-grade butyl sealants

Gun-grade butyl sealants are 1-component cold-processable sealants based on butyl rubber. They can be applied at room temperature. These sealants come in cartridges or foil cartridges for pressure guns, or in drums requiring suitable applicators. A distinction is made between solvent-free and solvent-based products. Solvent-based products release their organic solvent after application. During this process, they set physically, forming a plastic butyl sealant which is resistant to aging. The solvent-free products cure when exposed to heat.

Butyls

Product table

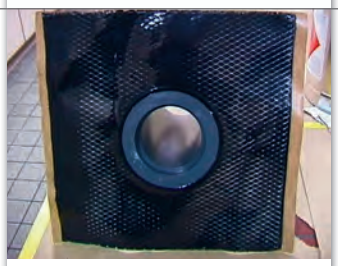
How do you want to apply the product?

Manual application

Pre-formed

Cold applied

Can be applied after the release paper / foil has been pulled off

	Low tackiness	**High tackiness**	
		Medium cohesion	**High cohesion**
Solution	**Terostat VII**	**Terostat 276**	**Terostat 81**
Density	1.69 g/cm³	1.41 g/cm³	1.26 g/cm³
Solids content	100%	100%	100%
Adhesion strength	Low	Very high	Very high
Processing temperature	Room temperature	Room temperature (hot applied: +120 to +140°C)	Room temperature (hot applied: +80 to +160°C)
Service temperature range	-40 to +80°C	-40 to +80°C	-40 to +80°C
Pack sizes on request			
	Terostat VII • Easy to remove • Very good water and aging resistance • Good for spacing • Sound insulation • Can be overpainted	**Terostat 276** • High tackiness • Pumpable at elevated temperatures and also available as profiled grade	**Terostat 81** • High quality sealing tape • High tackiness and self-welding • Very good water and aging resistance • No corrosive constituents

Automated application

Formed in place

Cold applied | Hot applied

Gun-grade butyls | Hotmelt butyls

Kneadable | Heat conductive

Terostat IX	Terostat 2759	Terostat 6814	Terostat 301
1.7 g/cm³	1.37 g/cm³	1.3 g/cm³	1.25 g/cm³
100%	85%	100%	100%
Low	Medium	Very high	Very high
Room temperature	Room temperature	+120 to +150°C	+120 to +140°C
-30 to +80°C	-30 to +80°C	-40 to +80°C	-40 to +80°C

Terostat IX
- Slight tackiness
- Very good water and aging resistance
- Good for spacing
- Sound insulation
- Can be overpainted

Terostat 2759
- Easy to dab off
- Very good water and aging resistance
- Elasto-plastic

Terostat 6814
- High tackiness
- Pumpable
- Soft plastic

Terostat 301
- High thermal conductivity
- Soft formable and hot extrudable
- Pumpable and also available as profiled grade

Butyls

Product list

Product	Characteristic	Colour	Density in g/cm³	Solids content in %	Adhesion strength	Processing temperature in °C
Terostat VII	Putty	Light grey	1.69	100	Low	Room temperature*
Terostat IX	Putty	Light grey	1.7	100	Low	Room temperature*
Terostat 81	Pre-formed (and hot applied) butyl	Black	1.26	100	Very high	Room temperature* Hot applied**: +80 to +160
Terostat 276	Pre-formed and hot applied butyl	Grey and black	1.41	100	Very high	Room temperature* Hot applied**: +120 to +140
Terostat 276 Alu	Composite	Silver black	1.41	100	High	Room temperature*
Terostat 279	Hot applied butyl	Black	1.4	100	Very high	+80 to +160
Terostat 285	Hot applied butyl	Grey, black	1.4	100	Very high	+80 to +160
Terostat 301	Hot applied butyl	Anthracite	1.25	100	Very high	+120 to +140
Terostat 2759	Cartridge grade, room temperature extrudable	Grey	1.37	85	Medium	Room temperature*
Terostat 2761	Pre-formed butyl	Black	1.3	100	High	Room temperature*
Terostat 2780	Hot applied butyl	Black	1.14	100	Low	+130 to +200
Terostat 2785	Hot applied butyl	Black	1.05	>98	Very high	Room temperature* Hot applied**: +90 to +130
Terostat 3631 FR	Pre-formed parts	Black	1.4	100	Medium	Room temperature*
Terostat 4006	Cartridge grade, room temperature extrudable	Grey	1.4	83	Low	Room temperature***
Terostat 6814	Hot applied butyl	Black	1.3	100	Very high	+120 to +150

* Pack size: tape

** Pack size: drum or hobbock

*** Pack size: cartridge or sausage

	Service temperature range (short exposure)	Penetration 1/10 mm	Comments
	-40 to +80°C	56	Sealing of metal sheet overlap
	-30 to +80°C	75	Kneadable sealant for gap and breakthrough feeling
	-40 to +80°C (+200 °C)	65	Very high tackiness, improved performance
	-40 to +80°C	55	Multi-purpose, high strength
	-40 to +80°C	Not applicable	Laminated with an aluminium composite foil for excellent weathering and UV resistance, water vapour diffusion (DIN 53 122): μ = 645,000
	-40 to +80°C	85	Excellent pumpable hot butyl with high adhesion strength
	-40 to +80°C	105	Fungus resistant pumpable hot butyl
	-40 to +80°C	70	High thermal conductivity, pumpable hot butyl
	-30 to +80°C	N.A.	Gun-grade, solvent-based, excess material, can easily be dabbed off
	-40 to +80°C (+160 °C)	50	Vacuum bagging tape for infusion processes up to +80°C mould temperature
	-30 to +105°C (+200°C)	Not applicable	High strength, suitable for tank melter application
	-40 to +100°C	55	Good adhesion, high temperature resistance, suitable for flexible photovoltaic modules. PMMA compatibility Evonik (Plexiglas XT and XT 0A370)
	-40 to +105°C	45	Flame retardant tape, high temperature resistance
	-20 to +80°C	N.A.	Gun-grade, solvent-based sag-resistant sealant
	-40 to +80°C	105	High performance pumpable hot butyl

Casting Resins

Product table

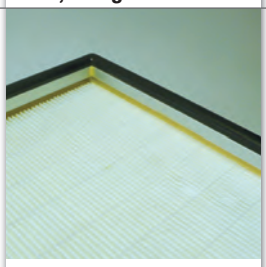
What kind of Casting?

	Air		Food/Water
	Liquid	Thixotropic	Dry substrates
Solution	**Macroplast UK 8439-21**	**Macroplast UK 8180 N**	**Macroplast CR 3525**
Technology	2K-PU	2K-PU	2K-PU
Hardener (Part B)	Macroplast UK 5400/ Macroplast UK 5401	Macroplast UK 5400/ Macroplast UK 5401	Macroplast CR 4200
Mixed colour	White/Beige	Beige	Yellowish
Mix ratio by weight	5:2	5:3	100:75
Working life	4 – 5 min.	4 – 6 min.	23 – 29 min.
Viscosity mixture	800 mPa·s	850 mPa·s	1,300 mPa·s
Service temperature range	-40 to +80°C	-40 to +100°C	80°C in process
Short exposure (1h)	+150°C	+150°C	+70°C
Pack sizes	Part A: 190kg drum / Part B: 30kg pail, 250kg drum	Part A: 200kg drum, 1,250kg container / Part B: 30kg pail, 250kg drum, 1,250kg container	Part A: 25kg pail, 180kg drum / Part B: 30kg pail, 240kg drum

Casting resins based on epoxy and polyurethane
Possessing versatile characteristics, casting resins based on epoxy and polyurethane have been steadily gaining ground over the past decades. They can be chemically engineered to be very hard and impact resistant or soft and elastic. A casting resin usually consists of two basic components which are mixed and react with each other to form a cross-linked product. Systems of this kind generally display high strength, are easy to apply, and have very good gap filling properties. Polyurethane casting resins are compatible with a broad range of materials and withstand temperatures of up to 120°C (with brief peaks up to 150°C). If higher temperatures are required (up to 180°C), epoxy casting resins are used.

Macroplast UK 8439-21
- Self levelling
- Fast setting
- Broad adhesion spectrum

Macroplast UK 8439-21 has very good workability and self levelling properties. It is designed for the manufacturing of particulate air filters. The product meets the requirements in HEPA filter industry.



Macroplast UK 8180 N
- Fast built-in thixotropy
- Short processing time
- Good penetration into filter media

Macroplast UK 8180N forms a thixotropic solution which allows to have a very fast inline processing for the assembly of filter elements. The product is suitable for clean room applications.

Macroplast CR 3525
- Fast setting
- Easy processibility

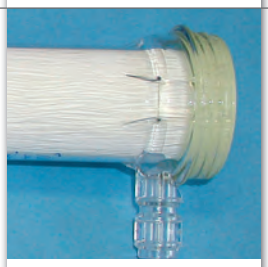
Macroplast CR 3525 has low exothermic reaction and therefore allows fast processing.

KTW approval
EG 1935 2004, direct food contact approval
2002/72/EG approval for the plastic industry

Filter application				Electrical application
	Medical	Oil		
Wet substrates		Medium working life	Long working life	
Macroplast EP 3299	**Macroplast CR 5103 B4**	**Macroplast EP 3030**	**Macroplast EP 3430**	**Macroplast CR 6127**
2K-EP	2K-PU	2K-EP	2K-EP	2K-PU
Macroplast EP 5299	Macroplast CR 4620	Macroplast EP 5030	Macroplast EP 5430	Macroplast CR 4300
Amber	Yellowish/Light Yellowish	Purple	Amber	White
100:35	100:72	100:29	10:1	85:15
6 h	220 – 320 sec.	60 min.	16 h	70 – 110 min.
3,000 mPa·s	1,200 mPa·s	600 mPa·s	8,000 mPa·s	2,600 mPa·s
-55 to +80°C	80°C in process	-55 to +80°C	-55 to +100°C	-40 to +80°C
+200°C	+120°C	+200°C	+200°C	+150°C
Part A: 180kg drum / Part B: 180kg drum	Part A: 180kg drum / Part B: 250kg drum	Part A: 20kg pail, 230kg drum / Part B: 20kg pail, 200kg drum	Part A: 20kg pail / Part B: 18kg pail	Part A: 35kg pail / Part B: 6kg pail, 30kg pail

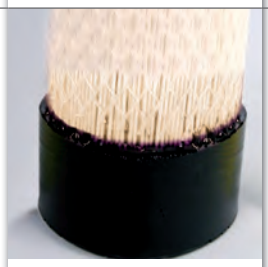
Macroplast EP 3299
- Good adhesion properties
- High processing temperature resistance

Macroplast EP 3299 has a very good chemical resistance and good adhesion properties to wet fibers in the production process.



Macroplast CR 5103 B4
- Allows steam, ETO or gamma ray sterilisation
- Very good adhesion

Macroplast CR 5103 B4 has very good penetration properties during centrifugation. The product is ISO 10993 compliant for medical equipment and approved for dialysers.



Macroplast EP 3030
- Multipurpose filter applications
- High chemical resistance
- Low viscosity

Macroplast EP 3030 has low viscosity and controlled exothermic reaction in the process. It is well-proven in the production of membrane filters.

Macroplast EP 3430
- Long working life
- High temperature stability
- Low shrinkage

Macroplast EP 3430 has a very good resistance to hydraulic fluids, fuel and chemicals. Due to its long open time it can also be used for large potting applications e.g. in gas separation filters.

Macroplast CR 6127
- Flame retardant acc. to UL 94 V0
- Elastic properties
- Very good electrical properties e.g. dielectric strength or constant

Macroplast CR 6127 is qualified for the casting of telecommunication articles, transformers or other electrical/ electronic devices.

Acoustic Coatings

Soundproofing

Why use Teroson Acoustic Coatings?

Basically, there are two options for controlling noise: It can be insulated or absorbed. As both options can be applied to airborne and to structure-borne sound, there are in fact four different types of noise control:

1. Absorption of structure-borne sound
Absorption of structure-borne sound is achieved by converting part of the sound energy into thermal energy while the sound travels through homogeneous materials attached or bonded to a solid body. In this way, the structure-borne sound is absorbed before it generates air-borne sound. The better the absorption properties of such damping materials, the better the structure-borne sound absorption. The "loss temperature" is a parameter for measuring this effect.

2. Insulation against structure-borne sound
Insulation against structure-borne sound is achieved by attenuating the propagation of sound by using a flexible material for sound insulation. The softer and more voluminous this material, the better the structure-borne sound insulation.

3. Absorption of air-borne sound
Absorption of air-borne sound is achieved by converting part of the air-borne sound energy into thermal energy as the sound penetrates into fibrous or foam materials. The thicker the fibrous or foam materials, the better the air-borne sound absorption.

4. Insulation against air-borne sound
Insulation against air-borne sound is achieved when part of the sound energy is reflected by a wall. The remaining sound energy is transmitted through the wall and re-radiated on the opposite side in the form of air-borne sound. The heavier and more flexible the partitioning wall, the better the air-borne sound insulation.

Sound Measurement and Evaluation:

The pressure of air-borne sound waves is measured by means of a sound level meter with a microphone. Sound levels are measured in units of decibels (dB). As the subjective response to noise as perceived by the human ear is largely dependent on the frequency or the frequency spectrum of a sound, level meters are provided with weighting filters for equalisation. The A-weighted sound level, expressed as dBA, will be sufficiently accurate for most comparative noise measurements.

Loss factor ”d“:

The acoustic loss factor ”d“ is used as a measure of the noise absorption capability of a material. This factor indicates how much of the sound energy propagated in the form of flexural waves will be absorbed and converted into heat energy. The loss factor of a material depends on frequency and temperature. It does not, however, provide a meaningful indication of the actual reduction of noise level which can be achieved. It must therefore be measured on site. Striking a reasonable compromise between economic cost and benefit, a loss factor of approx. 0.1 has been found acceptable for a wide range of applications.

Air-borne sound absorption coefficient α:

The absorption capability of a material is expressed as air-borne sound absorption coefficient α. It describes the percentage of incident sound energy which is absorbed and converted into heat energy. The absorption coefficient α depends to a great extent on frequency. The lower (deeper) the frequency, the thicker the absorbent material to be used!

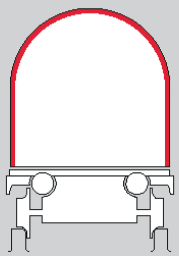
Soundproofing

- Highly efficient paste-type soundproofing materials
- Offer outstanding absorption capabilities
- Reduction of structure-borne noise
- Can be coated in any thickness to meet the most exacting requirements for universal structure-borne sound absorption
- Can be applied by spatula or spray gun
- Approved according DIN 5510 Part 2, class S4-SR2-ST2 (Fire behaviour)

Solution	Terophon 112 DB	Terophon 129
Chemical base	**Aqueous synthetic resin dispersion**	**Aqueous synthetic resin dispersion**
Density wet/dry	**1.4 g/cm³ / 1.2 g/cm³**	**1.35 g/cm³ / 1.15 g/cm³**
Solids contents	**65%**	**70%**
Drying time (4 mm wet film) (DIN EN ISO 291)	**24 h**	**20 h**
Temperature resistance	**-50 to +120°C**	**-50 to +120°C**
Pack sizes	**250kg drum**	**250kg drum**

Handy Hints:

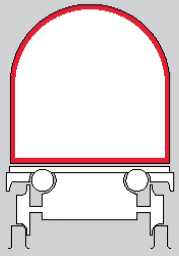
- Never apply Terophon water-based products to bare steel sheets because there is a serious risk of corrosion while the aqueous product cures on the steel face and afterwards, when humidity migrates into the Terophon coating. Non-galvanised steel sheets or non-anodised aluminium substrates always require a waterimpermeable primer protection
- The Henkel range includes other soundproofing products which are available on request



Terophon 112 DB

- Solvent-free
- Ready to apply from spray guns
- Excellent fire resistance
- Low flammability
- Good thermal insulation properties

Terophon 112 DB is used for secondary noise and vibration control on thin walled sheet metal constructions in the manufacture of vehicles, railway carriages, ship building as well as plant and equipment building. In addition, the product is also applied to ventilation ducts, fan housings, lifts, waste disposal units, to the rear side of facade elements as well as to container buildings. Coatings with Terophon 112 DB must not be subjected to standing water or direct weathering.



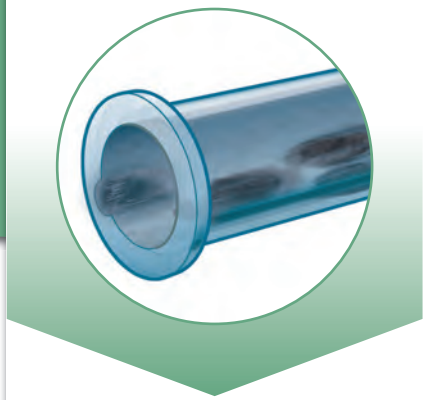
Terophon 129

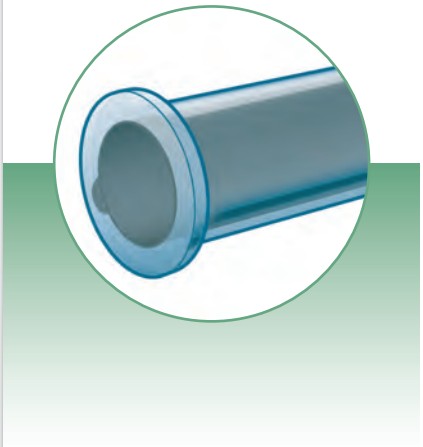
- Solvent-free
- Ready to apply from spray guns
- Moisture resistant
- Low flammability
- Good thermal insulation properties

Terophon 129 is used for secondary noise and vibration control on thin walled sheet metal constructions in the manufacture of vehicles, railway carriages, ship building as well as plant and equipment building. Coatings with Terophon 129 can be subjected to standing water for a longer period of time.

Metal-filled Compounds

To repair metal parts





Why use a Loctite® Hysol® Metal-filled Compound?

Loctite® Hysol® Metal-filled Compounds offer maintenance solutions to the problems caused by impingement and mechanical damage, including cracks in housings, worn keyways in shafts and collars, worn cylindrical shafts, etc.

Loctite® Hysol® Metal-filled Compounds repair, rebuild and restore damaged machinery and equipment permanently and without the need of heat or welding.

Traditional methods vs modern solutions:

Traditional repair methods such as hard face welding are time consuming and expensive. Alternatively, Loctite® Hysol® Metal-filled Compounds are easily applied and offer superior compressive strength and protection qualities.

Loctite® Hysol® Metal-filled Compounds and Loctite® Nordbak® Wearing Compounds help you restore and rebuild a wide variety of worn parts and put them back in serviceable condition.

Key benefits of Loctite® Hysol® Metal-filled Compounds are:

- Fast repair
- Low shrinkage to reduce stress on components
- Easy to apply
- No need to heat parts
- Make repairs right on the production line
- Match metal colour
- Can be drilled, tapped or machined after cure
- Superior adhesion to metal, ceramic, wood, glass and some plastics
- Excellent resistance to aggressive chemicals to increase part life
- Choice of mild steel, aluminium or non-metallic fillers
- Create durable repairs
- High compression strength for mechanical applications

Key factors to consider when choosing the right Loctite® Hysol® Metal-filled Compound

Metal to repair

Loctite® Hysol® products for metal repair use steel or aluminium fillers to obtain properties as close as possible to the part being repaired. Non-metal filled products can be used to rebuild worn areas constantly subjected to cavitation and wear.

Consistency

Product viscosity must be formulated to meet customer needs. The range of Loctite® Hysol® Metal-filled range includes pourable, putty or kneadable products to answer your requirements.

Special requirements

As some applications are extremely demanding, Henkel has developed special products to resist to high compression loads, high temperature or abrasion.

Surface Preparation

Correct surface preparation is vital for the successful application of these products.

Good surface preparation will:

- Improve adhesion of Loctite® Hysol® Metal-filled Compounds to parts
- Prevent corrosion between the metal surface and the Loctite® Hysol® Metal-filled Compound
- Extend part life

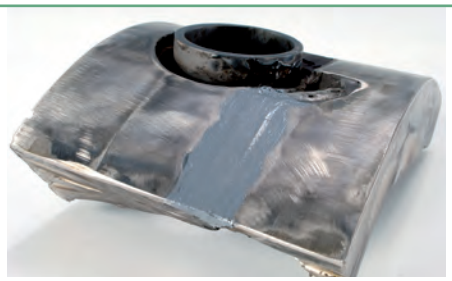
After surface preparation, parts must be:

- Clean and dry
- Without surface or internal chemical pollution
- Without corrosion
- With a surface profile of 75 µm minimum

Product application

Loctite® Hysol® Metal-filled Compounds are two component epoxies. Products must be mixed correctly before application, using the proper mixing ratio, until a uniform colour is achieved.

Putty products should be applied in thin layers. Press in place firmly and build up to the required thickness to fill the gap. Particular attention must be taken to prevent air bubbles forming.



Shaft repair

Use Loctite® Hysol® 3478 for this special application. This product is particularly suitable for rebuild bearing seats. Please contact your local Technical Support to obtain specific recommendations for shaft repair solutions.

Metal-filled Compounds

Product table

Repair or rebuild damaged metal parts?

	Steel		
	Kneadable	High compressive strength	Putty
Solution	**Loctite® 3463** (Metal Magic Steel™ stick)	**Loctite® Hysol® 3478 A&B** (Superior Metal)	**Loctite® Hysol® 3471 A&B** (Metal Set S1)
Description	2K-Epoxy	2K-Epoxy	2K-Epoxy
Mix ratio by volume / weight	N/A	4:1/7.25:1	1:1/1:1
Working life	3 min.	20 min.	45 min.
Fixture time	10 min.	180 min.	180 min.
Shear strength (GBMS)	≥6 N/mm²	17 N/mm²	20 N/mm²
Compressive strength	82.7 N/mm²	125 N/mm²	70 N/mm²
Service temperature range	-30 to +120°C	-30 to +120°C	-20 to +120°C
Pack sizes	114g	453g	500g tub kit
			
	Loctite® 3463 • Emergency sealing of leaks in pipes and tanks • Smoothes welds • Repairs small cracks in castings Sets in 10 minutes. Steel filled kneadable Stick. Adheres to damp surfaces and cures under water. Chemical and corrosion resistant. Can be drilled, filed and painted. **ANSI/NSF Standard 61**	**Loctite® Hysol® 3478 A&B** • Rebuilding keyways and spline assemblies • Rebuilding of clamp connections, tensioning elements, gear wheels or bearing seats Ferro-silicon filled with outstanding compression strength. Ideal for renewing surfaces subjected to compression, thru-st, impact and harsh environments.	**Loctite® Hysol® 3471 A&B** • Seal cracks in tanks, castings, vessels and valves • Patch non-structural defects in steel casings • Resurface worn air seals • Repair pitting caused by cavitation and/or corrosion General-purpose steel-filled, non-sagging 2K-Epoxy. Used to rebuild worn metal parts.

What material are you filling?

	Aluminium			Metallic pieces under friction
Pourable	Fast cure	Multi purpose	High temperature resistance	Wear resistant

Loctite® Hysol® 3472 A&B (Metal Set S2)	Loctite® Hysol® 3473 A&B (Metal Set S3)	Loctite® Hysol® 3475 A&B (Metal Set A1)	Loctite® Hysol® 3479 A&B (Metal Set HTA)	Loctite® Hysol® 3474 A&B (Metal Set M)
2K-Epoxy	2K-Epoxy	2K-Epoxy	2K-Epoxy	2K-Epoxy
1:1/1:1	1:1/1:1	1:1/1:1	1:1/1:1	1:1/1:1
45 min.	6 min.	45 min.	40 min.	45 min.
180 min.	15 min.	180 min.	150 min.	180 min.
25 N/mm²	20 N/mm²	20 N/mm²	20 N/mm²	20 N/mm²
70 N/mm²	60 N/mm²	70 N/mm²	90 N/mm²	70 N/mm²
-20 to +120°C	-20 to +120°C	-20 to +120°C	-20 to +190°C	-20 to +120°C
500g tub kit	500g tub kit	500g tub kit	500g tub kit	Not available in the U.K.

Loctite® Hysol® 3472 A&B
- Form moulds, fixtures and prototypes
- Repair threaded parts, pipes and tanks

Pourable, steel-filled, self levelling. Recommended for casting into hard to reach areas, anchoring and levelling, forming moulds and parts.

Loctite® Hysol® 3473 A&B
- Repair holes in tanks, leaks in pipes and elbows
- Renew stripped threads
- Rebuild worn steel parts

Fast curing, steel filled, nonsagging. Ideal for emergency repair and repairing worn metal parts to prevent downtime.

Loctite® Hysol® 3475 A&B
- Repair aluminium castings, cracked or worn aluminium parts and stripped aluminium threads

A non sagging, heavily reinforced, aluminium powder filled 2K-Epoxy. Easily mixed and moulded to form odd shapes if required. Cures to a non-rusting, aluminium-like finish.

Loctite® Hysol® 3479 A&B
- Rebuilding and repairing worn metal parts in high operating temperature applications.

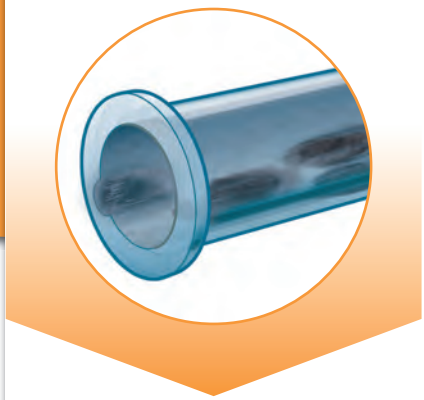
A non sagging, heavily reinforced, aluminium powder filled 2K-Epoxy. Easily mixed and moulded to form odd shapes if required. Cures to a non-rusting, aluminium-like finish.

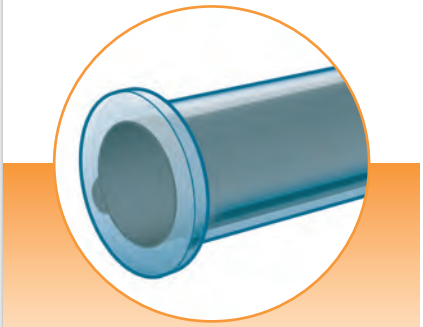
Loctite® Hysol® 3474 A&B
- Ideal for repairing metallic surfaces under friction

Steel putty, high wear resistant. Forms a self-lubricating surface to reduce sliding wear on moving parts.

Protective Coatings and Compounds

Protection of parts against external attack





Why use a Loctite® Nordbak® Protective Coating or Compound?

Loctite® Nordbak® Protective Coatings and Compounds offer maintenance solutions to the problems caused by wear, abrasion, erosion, chemical attack and corrosion.

Typical applications for this product range include for example air ducts, pumps, heat exchangers, centrifuges, impellers, fan blades, cyclones, pipes, tanks, retention areas etc.

Loctite® Nordbak® Protective Compounds with ceramic fillers provide excellent wear resistance and superior adhesion. They are designed for specific service conditions and to protect and extend the service life of a wide range of plant areas and plant equipment. Their key advantage is their capability to create a sacrificial and renewable working surface, protecting the structural integrity of the original substrate.

In addition to Protective Compounds which are designed to protect against abrasion by using ceramic fillers Loctite® has newly launched Protective Coatings which protect against corrosion and chemical attack. Those do not contain any ceramic fillers which provides a very smooth surface.

Available in trowelable, brushable and sprayable formulations with special fillers for tough conditions, Loctite® Nordbak® Protective Coatings and Compounds stand up to every corrosion, abrasion, and wear problem you can encounter, and are ideal for all those large-scale repairs that have to last.

Traditional methods vs modern solutions:

Traditional repair methods such as hard metal welding or flame spraying are expensive and difficult to use for large surfaces. Alternatively, Loctite® Nordbak® Protective Coatings and Compounds are easily applied on all surface sizes and offer the extra benefit of corrosion protection. In addition Loctite® Protective Coatings do not create heat stress during the application.

Loctite® Hysol® Metal-filled and Loctite® Nordbak® Protective Coatings and Compounds help you restore and rebuild a wide variety of worn parts and put them back in serviceable condition.

Key benefits of Loctite® Nordbak® Protective Coatings and Compounds:

- Restore worn surfaces and extend part life of new as well as old parts
- Increase part efficiency
- Save cost by avoiding part replacement and reducing spare part inventories
- Protect parts against abrasion, erosion, chemical attack and corrosion
- Excellent chemical resistance for effective protection of assemblies

Key factors to consider when choosing the right Loctite® Nordbak® Protective Coating or Compound

Particle size

To improve abrasion resistance, particle sizes of the abrasive materials and of the Loctite® Nordbak® Protective Coatings and Compounds should be similar. The range of Loctite® Nordbak® Protective Coatings and Compounds offers grades for coarse particles as well as fine particle protection and some specific products for pure chemical attack or corrosion protection. A special product offering high impact resistance is also included in the range.

Temperature resistance

Operating temperatures of Loctite® Nordbak® Coatings and Compounds range from -30°C to +120°C. Some special grades, e.g. Loctite® Nordbak® 7230 or Loctite® Nordbak® 7229, can be used up to 230°C. These special grades require post curing to achieve their ultimate high temperature performance.

Chemical and corrosion resistance

Thanks to the special epoxy matrix of Loctite® Nordbak® Coatings and Compounds, this range of products is resistant to most types of chemical aggression. The products offer good protection against fresh water and sea water, ammonium sulphate and sodium hydroxide. Please contact your local Technical Support for specific chemicals requirements.

Product Application

Loctite® Nordbak® Protective Coatings and Compounds are two component epoxies. Products must be mixed correctly before application, using the proper mixing ratio, until a uniform colour is achieved.

To insure good wetability of Loctite® Nordbak® Protective Coatings and Compounds, it is recommended to apply a brushable product like Loctite® Nordbak® 7117 as a primer prior to use coarse particle reinforced Loctite® Nordbak® Protective Coatings and Compounds. For coating thicker than 25mm, apply material in layers of 25mm at a time, allowing the layer to cool before applying the next layer.

Surface Preparation

Correct surface preparation is vital for the successful application of these products.

Good surface preparation will:

- Improve adhesion of the Loctite® Nordbak® Protective Coatings and Compounds to parts
- Prevent corrosion between the metal surface and the Loctite® Nordbak® Protective Coatings and Compounds
- Extend maintenance intervals

After surface preparation parts must be:

- Clean and dry
- Without surface or internal chemical pollution
- Without corrosion
- With a surface profile of 75 µm minimum
- With a blast profile of class 2.5

For large surfaces Loctite® 7515 compatible with Loctite® Nordbak® Protective Coatings and Compounds should be applied to avoid flash rusting.

Protective Coatings and Compounds

Product table

Which attack to be resisted?

Pure chemical attack or corrosion

On concrete | **On metal**

Brushable coating | **Sprayable coating** | **Sprayable ceramic compound**

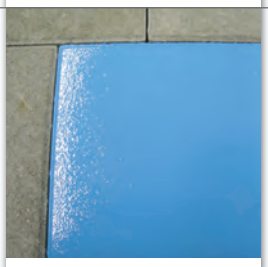
Solution	Loctite® Nordbak® 7277	Loctite® Nordbak® 7266	Loctite® Nordbak® 7255
Colour	Blue	Blue	Green
Service temperature range (dry)	-30 to +95°C	-30 to + 100°C	-30 to +95°C
Mix ratio by volume (A:B)	2.8:1	2.3:1	2:1
Mix ratio by weight (A:B)	100:28	100:34	100:50
Working time	30 min.	30 min.	40 min.
Cure time	6 h	5 h	4 h
Recommended total layer thickness*	min. 0.5 mm	min. 0.2 mm	min. 0.2 mm
Pack sizes	6.6kg, 23.4kg	1kg, 10kg	900g, 30kg

Handy Hints:

1) Apply Loctite® 7515 at the end of surface preparation and before applying the final coating/compound. Benefit: Temporary corrosion protection which prolongs the working time of the surface to up to 48h.

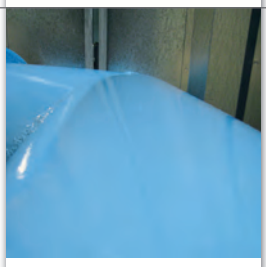
2) Badly worn surfaces are rebuilt using Loctite® Nordbak® 7222 Wear Resistant Putty or Loctite® Nordbak® 7232 High Temperature Wear Resistant Putty, prior to applying protective Loctite® Nordbak® composite coatings.

Refer to your Henkel Engineer for further information.



Loctite® Nordbak® 7277
Brushable non-filled two-part epoxy for

- Tanks, reservoirs and pipes
- Flooring



Loctite® Nordbak® 7266
Sprayable non-filled two-part epoxy for

- Pumps, centrifuges and pipes
- Gearboxes, engines and compressors
- Heat exchangers, fans and casings
- Tanks and reservoirs

Loctite® Nordbak® 7255
Ultra-smooth, ceramic reinforced two-part epoxy for

- Lining tanks and chutes
- Rudders and pintle housings
- Heat exchangers
- Condensers
- Cooling pump impellers

*It is recommended for sprayable and brushable products to apply minimum two layers to achieve total layer thickness.

Abrasion or erosion on metal with or without chemical attack

Fine particle

Brushable ceramic compound

Loctite® Nordbak® 7117
Dark grey
-30 to +95°C
3.38:1
100:16
60 min.
3.5 h
min. 0.5 mm
1kg, 6kg

Loctite® Nordbak® 7117
Brushable ceramic filled two-part epoxy for

- Impellers, butterfly valves
- Pump housings
- Cyclones
- Lining tanks

High temperature brushable ceramic compound

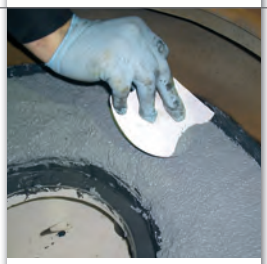
Loctite® Nordbak® 7234
Grey
-30 to +205°C
2.6:1
100:21
30 min.
8 h + 3 h post cure
min. 0.5 mm
1kg

Loctite® Nordbak® 7234
Brushable ceramic filled two-part epoxy for

- Exhausters
- Heat exchangers and condensers
- Lining tanks and chutes
- Butterfly valves

Pneu-Wear ceramic compound

Loctite® Nordbak® 7226
Grey
-30 to +120°C
4:1
100:25
30 min.
6 h
min. 6 mm
1kg, 10kg



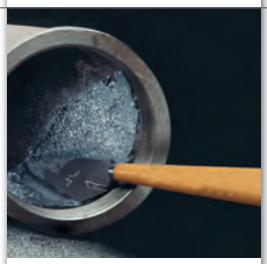
Loctite® Nordbak® 7226
Ceramic filled two-part epoxy for

- Dredge pump liners
- Flumes and troughs
- Pump impellers
- Vibrating feeders
- Chutes/hoppers

Coarse particle

Trowelable ceramic compound

Loctite® Nordbak® 7218
Grey
-30 to +120°C
2:1
100:50
30 min.
7 h
min. 6 mm
1kg, 10kg



Loctite® Nordbak® 7218
Trowelable, ceramic filled two-part epoxy for

- Cyclone and separator bodies
- Dust collectors and exhausters
- Pump liners and impellers
- Fan blades and housings
- Chutes and hoppers
- Elbows and transition points

High temperature trowelable ceramic compound

Loctite® Nordbak® 7219
Grey
-30 to +120°C
2:1
100:50
30 min.
6 h
min. 6 mm
1kg, 10kg

Loctite® Nordbak® 7219
Rubber modified, ceramic filled two-part epoxy for

- Dredge pump liners
- Flumes and troughs
- Pump impellers
- Vibrating feeders
- Chutes/hoppers

Protective Coatings and Compounds

Product list

Product	Product description	Particle size	Colour	Mix ratio by volume (A:B)	Mix ratio by weight (A:B)	Working time	Cure time
Loctite® Nordbak® 7117	Ceramic filled epoxy compound	Fine	Dark grey	3.38:1	100:16	60 min.	3.5 h
Loctite® Nordbak® 7204	Quartz filled epoxy – Concrete repair	Small	Grey	1.66:1	100:51.7	45 min.	24 h
Loctite® Nordbak® 7218	Ceramic filled epoxy compound	Large	Grey	2:1	100:50	30 min.	7 h
Loctite® Nordbak® 7219	Ceramic filled epoxy compound	Large	Grey	2:1	100:50	30 min.	6 h
Loctite® Nordbak® 7221	Epoxy coating	Fine	Grey	2.3:1	100:29.4	20 min.	16 h
Loctite® Nordbak® 7222	Ceramic filled epoxy compound	Small	Grey	2:1	100:50	30 min.	6 h
Loctite® Nordbak® 7226	Ceramic filled epoxy compound	Fine	Grey	4:1	100:25	30 min.	6 h
Loctite® Nordbak® 7227	Ceramic filled epoxy compound	Fine	Grey	2.75:1	100:20.8	30 min.	6 h
Loctite® Nordbak® 7228	Ceramic filled epoxy compound	Fine	White	2.8:1	100:22.2	15 min.	5 h
Loctite® Nordbak® 7229	Ceramic filled epoxy compound	Small	Grey	4:1	100:25	30 min.	6 h + 2 h post cure

	Recommended layer thickness	Hardness shore D	Compressive strength N/mm²	Shear strength N/mm²	Service temperature range	Pack sizes	Comments
	min. 0.5 mm	87	105	23.2	-30 to +95°C	1kg, 6kg	Brushable two-part epoxy that provides a high gloss, low friction coating to protect equipment from wear abrasion and corrosion.
	min. 6 mm	–	82.7	–	-30 to +66°C	19kg	Trowelable quartz filled two-part epoxy for repairing of concrete flooring and surfaces exposed to chemical and mechanical attacks.
	min. 6 mm	90	110.3	–	-30 to +120°C	1kg, 10kg	Trowelable, ceramic filled epoxy designed to protect, rebuild and repair high wear areas of processing equipment. Suitable for overhead applications and irregular surfaces.
	min. 6 mm	85	82.7	–	-30 to +120°C	1kg, 10kg	Rubber modified, ceramic filled epoxy that offers high impact resistance. Ideal for areas exposed to abrasion and impact. Nonsagging and suitable for overhead applications and irregular surfaces.
	min. 0.5 mm	83	69	17.2	-30 to +64°C	5.4kg	Brushable ceramic filled two-part chemical resistant epoxy to protect equipment against extreme corrosion caused by chemical exposure.
	–	89	80	10	-30 to +107°C	1.3kg	Trowelable ceramic filled two-part epoxy putty for badly worned surfaces exposed to wear, erosion and cavitation.
	min. 6 mm	85	103.4	34.5	-30 to +120°C	1kg, 10kg	Carbid-filled epoxy for protecting processing equipment from fine particle abrasion. This trowelable and non-sag epoxy is suitable for overhead and vertical surfaces.
	min. 0.5 mm	85	86.2	24.2	-30 to +95°C	1kg	Brushable ceramic filled two-part epoxy with self-leveling properties, providing a high gloss and low friction surface (grey).
	min. 0.5 mm	85	86	24	-30 to +95°C	1kg	Brushable ceramic filled two-part epoxy with self-leveling properties, providing a high gloss and low friction surface (white).
	min. 6 mm	85	103.4	34.5	-30 to +230°C	10kg	Trowelable ceramic filled two-part epoxy putty with high temperature resistance to protect against small particles. Suitable for overhead and vertical surfaces.

Protective Coatings and Compounds

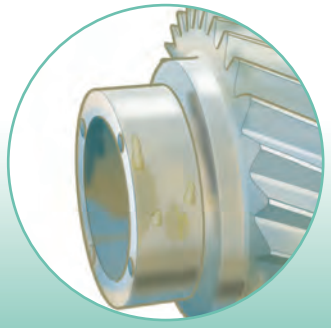
Product list

Product	Product description	Particle size	Colour	Mix ratio by volume (A:B)	Mix ratio by weight (A:B)	Working time	Cure time	
Loctite® Nordbak® 7230	Ceramic filled epoxy compound	Large	Grey	4:1	100:25.6	30 min.	7 h + 2 h post cure	
Loctite® Nordbak® 7234	Ceramic filled epoxy compound	Fine	Grey	2.6:1	100:21	30 min.	8 h + 3 h post cure	
Loctite® Nordbak® 7255	Ceramic filled epoxy compound	Fine	Green/grey	2:1	100:50	40 min.	4 h	
Loctite® Nordbak® 7256	Ceramic tile bonding epoxy	Fine	Off-white	1:1	100:125	60 min.	12 h	
Loctite® Nordbak® 7257	Concrete repair – Magnesium phosphate	Small	Grey	1:5	100:500	3 min.	22 min.	
Loctite® Nordbak® 7266	Epoxy coating	–	Blue	2.3:1	100:28	30 min.	5 h	
Loctite® Nordbak® 7277	Epoxy coating	–	Blue	2.8:1	100:34	30 min.	6h	

	Recommended layer thickness	Hardness shore D	Compressive strength N/mm²	Shear strength N/mm²	Service temperature range	Pack sizes	Comments
	min. 6 mm	90	103.4	–	-28 to +230°C	10kg	High temperature resistant two-part ceramic filled epoxy compound to protect against large particles. Suitable for overhead and vertical surfaces.
	min. 0.5 mm	–	–	–	-29 to +205°C	1kg	Brushable two-part epoxy designed to protect against turbulence and abrasion under extreme heat.
	min. 0.5 mm	86	106	31	-30 to +95°C	900ml, 30kg	Ultra-smooth, ceramic reinforced epoxy that provides a high gloss, low friction coating to protect against turbulence and abrasion. Seals and protects equipment from corrosion and wear.
	–	88	96.6	34	-29 to +93°C	9kg	High strength two-part epoxy for installing ceramic tiles quickly and securely. Suitable for both horizontal and vertical applications.
	min. 6 mm	–	Up to 90	–	-26 to +1,090°C	5.54kg, 25.7kg	Two-part, rapid setting concrete repair and grouting system designed for making reliable, long lasting repairs.
	min. 0.2 mm	84	105	17	-30 to +100°C	1kg, 10kg	Sprayable non-filled two-part epoxy that provides corrosion protection and high chemical resistance. Easy to spray with standard airless spray gun.
	min. 0.5 mm	–	–	–	-30 to +95°C	6.6kg, 23.4kg	Brushable non-filled two-part epoxy for the protection of concrete against chemical attack and corrosion.

Cleaning

Parts, hands and maintenance cleaning



Why use a Loctite® Cleaner?

Loctite® Cleaners and Degreasers are highly effective and are available in both water-based and solvent-based formulations. When choosing a cleaner or degreaser, the major factor to consider is the kind of cleaning application. The Loctite® Cleaner portfolio offers cleaners used to clean surfaces prior to bonding applications, hand cleaners as well as cleaners specifically developed for all kinds of maintenance cleaning in industry.

Loctite® cleaners prior to bonding (solvent-based)

Major factors to select the right product are drying time, residue, odour and substrate compatibility. Residue is a particularly important concern: if there is any secondary processing of the part, e.g. painting or bonding, a residue could interfere with that process. Substrate compatibility is a common concern when dealing with plastics and solvent-based cleaners.

Loctite® cleaners for maintenance applications (water-based)

Covering the main needs in maintenance applications, Loctite® maintenance cleaners are perfect for any kind of workshop use. Some of them are dedicated cleaners to clean mechanical parts and machines in different ways (high pressure, spray, dip, manual), others are suitable for light and heavy floor cleaning by using either floor cleaning machines or high pressure equipment. In addition, the portfolio contains a cleaner for the removal of any markings.

Why use a P3 Cleaner?

P3 cleaners are mainly used for cleaning parts and assemblies in the metalworking industry, in workshops, in the railway and boat industries and for maintenance applications. P3 cleaners are also suitable for removing paint from surfaces (graffiti), cleaning hands, floors, car bodies, track vehicles, boats, awnings, tanks, pipes and many other applications.

- P3 combines high quality water-based alkaline, acidic and neutral cleaners. P3 cleaners are suitable for metal substrates, plastics, concrete, stone, ceramics, glass, painted surfaces etc.
- P3 cleaners can be applied by spraying, dipping, high pressure, ultrasonic, manually or with a machine as a final or intermediate cleaning process.
- Good cleaning results can be achieved at temperatures of 5°C up to 100°C.
- P3 cleaners are available as concentrates (mix with water) or as ready-to-use products.
- In addition, cleaners with corrosion protection properties are available.

The cleaning function is removal of residus from the surface to prepare it for subsequent operations. Residues are materials left on the surface from previous operations such as cutting, stamping, drilling, drawing, grinding, etc. or the surface condition of incoming stock.

Residues may generally be divided into three categories:

- Organic residues are typically the lubricants used in metal forming and machining operations or corrosion preventive compounds. Mainly alkaline cleaners are suitable.
- Inorganic residues include rust, heat and weld scale, smuts and oxides. Acids or acidic cleaners are designed to remove such kind of soils. Acidic cleaners are also used to clean injection-moulded thermoset plastic.
- Miscellaneous residues include shop dirt, inks, glove and finger prints. Alkaline or neutral cleaners could be applied.

Parts and Hand Cleaning

Product table

Do you need a parts or a hand cleaner?

Parts cleaner

	General purpose	General purpose	Plastic parts	Low VOC
Solution	**Loctite® 7061**	**Loctite® 7063**	**Loctite® 7070**	**Loctite® 7066**
Description	Cleaner & degreaser	Cleaner & degreaser	Cleaner & degreaser	Cleaner & degreaser
Pack sizes	400ml aerosol	400ml aerosol, pump, 10lt can, 200lt	400ml aerosol, pump, 10lt	Not available in the U.K.
				
	Loctite® 7061 **Cleaner & degreaser** • Solvent-based (acetone) general parts cleaner • Very fast evaporation • Removes dirt, resins, lacquer, oils and greases	**Loctite® 7063** **Cleaner & degreaser** • Solvent-based general parts cleaner • Leaves no residue • Ideal for use prior to adhesive bonding and sealing applications • Removes most greases, oils, lubrication fluids, metal cuttings and fines from all surfaces	**Loctite® 7070** **Cleaner & degreaser** • Solvent-based general parts cleaner • Usable as spray or in immersion cleaning process at room temperature • Removes special heavy oils • For most plastic parts without the risk of stress cracks	**Loctite® 7066** **Cleaner & degreaser** • Water-based emulsion with low VOC • For use on metals and plastics **A7 NSF Reg.No.: 138407**

Handy Hints:

- If cleaning tissues are required use Loctite® 7852 Easy Clean. Hands and parts cleaner for use without water. Available in a bucket containing 70 wipes.

	General cleaner	Hand cleaner	
Gasket remover		General purpose	For ink, paint or resin on hands
Loctite® 7200	Loctite® 7039	Loctite® 7840	Loctite® 7850	Loctite® 7855
Gasket remover	Contact cleaner spray	Cleaner & degreaser	Hand cleaner	Hand cleaner
400ml aerosol	400ml aerosol	750ml trigger spray, 5lt can, 20lt drum	400ml bottle, 3lt pump dispenser, 10lt	400ml bottle, 1.75lt pump dispenser

Loctite® 7200
Gasket remover
- Removes cured gasket sealants and traditional gaskets in 10 to 15 minutes
- Minimal scraping
- Usable on most types of surfaces

Loctite® 7039
Contact cleaner spray
- For cleaning electrical contacts exposed to moisture or other contamination
- Does not affect insulating varnishes
- Typical application: cleaning of electrical contacts, relays, switchgear, etc.

Loctite® 7840
Cleaner & degreaser
- Biodegradable
- Solvent-free, non-toxic, non-flammable
- Diluted with water
- Removes grease, oil, cutting fluids and workshop grime

Loctite® 7850
Hand cleaner
- Natural extract base
- Free of mineral oils
- Biodegradable
- Contains premium skin conditioners
- Works with or without water
- Removes ground-in dirt, grease, grime, and oil

Loctite® 7855
Hand cleaner
- Biodegradable
- Non-toxic
- Removes paint, resin and adhesives

Maintenance Cleaning in Workshops

Product table

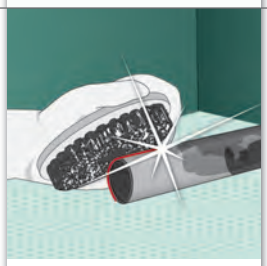
Which type of maintenance cleaning is required?

Cleaning of mechanical parts in workshop

Solution	Multi-purpose cleaning	Dip cleaning	Fountain cleaning
	Loctite® 7010	**Loctite® 7012**	**Loctite® 7013**
pH at 10 g/l	9	11.3	Neat: 9.5
Service temperature range	5 to 80°C	Room temperature to 40°C	Room temperature
Application concentration	30 to 500 g/l	10 to 500 g/l	Ready-to-use
Pack sizes	5lt, 20lt	5lt, 20lt	5lt, 20lt

Handy Hints:

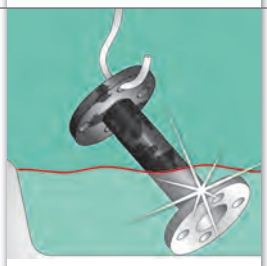
- These products cover 90% of the cleaning needs in a workshop
- For more specific needs like cleaning in spraying machines or heavy duty floor cleaners, we recommend contacting Henkel technical support



Loctite® 7010
Multi-purpose Workshop Cleaner

- Universal liquid cleaner for general cleaning of light contamination
- Biodegradable, solvent-free, label-free
- Pleasant odour

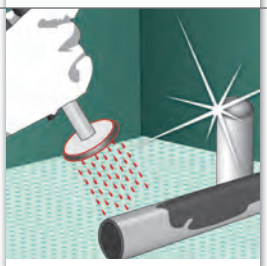
Applications:
Manual cleaning of workshops, tools and machines.



Loctite® 7012
Dip Cleaner

- General cleaner and degreaser for heavy contamination
- Excellent penetrating action on dirt and easy dissolution of grease
- Can be applied by spraying, dipping and manually
- Solvent-free

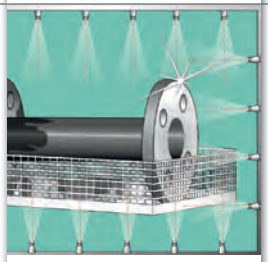
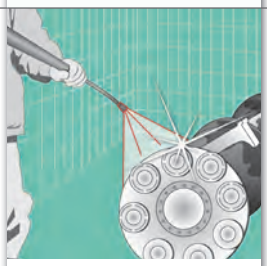
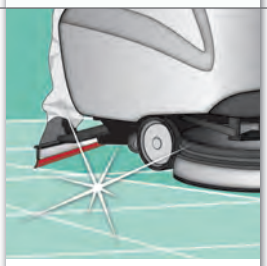
Applications:
Cleaning of all metal mechanical parts, with or without high pressure. Also suitable on synthetic substances, rubbers and painted surfaces.



Loctite® 7013
Industrial Cleaner for Fountain Applications

- Water based cleaner to replace solvents
- Dissolves all kind of contamination
- Provides temporary rust protection
- Biodegradable and environmentally compatible
- Solvent-free

Applications:
For cleaning mechanical parts using cleaning tables.

		Cleaning of floors		Cleaning of graffiti and markings
Spray cleaning	High pressure cleaning	General floor cleaning	Heavy-duty floor cleaning	Graffiti and marking remover
Loctite® 7014	**Loctite® 7018**	**Loctite® 7860**	**Loctite® 7861**	**Loctite® 7862**
11.5	10.1	8.7	12.2	Neat: 3.7
50 to 75°C	Room temperature to 35°C	15 to 35°C	15 to 100°C	+10 to +40°C
20 to 60 g/l	5 to 500 g/l	25 to 100 g/l	5 to 20 g/l	Ready-to-use
5lt, 20lt	5lt, 20lt	5lt, 20lt	5lt, 20lt	5lt, 20lt
				

Loctite® 7014
Spray Cleaner
- Efficient metal cleaner and degreaser used in spray cleaning machines
- Strong detergent
- Contains inhibitor for light metals
- Solvent-free

Loctite® 7018
High-Pressure Cleaner
- Heavy duty cleaner for removal of dirt, oil and grease from washable surfaces
- Good foaming properties
- Suitable for high pressure applications
- Temporary corrosion protection
- Solvent-free, biodegradable

Applications:
For heavy duty cleaning of mechanical parts using foam machines or high pressure.

Loctite® 7860
Low Foam Floor Cleaner
- Neutral, low foaming, perfumed floor cleaner
- Protective and dirt-repellent properties
- Ideal for use in floor cleaning equipment
- Also suitable for manual application
- Solvent-free

Applications:
For daily cleaning of sensitive floor materials.

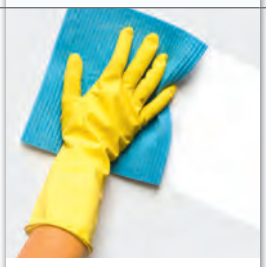
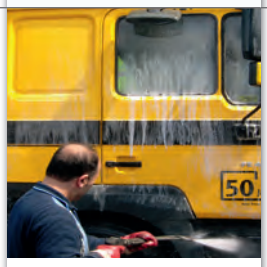
Loctite® 7861
Heavy-duty Floor Cleaner
- Efficient heavy-duty cleaner for concrete floors, applicable with high-pressure and steam equipment
- Can be used prior to concrete repair applications
- Removes wide range of contaminants (fat, grease, oil, dust) and provides temporary corrosion protection
- Solvent-free

Loctite® 7862
Graffiti and Marking Remover
- Very efficient on almost any type of graffiti
- Particularly active on bitumen containing spray paints
- Can be used on vertical surfaces
- Label-free

Applications:
For the removal of graffiti and markings from all common substrates.

Maintenance Cleaners

Product table

	Machine and general cleaning		Membrane cleaning	Floor cleaning
	General	Heavy soiling	Alkali-resistant	Cleaning equipment
Solution	**P3 Glin Plus**	**P3 Grato 3000**	**P3 Ultraperm 091**	**P3 Glin Floor**
Application	All	All	Spray	Manual / equipment
Appearance	Clear, yellow-green liquid	Colourless up to yellowish liquid	Clear liquid	Clear, yellow-green liquid
Concentration	30 – 500 g/l	20 – 200 g/l	10 – 20 g/l	20 – 100 g/l
Temperature	10 to 50°C	10 to 50°C	50 to 70°C	Room temperature
				
	P3 Glin Plus **Universal, liquid cleaner** • Combination of surfactants, salts of organic acids and hydrotropes • Free of phosphates, alkali, acids and solvents • Perfumed • Good demulsifying effect • All substrates	**P3 Grato 3000** **Highly concentrated alkaline cleaner / degreaser** • Economical in use • Phosphate, EDTA- and NTA-free • Excellent degreasing properties • Most efficient all-round alkaline cleaner • Perfect vehicle cleaner	**P3 Ultraperm 091*** **Alkaline cleaner for membranes** • Alkali, complexing agents, biodegradable anionic surfactants • Excellent emulsifying and complexing properties • Does not attack synthetic material • Easy removal of organic soiling and descaling action in one product	**P3 Glin Floor** **Floor cleaner for automatic & manual cleaning** • Neutral • Low foaming for use in floor cleaning equipment • Slightly perfumed • Leaves soil-repellent protection layer

* For further information on the cleaning range, please contact your local sales engineer.

Maintenance cleaning

Marine cleaning	Painting equipment	Graffiti remover	Glass cleaning	Hand cleaning
P3 Grato Marine Cleaner	**P3 Croniclean 300**	**P3 Scribex 400**	**P3 Glin Cristal**	**P3 Manuvo**
Manual / spray	Manual / dip / spray	Manual / spray	Spray	Manual
Colourless liquid	Yellow to brown	Thickened yellow liquid	Blue liquid	Yellow, clear viscous
500 g/l and more	10 – 20 g/l	Ready-to-use	Ready-to-use	Ready-to-use
Room temperature	Room temperature	7 to 30°C	Room temperature	Room temperature
				
P3 Grato Marine Cleaner* Concentrated cleaning product for yachts • Very efficient for difficult cleaning operations • Safe product (not subject to R or S phrases) • Neutral product	**P3 Croniclean 300* For removal of water-based paints** • Butylglycol-free • Ideal for removal of water-based uncured paints from nozzles, guns, etc. • Free of chlorinated or petroleum solvents	**P3 Scribex 400* Graffiti remover** • Contains environmentally compatible raw materials • NMP/terpenes/DMSO • Not flammable • Low odour • Low VOC (8%)	**P3 Glin Cristal Glass cleaner** • Also ideal for cleaning of plastics • Self-drying	**P3 Manuvo* Highly efficient, liquid, solvent-free hand cleaner** • Hard on dirt but soft on skin • In line with EU cosmetic rules • Slightly perfumed

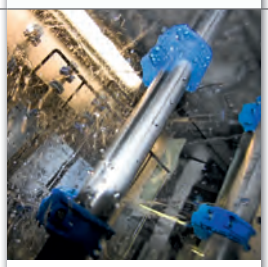
Industrial Cleaners

Product table

	General dip	General spray	High pressure
Solution	**P3 Galvaclean 20**	**P3 Industril FA**	**P3 Grato 80**
Application	Dip	Spray	Spray or high pressure
Appearance	Yellow to light brown liquid	Clear, red-brown liquid	Clear liquid
Concentration	20 – 80 g/l	30 – 100 g/l	5 – 50 g/l
Temperature	40 to 90°C	20 to 50°C	20 to 90°C
			
	P3 Galvaclean 20 **All purpose neutral dip cleaner** • Salts of organic acids, non-ionic surfactants, alkanolamine • Neutral cleaner • Multi-metal • Dewatering properties • Very good corrosion protection • For final as well as for intermediate cleaning	**P3 Industril FA** **All-round spray cleaner for heavy soiling** • Contains corrosion protection agent • Also usable in other cleaning methods (dip, HP, manual, etc.) • For use on all substrates • Environmentally compatible alternative to solvent cleaners	**P3 Grato 80** **Alkaline high pressure cleaner** • Alkalis, surfactants, silicates • All-round alkaline cleaner • Inhibited for use on aluminium • High degreasing performance • Ideal tank cleaning product

Industrial cleaning

Parts cleaning

Alkaline	Alkaline	Corrosion protection	Neutral	Acid
P3 Upon 5800	**P3 Saxin 5520**	**P3 Emulpon 6776**	**P3 Neutracare 3300**	**P3 Chemacid 3500**
Spray	Spray	Dip / spray	All	Dip / spray
Clear colourless liquid	Clear liquid	Clear, yellowish liquid	Clear, light yellowish liquid	Clear, yellow-brownish liquid
40 – 80 g/l	20 – 60 g/l	10 – 50 g/l	10 – 30 g/l	Dip: 100 – 300 g/l, Spray: 10 – 50 g/l
40 to 80°C	50 to 80°C	40 to 80°C	30 to 80°C	50 to 90°C
				
P3 Upon 5800 **Liquid spray cleaner for degreasing of steel parts and plastic** • Alkalis, phosphates, salts of organic acid, non-ionic surfactants • High degreasing performance • Usable in all water qualities	**P3 Saxin 5520** **Liquid spray cleaner for all metals** • Silicate, surfactant • Inhibited for use on aluminium • Low foaming	**P3 Emulpon 6776** **Cleaning before machining and corrosion protection after machining** • Organic corrosion protection components, solubilisers, mineral oil fractions • Applicable in immersion and spray process • All metals • Corrosion protection for long term storage	**P3 Neutracare 3300** **Water-based neutral cleaner** • Organic corrosion inhibitors • Very high demulsifying properties • Multi-metal • Applicable in all kinds of processes • Salt-free	**P3 Chemacid 3500** **Pickling and derusting agent for immersion and spray processes** • Phosphoric acid, sulphuric acid, inhibitor • Fast pickling • Contains inhibitor • Ideal for equipment cleanouts

Cleaning, Protecting and Specialities

Product table

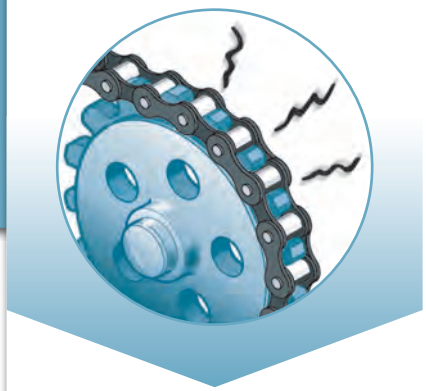
Paint removal

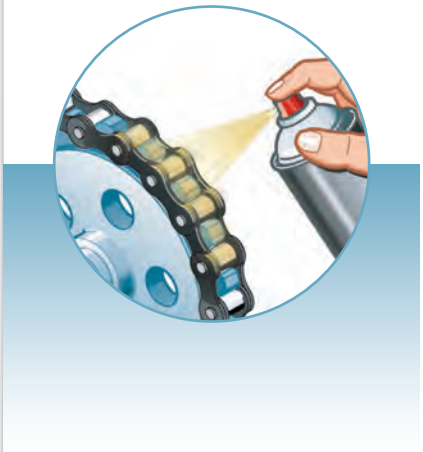
	Paint stripping		Paint detack
	Hot	Cold	Solvent-based paints
Solution	**Novastrip 9210**	**Turco 6776**	**P3 Croni 810**
Application	Spray	Brushing / dip	–
Appearance	Brown liquid	Green paste / liquid	White liquid
Concentration	300 – 500 g/l	Ready-to-use	100 – 200 g/l
Working temperature	> 80°C	Room temperature up to 35°C	Room temperature
			
	Novastrip 9210 **Highly alkaline paint stripper (steel)** • Amine-free • Solvent-free	**Turco 6776** **Acid paint stripper** • Methylenechloride-free • Turco 6776 LO: Thickened for good adherence • Turco 6776 Thin: For dip application • All metals (incl. aluminium) • Low odour	**P3 Croni 810** **Neutral paint coagulant** • All-rounder for solvent based paints • Neutral • Contains corrosion inhibitor

	Protecting		Cleaning specialities	
	Corrosion protection		Neutralising smell	Polishing
Water-based paints	Water-based	Oil-based		
P3 Croni 828	**P3 Prevox 7400**	**P3 Gerocor 3**	**P3 Grato WP**	**P3 Grato Marine Polish**
–	Spray / dip	Spray / dip	Spray	Manual – wipe
Light brownish powder	Clear, yellowish liquid	Clear, brownish liquid	White liquid	Beige paste
40 – 50 g/l	5 – 20 g/l (steel), 15 – 30 g/l (cast iron)	Ready-to-use	1 – 20 g/l	Ready-to-use
Room temperature	15 to 80°C	Room temperature	Room temperature	Room temperature
				
P3 Croni 828 **Neutral paint coagulant for solvent and water based paints** • Special silicates, dust binding agents • Neutral • For both solvent and water-based paints	**P3 Prevox 7400** **Passivation of steel and cast iron for subsequent temporary storage in closed warehouses** • Organic corrosion protection components • Water-based • No disturbance of following process steps (painting, bonding, etc.)	**P3 Gerocor 3** **Passivation of steel and cast iron for subsequent storage or transport** • Organic corrosion protection components mineral oil fractions • Flashpoint > 100°C • 3 – 6 months corrosion protection in closed warehouse	**P3 Grato WP** **Smell neutralisation** • Special technology to neutralise unpleasant smells • Low consumption / high performance • Part of Windpur range for neutralising smell	**P3 Grato Marine Polish** **Ready to use water-based silicone-free wax emulsion for stainless steel, plastics and painted surfaces** • Leaves a water-repellent protective layer on the surface • Results in a shining surface • Part of Grato marine maintenance range

Lubrication

Lubrication and Protection





Why use a Loctite® Lubricant?

Loctite® Lubricants offer protection for industrial plants and equipment. This range includes organic, mineral and synthetic based products meeting the requirements of industrial applications.

What is the function of a lubricant?
The typical function of a lubricant is to protect against friction and wear. Lubricants are also used to protect against corrosion by displacing moisture and leaving a continuous coating on the part.

What considerations are important when choosing a lubricant?
When choosing a lubricant, it is important to consider the intended application as well as the environmental conditions to which the assembly will be exposed. Environmental conditions are critical to the successful selection of the right lubricant product. Factors including high temperature, harsh chemicals and contaminants may have an adverse effect on the expected lubricant performance.

Loctite® Anti-Seize

Loctite® Anti-Seize products provide protection in harsh environments and operating conditions, e.g. extreme temperatures and corrosive attack. They prevent fretting and galvanic corrosion. Can also be used as running-in lubricant for new equipment.

Loctite® Dry Film Lubricants

MoS_2 and PTFE based Loctite® Dry Film Lubricants reduce friction, prevent seizing, ensure protection against corrosion and enhance the performance of oils and greases.

Multan® Cutting Fluid Emulsions – New biostable cutting fluids

Henkel patented emulsifier technology

Excellent wetting properties result in:

- High cleanliness of machined parts, machines and tools
- Good run-off characteristics and low drag-out rates
- Minimised replenishment rates
- Excellent anti-corrosion behaviour
- Bactericide-free cutting fluids without bacterial growth – even the addition of bactericides is unnecessary
- No bactericide costs – even during replenishment / stable also during long idle periods / self-repairing
- Bactericide-free formulation ensures very good skin compatibility
- Remarkably little foam formation
- Milky white cutting fluids used for drilling, turning, milling, grinding
- Multi-metal applications (cast iron, steel, aluminium, non-ferrous metals, etc.)
- Multi-machining characteristics (turning, drilling, milling, tapping, grinding, etc.)
- General purpose – A true all-rounder Multan 71-2
- High performance cutting fluid for aluminium / stainless steel machining where high lubricity is required: the specialist Multan 77-4

Multan 71-2

Multan 77-4

Loctite® Lubricating Oils

Loctite® Lubricating Oils have been designed for moving parts in equipment ranging from big plants to mini machines. Flowability and surface adhesion ensure good lubrication at both high and low speeds within the specified temperature range.

Loctite® Lubricating Greases

Loctite® Lubricating Greases have been designed to offer the following performance benefits:

- Protect against friction
- Reduce wear
- Prevent overheating

Carefully balanced formulations and high-quality ingredients help Loctite® lubricants to meet the requirements of a wide range of applications. To match specific requirements, Loctite® Greases are made of mineral or synthetic base oils combined with a thickening agent, e.g. lithium soap or inorganic material such as silica gel. Loctite® Greases protect against corrosion and withstand extreme pressures.

Anti-Seizes

Product table

	High performance applications		
	High water resistance	High purity	Long term protection
Solution	**Loctite® 8023**	**Loctite® 8013**	**Loctite® 8009**
Colour	**Black**	**Dark grey**	**Black**
Solid lubricating agent	**Graphite, calcium, boron nitride & rust inhibitors**	**Graphite & calcium oxide**	**Graphite & calcium fluoride**
NLGI class	**–**	**–**	**–**
Service temperature range	**-30 to +1,315°C**	**-30 to +1,315°C**	**-30 to +1,315°C**
Pack sizes	**454g brush top**	**454g brush top**	**454g brush top**

Handy Hints:

- Loctite® 8065 now offers the same trusted performance in a semi-solid stick formula, but clean, fast and easy to apply.
- Special equipment available on request

Loctite® 8023 brush top

- Anti-Seize with ultimate wash out resistance
- For stainless steel

American Bureau of Shipping certified

Loctite® 8013 brush top

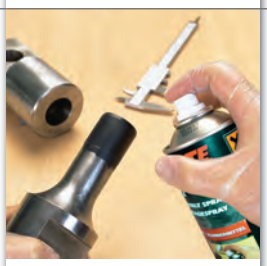
- High purity metal-free Anti-Seize
- Excellent chemical resistance
- For stainless steel
- Ideal for use in the nuclear industry

PMUC

Loctite® 8009 brush top

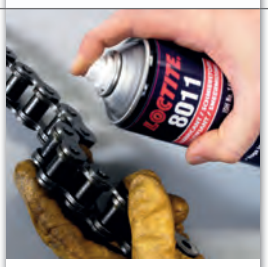
- Metal-free Anti-Seize
- Provides long term lubrication
- For all metals including stainless steel and titanium

Standard applications

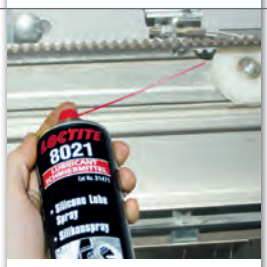
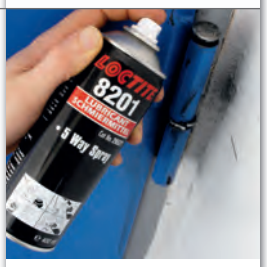
High load	Copper anti-seize	Aluminium anti-seize	MoS_2 assembly spray / paste	Food grade anti-seize
Loctite® 8012	**C5-A® Loctite® 8007/8008/8065**	**Loctite® 8150/8151**	**Loctite® 8154**	**Loctite® 8014**
Black	Copper	Grey	Black	White
MoS_2 & rust inhibitors	Copper & graphite	Aluminium, graphite, extreme pressure (EP) additives	MoS_2	White oil and extreme pressure (EP) additives
1	–	1	1	–
-30 to +400°C	-30 to +980°C	-30 to +900°C	-30 to +450°C	-30 to +400°C
454g brush top	400ml aerosol, 454g brush top, 20g stick	500g, 400ml aerosol	400ml aerosol	907g can
				
Loctite® 8012 brush top • MoS2 assembly paste ensures maximum lubricity • Gives good resistance to extremely high loads • Ideal for protection of parts during running in or cold start	**C5-A®** **Loctite® 8007 aerosol** **Loctite® 8008 brush top** **Loctite® 8065 stick** • Copper based Anti-Seize • Typical applications: screws, nuts, pipes, exhaust bolts, brake caliper bolts	**Loctite® 8150 can** **Loctite® 8151 aerosol** • Protects threaded connections • Prevents seizing and corrosion • Typical applications: screws, nuts, pipes, heat exchangers and fittings of oil and gas burners	**Loctite® 8154 aerosol** • Assembly paste with MoS_2 • Facilitates assembly and disassembly of cylindrical parts • Withstands heavy operating conditions • Lubricates and seals cylindrical parts, bearings, gears at low speed **H2 NSF Reg. No.: 122982**	**Loctite® 8014** • Food grade metal-free Anti-Seize • For stainless steel components • Suitable for wet environments **H1 NSF Reg. No.: 123004**

Dry Films and Oils

Product table

	Dry film lubricant			
	General purpose	Non-metal surface	Penetrating oil	Chain lubricant
Solution	**Loctite® 8191**	**Loctite® 8192**	**Loctite® 8001**	**Loctite® 8011**
Appearance	Black	White	Colourless	Yellow
Base	MoS_2	PTFE	Mineral oil	Synthetic oil
Viscosity	1,100 mPa·s	1,100 mPa·s	4 mPa·s	11.5 mPa·s
Service temperature range	-40 to +340°C	-180 to +260°C	-20 to +120°C	-20 to +250°C
Load test 4 ball N (weld load)	N.A.	N.A.	1,200	2,450
Pack sizes	400ml aerosol	400ml aerosol	400ml aerosol	400ml aerosol
				
	Loctite® 8191 • MoS_2 anti-friction coating – aerosol • Quick drying • Surface protection against corrosion • Enhances the performance of oils and greases	**Loctite® 8192** • PTFE coating • For non-metal and metal surfaces • Creates sliding surface for free movement • Prevents dust/dirt accumulation • Protection against corrosion • For conveyor belts, slideways and cams **H2 NSF Reg. No.: 122980**	**Loctite® 8001** • Penetrating mineral oil spray • Multi-purpose penetrating oil for micro-mechanisms • Penetrates inaccessible mechanisms • Lubricates valve seats, collars, chains, hinges and cutting knives **H1 NSF Reg. No.: 122999**	**Loctite® 8011** • High-temperature chain oil spray • Oxidation resistance prolongs lubricant service life • Lubricates open mechanisms, conveyors and chains at elevated temperatures up to 250°C **H2 NSF Reg. No.: 122978**

Oil

Freeing parts	Silicone oil	Cutting oil	All-round cutting fluid	General purpose
Loctite® 8040	**Loctite® 8021**	**Loctite® 8030/8031**	**Loctite® 8035**	**Loctite® 8201**
Amber	Colourless	Dark yellow	Brownish liquid	Light yellow
Mineral oil	Silicone oil	Mineral oil	Emulsifier	Mineral oil
5 mPa·s	350 mPa·s	170 mPa·s	Low	17.5 mPa·s (+50°C)
N.A.	-30 to +150°C	-20 to +160°C	N.A.	-20 to +120°C
N.A.	N.A.	8,000	N.A.	N.A.
400ml aerosol	400ml aerosol	8030: 250ml bottle, 8031: 400ml aerosol	5lt / 20lt bucket	400ml aerosol
				
Loctite® 8040 Freeze & Release • Releases rusted, corroded and seized components by the shock-freezing effect • Wicks directly into the rust by capillary action • Released parts remain lubricated and protected from corrosion	**Loctite® 8021** • Silicone oil • Lubricates metal and non-metal surfaces • Suitable as release agent **H1 NSF Reg. No.: 141642**	**Loctite® 8030 bottle** **Loctite® 8031 aerosol** • Cutting oil • Protects cutting tools in operation • Improves surface finish • Increases tool life • For drilling, sawing or tapping steel, stainless steel and most non-ferrous metals	**Loctite® 8035** • Water-miscible and bactericide-free • With patented emulsifier system • Very good corrosion protection and high process economy • For drilling, turning, sawing, milling, threading, grinding • Suitable for a broad range of materials: steel, high-alloy steel, cast iron and non-ferrous metals, including brass and aluminium alloys	**Loctite® 8201 Five way spray** • Frees assemblies • For light lubrication of metals • Cleans parts • Displaces moisture • Prevents corrosion

Greases

Product table

	General purpose	
	Neutral appearance	Corrosion protection
Solution	**Loctite® 8105**	**Loctite® 8106**
Appearance	Colourless	Light brown
Base oil and additives	Mineral	Mineral
Thickener	Inorganic gel	Lithium soap
Drop point	None	> +230°C
NLGI class	2	2
Service temperature range	-20 to +150°C	-30 to +160°C
Load test 4 ball N (weld load)	1,300	2,400
Pack sizes	400ml cartridge, 1lt can	400ml cartridge, 1lt can

Handy Hints:

- Special equipment available on request

Loctite® 8105

- Mineral grease
- Lubricates moving parts
- Colourless
- Odourless
- Ideal for bearings, cams, valves and conveyors

H1 NSF Reg. No.: 122979

Loctite® 8106

- Multi-purpose grease
- Lubricates moving parts
- Provides corrosion protection
- For rolling/plain bearings and slideways

High performance			Special purpose
High temperature resistance	Heavy load applications	Plastic part applications	Chains, gears

Loctite® 8102	Loctite® 8103	Loctite® 8104	Loctite® 8101
Light brown	Black	Colourless	Amber
Mineral, EP	Mineral oil, MoS2	Silicone	Mineral oil, EP
Lithium soap complex	Lithium soap	Silica gel	Lithium soap
> +250°C	> +250°C	N.A.	> +250°C
2	2	2 / 3	2
-30 to +200°C	-30 to +160°C	-50 to +200°C	-30 to +170°C
3,300	3,600	N.A.	3,900
400g cartridge, 1lt can	400g cartridge, 1lt can	75ml tube, 1lt can	400ml aerosol

Loctite® 8102
- High-temperature grease
- Prevents wear and corrosion
- Suitable in humid environmental conditions
- Withstands heavy loads at medium and high speeds
- Lubricates rolling/plain bearings, open gears and slideways

Loctite® 8103
- MoS2 grease
- For moving parts at all speeds
- Withstands vibration and heavy loads
- For highly stressed joints, plain and roller bearings, socket joints and slideways

Loctite® 8104
- Silicone grease
- Valve and packing grease
- Wide temperature range
- Lubricates most plastic and elastomeric components

H1 NSF Reg. No.: 122981

Loctite® 8101
- Chain lubricant
- Adhesive grease for open mechanical systems with anti-fling properties
- Protects against water ingress
- Excellent wear and high pressure resistance
- Lubricates chains, open gears and worm screws

Cutting, Stamping and Drawing Fluids

Product table

	Grinding	Machining	
	Grinding	Non-ferrous substrates	General machining
Solution	**Multan 46-81**	**Multan 21-70**	**Multan 71-2**
Type	**Synthetic**	**Semi-synthetic**	**Semi-synthetic**
Appearance	**Transparent**	**Emulsion**	**Transparent**
Aluminium	**Suitable**	**Suitable**	**Suitable**
Steel	**Preferred**	**Suitable**	**Preferred**
Cast iron	**Preferred**	**Suitable**	**Preferred**
Stainless steel	**Suitable**	**Suitable**	**Suitable**
Non-ferrous metals	**Suitable**	**Preferred**	**Suitable**
Make-up concentration	**3 – 4%**	**5 – 20%**	**4 – 8%**

Handy Hints:

Additives for lubricant systems:
- Multan S: system cleaner to extend the lifetime of emulsions
- Multan AS: defoamer for emulsions

Multan 46-81
- Wide range of grinding operations
- Mineral-oil-free
- Excellent foam control
- pH: 9.3
- Inhibited against attack on copper alloys
- Resistant to bacterial growth
- No formation of nitrosodiethanolamines

Multan 21-70
- Drilling, turning, milling, threading, grinding operations
- Boron- and amine-free
- Free of EP additives (chlorine, sulphur, phosphorus)
- pH: 9.1
- Mineral oil base
- No staining on aluminium and non-ferrous metals
- Resistant to bacterial growth
- Suitable for moderate to extreme water hardness – 20–150 GH

Multan 71-2
- Drilling, turning, milling, threading, reaming, grinding
- Bactericide-free
- pH: 9.2
- Low replenishment rates
- Highly resistant to micro-organisms, bacteria, fungi
- Extremely efficient lubrication resulting in longer tool life and excellent cooling performance

			Stamping and drawing	
	Sophisticated machining	Heavy duty machining	Stamping	Drawing
	Multan 77-4	**Multan 233-1**	**Multan F AFS 105**	**Multan F 7161**
	Semi-synthetic	Vegetable oil	Oil	Oil
	Milky	Emulsion	Transparent	Transparent
	Preferred	Suitable	Preferred	Preferred
	Preferred	Preferred	Suitable	Preferred
	Suitable	Suitable	Suitable	Preferred
	Preferred	Suitable	Suitable	Suitable
	Suitable	Suitable	Suitable	Suitable
	4 – 8%	2 – 10% (in addition to semi-synthetic emulsions)	Ready-to-use	Ready-to-use

Multan 77-4
- Drilling, turning, milling, threading, grinding operations
- Bactericide-free
- pH: 9.4
- Novel lubricating component
- Highly resistant to micro-organisms, bacteria, fungi
- High-performance cutting fluid
- Extremely efficient lubrication resulting in longer tool life
- Contains aluminium inhibitors

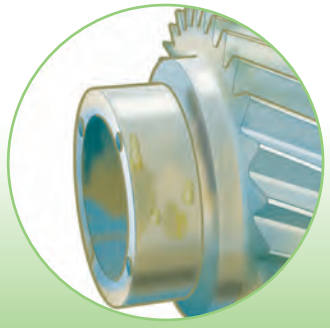
Multan 233-1
- Enables the most difficult machining work, e.g. deep hole drilling, cutting, drilling
- Part of the HD System
- Dispersible in cutting fluids, e.g Multan 71-2
- Mineral-oil-free
- Contains EP additives with excellent lubricating performance
- Biodegradable vegetable oils, good oxidation resistance

Multan F AFS 105
- Low viscosity for low and medium stamping operations
- Rolling, dipping, spraying, pouring application
- Aluminium fin and hair pin manufacturing
- Evaporating-type product
- Easy to clean
- No staining on aluminium and copper
- Suitable for manufacturing parts of air-conditioners

Multan F 7161
- Water-miscible
- Rolling, spraying, brushing, pouring application
- Compatible with downstream processes such as cleaning, pre-treatment, painting

Surface Preparation

Preparation & Protection



Why use a Loctite® Surface Preparation product?

The Loctite® portfolio of Surface Preparation products offers solutions for all types of surface treatments or preparations:

1. Protection of welding equipment
Protect shroud and contact tip from welding spatter and ensure uninterrupted welding for a complete shift

2. Belt dressing
Prevent slippage and increase friction for all types of belts

3. Rust treatment and corrosion protection
Protect surfaces against corrosion by converting rust into a stable base – restoring the protective coating on galvanised parts – coating parts with a non-drying, tack-free product

4. Leak detection
Detect leaks in gas handling systems

5. Tamper proofing
Visually detect movements in adjusted parts

6. Repair tape
Repair, reinforce, fix, seal and protect with a fabric reinforced tape

All products are easy to use. Some of them are recommended for emergency repairs where fast and efficient help is needed. Ideal also for maintenance and line production.

Why use a Loctite® Activator or Primer?

Loctite® Activators
Loctite® Activators accelerate the cure of Loctite® threadlockers, thread sealants, retaining compounds, gasketing products and instant adhesives. They are also recommended for applications at low temperatures (below 5°C) and where large gap filling may be required.

For modified acrylics (Loctite® 329, 3298, 330, F 246, 3342) the activator is mandatory to initiate the curing process: the activator is applied to one face, the adhesive to the mating face. Curing starts when parts are assembled.

Loctite® Primers
Loctite® Primers are used to improve adhesion to difficult-to-bond materials, e.g. polyolefins (PP, PE), POM. Loctite® Primers can only be used with instant bonding adhesives.

Henkel offers a complete range of activators and primers providing solutions for the following Loctite® adhesive technologies:

1. Loctite® Activators / Primers for Instant Bonding (Cyanoacrylates)
Loctite® Primers are used for improving adhesion to substrates. They are applied before the adhesive. For low surface energy plastic substrates, e.g. polyolefin, PP, PE, best adhesion will be achieved with Loctite® 770 / 7701.

Loctite® Activators are used to increase cure speed. Like the primers, activators are mostly applied before the adhesive. Heptane based activators have good “on-part life” and provide good aesthetic appearance of the bondline. They are also suitable for use on plastics which are sensitive to stress cracking. Activators can also be applied after the adhesive, e.g. for curing residual adhesive. They provide excellent cosmetic appearance by avoiding white staining of instant adhesives.

2. Loctite® Activators for Modified Acrylics
Loctite® Activators for modified acrylics are needed to initiate the curing process. Usually, the activator is applied to one part and the modified acrylic to the other part. The curing process starts when the two parts are assembled. Fixture time is dependent on the adhesive, on the substrate and on the cleanliness of the surfaces.

3. Loctite® Activators for Threadlocking, Pipe and Thread Sealing, Gasketing, Retaining and Anaerobic Acrylics
Loctite® Activators for this group of adhesives are used to increase the cure speed of the products. They are recommended for applications on passive metals such as stainless steel, plated or passivated surfaces. Activators are available as solvent-based or solvent-free formulations.

Surface Preparation

Product table

	Protection of welding equipment	Belt dressing	Rust treatment	Corrosion
				Drying (varnish)
				Ferrous metals
Solution	**Aerodag® Ceramishield**	**Loctite® 8005**	**Loctite® 7500**	**Loctite® 7800**
Description	Ceramic, silicone-free protective coating	Liquid spray	Rust treatment	Zinc spray
Colour	White	Clear yellow	Matt black	Grey
Service temperature range	N.A.	N.A.	N.A.	-50 to +550°C
Pack sizes	400ml aerosol	Not available in the U.K.	1lt can	Not available in the U.K.
				
	Aerodag® Ceramishield • Prevents adhesion of welding spatter • Provides long-term protection to welding equipment and ensures reliable, uninterrupted processes • Excellent adhesion to the surface • Eliminates the need for cleaning processes	**Loctite® 8005** **Belt dressing** • Prevents slippage • Increases friction for all types of belts • Extends belt life	**Loctite® 7500** **Rust treatment** • Converts existing rust into a stable base • Protects surfaces from corrosion • Cured product acts as a primer ready for painting • For metal pipes, valves, fittings, storage tanks, fences, guard rails, conveyors, construction and agricultural equipment	**Loctite® 7800** **Zinc spray** • Excellent cathodic corrosion protection on ferrous metals • Restores protection to galvanised parts • Typical applications: Touching-up of metal parts after welding, long term protection of metal assemblies

protection		Leak detector	Tamper proofing		Tape
Non-drying					
General purpose			General industry	Electronic industry	
Loctite® 7803		**Loctite® 7100**	**Loctite® 7414**	**Loctite® 7400**	**Loctite® 5080**
Metal protection coating		Detection of micro and larger leaks	Detect movements of parts	Detect movements of parts	Fabric reinforced tape
White		Colourless	Blue	Red	Metallic grey
-30 to +60°C		+10 to +50°C	-35 to +145°C	-35 to +145°C	Up to +70°C
Not available in the U.K.		Not available in the U.K.	50ml	20ml, 500ml	Not available in the U.K.
					
Loctite® 7803 **Metal protection coating spray** • Non-drying, tack-free coating • Provides long-term corrosion protection • For iron, steel, sheet steel, pipes, moulds, machines and installations that have to be stored outdoors		**Loctite® 7100** **Leak Detector** • Produces bubbles at areas where a leak is present • Non-toxic • Non-flammable • For use with all gases and gas mixtures except pure oxygen. Use also for iron, copper and plastic piping	**Loctite® 7414** **Tamper Proofing** • Visually detect movement of adjusted parts • Use for fittings, studs, nuts, etc. • Good adhesion to metals • Non-corrosive • Also for outdoor applications	**Loctite® 7400** **Tamper Proofing** • Visually detect movement of adjusted parts, mark adjustment points, or mark components that have been set or tested • Use for electronic equipment • Good adhesion to a wide range of substrates	**Loctite® 5080** **Fix & Repair Tape** • Pressure resistance up to 4 bar (pipe leakage) • The tape is easy to tear by hand • For repairing, reinforcing, fixing, sealing and protecting

Surface Preparation

Product table

What is your application?

Instant bonding

What do you want to do?

	Improve adhesion		**Accelerate**	
			General purpose	**General purpose**
Solution	**Loctite® 7239**	**Loctite® 770 / 7701***	**Loctite® 7458**	**Loctite® 7455**
Description	Primer	Primer	Activator	Activator
Colour	Colourless	Colourless	Colourless	Colourless
Solvent	Heptane	Heptane	Heptane	Heptane
Application method	Pre-applied	Pre-applied	Pre- or post-applied	Post-applied
Pack sizes	Not available in the U.K.	10g, 300g, 16oz	500ml	25ml, 150ml, 500ml, 20lt

Loctite® 7239
Plastic Primer
- General purpose
- Suitable for use on all industrial plastics
- Improves the adhesion of instant adhesives on polyolefins and other low surface energy plastics

Loctite® 770
Loctite® 7701*
Polyolefin Primer
- Only for difficult-to-bond plastics
- Provides (best) adhesion of instant adhesives to polyolefins and other low surface energy plastics

Loctite® 7458
- General purpose
- For all substrates
- Good on-part life – can be pre- or post-applied
- Low odour
- Minimises post-cure white discolouring
- Provides good aesthetic appearance of the bondline

Loctite® 7455
- General purpose
- For all substrates
- Fast fixturing between close-fitting parts
- For post-application

* For medical applications

Modified acrylics (329, 3298, 330, 3342)

Threadlocking, pipe and thread sealing, gasketing, retaining and anaerobic acrylics

What activator is preferred?

Best cosmetic appearance	Ideal for stress cracking sensitive plastics	Solvent-based	Solvent-based	Solvent-free
Loctite® 7452	**Loctite® 7457**	**Loctite® 7386**	**Loctite® 7471 / 7649**	**Loctite® 7240**
Activator	Activator	Activator	Activator	Activator
Transparent, light amber	Colourless	Transparent, yellow	Transparent, green	Blue-green, blue
Acetone	Heptane	Heptane	Acetone	Solvent-free
Post-applied	Pre- or post-applied	Pre-applied	Pre-applied	Pre-applied
500ml	150ml, 500ml	500ml	150ml, 500ml	90ml

Loctite® 7452
- Cures excess adhesive
- Provides excellent cosmetic appearance avoiding white discolouring of instant adhesive
- Not recommended on stress cracking sensitive plastics

Loctite® 7457
- Good on-part life – can be pre- or post-applied
- Recommended for use on stress cracking sensitive plastics

Loctite® 7386
- Initiate the cure of modified acrylic adhesives
- Fixture time and cure speed depend on adhesive, bonded substrate and surface cleanliness

Loctite® 7471
Loctite® 7649
- Speed up cure on passive and inactive surfaces
- For large bond gaps
- On-part life of: Loctite® 7649: ≤ 30 days, Loctite® 7471: ≤ 7 days

Loctite® 7240
- Increases cure speed on passive and inactive surfaces
- For large bond gaps
- For low (< 5°C) temperature curing

Pre-Treatment and Coatings

Corrosion Protection

Why use Bonderite or Aquence surface treatment solutions?

The Bonderite and Aquence product ranges are innovative corrosion protection products for metal pre-treatment prior to painting.

Technology features:

New-generation Bonderite solutions solve your specific metal pre-treatment demands beyond your expectations.

- Reliable, high quality
- Broad operation window
- Few process steps
- Short process times
- Low maintenance

Aquence is unique: The only organic coating solution able to provide outstanding steel corrosion protection on sharp metal edges and inside tubes or box sections. Unlike electrocoating and powder coating, Aquence has no throwing power limitations.

- Coats fully assembled parts
- Parts protected internally and externally
- No electrical contacts required
- No special rack stripping required

Process cost reduction:

By using Bonderite or Aquence, you will generate significant process cost savings coming from both low investment costs (shorter processes than conventional processes) and low running costs (reduced energy, manpower, maintenance, waste disposal, water consumption). Capitalising on recognised values such as reliability and high quality standards, our know-how will help you to optimise your individual metal pre-treatment processes. We will support you in utilising the advantages of the Bonderite and Aquence solutions and integrating them into your own production facility. These solutions are supported by advanced equipment technologies.

Service:

Profit from Henkel's market expertise and technical support, allowing you to capitalise on complete solutions going beyond the mere supply of chemicals for the pre-treatment process. Henkel laboratories perform analytical services or corrosion tests to guarantee that your process always meets the highest quality standards. In case you need personal assistance contact technical support.

Design:

We share our long experience with you whenever processes have to be re-engineered, optimised or adapted to new materials, machine equipment, specifications or legislations. Our R&D is continuously working to develop leading edge technologies that bring the efficiency and profitability of our metal pre-treatment processes to a superior level.

Benefits:

- External communication and control
- In-depth knowledge of your process parameters
- Assurance of consistently high quality
- Detailed documentation with regard to standards and obligations

Minimum ecological impact:

All our products are solvent-free, water-based and free of regulated heavy metals. Gas and electricity resources are conserved since less equipment is needed and bath and oven-curing temperatures are lower.

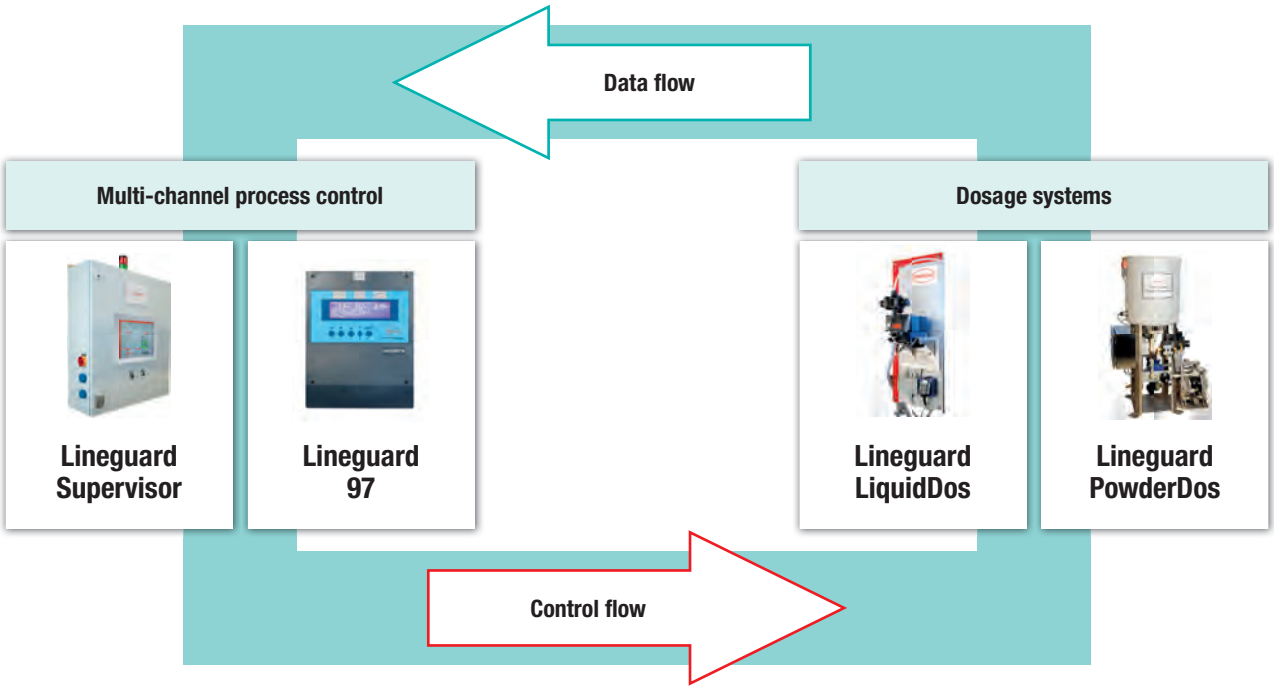
	Coating	
	PVDC coating	Epoxy-acrylic coating
Solution	**Aquence 866**	**Aquence 930**
Application	**Dip**	**Dip**
Appearance	**Black**	**Black**
Temperature	**+20°C**	**+20°C**
	Aquence 866 • Outstanding barrier properties • Low temperature curing (+90°C) • Flexible coating with high impact resistance • Water-based	**Aquence 930** • Tough and chemical-resistant • Energy-efficient process • Water-based, hard coating • Heat stability

Process Management Systems

Henkel can provide you with a customised multi-channel process control system for exact dosing of surface treatment products:

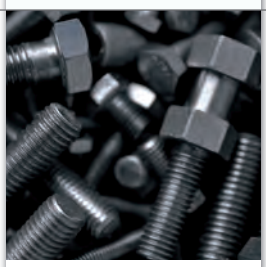
- Fully automated handling of different chemical measurements and dosage
- One computer to control all the data
- Send all data for the documentation to the **Lineguard WatchDog** (internet-based database)

For more information please contact your local sales engineer.



Metal Pre-Treatment

Product table

		Multi-metal phospating	
	Zinc phosphate	Manganese phosphate	Cleaner-coater
Solution	**Granodine 958**	**Bonderite MN 117**	**Bonderite CC**
Application	**Dip**	**Dip**	**Spray / dip**
Appearance	**Clear liquid, green**	**Clear liquid, green**	**Colourless with golden shades**
Concentration	**40 g/l**	**152 g/l**	**5 – 25 g/l**
Temperature	**+48 to +55°C**	**+75 to +85°C**	**+20 to +55°C**
			
	Granodine 958 • Generates a fine crystalline coating as excellent foundation for subsequent paint coatings • Provides excellent adhesion and corrosion resistance properties • Robust process • Suitable for multi-metals and automatic control Tricationic zinc-phosphate process	**Bonderite MN 117** • Black manganese phosphate layers on iron and steel • Reduces the frictional resistance and shortens the running-in period of machine parts • Low temperature application • Combined with anticorrosion oils and waxes the decorative phosphate layers provide excellent corrosion protection Manganese phosphate conversion coating, nickel-free	**Bonderite CC** • Cleaner / Coater process, substitutes iron phosphating • Good compatibility with powder and liquid paints • Simple, robust, short process • Free of toxic, regulated heavy metals Zirconium-based chemical conversion for steel, galvanised steel and aluminium

For traditional processes and special applications, please contact our sales staff or our technical service people.

Metal Pre-Treatment

Nano-ceramic coatings

Standard lines

Bonderite NT-1

Spray / dip

Colourless with golden shades

10 - 50 g/l

+20 to +40°C

Bonderite NT-1
- Substitute for iron phosphating
- Free of phosphates, COD, BOD and toxic regulated heavy metals
- Low temperature application
- Good compatibility with powder and liquid paints

Phosphate-free conversion coating for steel, zinc and aluminium surfaces

High performance

TecTalis 1200/1800

Spray / dip

Colourless with golden shades

30 g/l

+20 to +40°C

TecTalis 1200/1800
- Substitute for zinc phosphating
- Free of phosphates, COD, BOD and toxic regulated heavy metals
- Low temperature application

Phosphate-free conversion treatment for steel, galvanised steel and aluminium

Light metal conversion coating

Alodine 4850-2

Spray / dip

Liquid, translucent, light yellow

5 – 10 g/l

+20 to +40°C

Alodine 4850-2
- Excellent corrosion resistance and adhesion properties for subsequent paint coatings
- Low temperature application
- Qualicoat approval

Chrome-free conversion of light metals and post-passivation of phosphate layers

Alodine 4830/4831

Spray / dip

Clear liquid, slightly yellowish

5 – 15 g/l

+20 to +40°C

Alodine 4830/4831
- Excellent corrosion resistance and adhesion properties for subsequent paint coatings
- Generates colourless conversion coating layers on aluminium and its alloys
- Low temperature application

Chrome-free 2-component liquid passivation for aluminium

Anodising

Almeco Seal Duo Pro

Spray / dip

Colourless, clear liquid

1 – 3 g/l

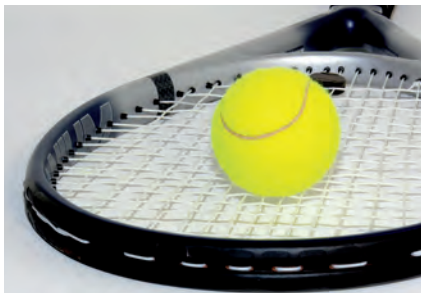
> +96°C

Almeco Seal Duo Pro
- Exerts a slight buffering effect
- Produces an outstanding optical finish on electrolytically coloured parts
- Substantially extends sealing bath life
- Fulfills all required short-time tests

Prevention of sealing smut during the hot water sealing of anodised aluminium

Mould Release Agents

Semi-permanent Mould Release Technology



World-standard products for release application

Henkel offers highly effective solutions for tough moulding and application challenges. Customers around the globe turn to Frekote® not just for our unique mould release products, but also for our expertise in developing "customised" solutions. We take pride in our knowledge, experience, and responsiveness in providing the best technical service to our customers around the globe.

The Frekote® line offers the broadest range of semi-permanent release agents, mould sealers and cleaners in the industry. Frekote® mould release agents, backed by over 50 years of research and development, are the global industry standard for performance, quality and value. By pioneering release solutions for many of the world's largest manufacturing organisations, Henkel understands what it takes to release the most complex materials in the most demanding applications.

Lowest cost per release – Frekote® semi-permanent release agents minimise fouling and ensure the highest number of releases possible per application. Our customers realise higher productivity and profitability through reduced downtime; lower reject rates, and higher quality products. Frekote® products are the industry standard replacement for sacrificial release agents. Unlike sacrificial waxes or silicones, Frekote® semi-permanent mould release agents do not transfer to your parts; instead they chemically bond with the mould surface and they provide multiple releases. The parts release cleanly, and will not stick to the low energy film. Only one touch-up coat is necessary to refresh the mould after multiple releases. Frekote® products are designed to save your money.

Henkel has designed mould release agents for virtually all composite, plastic and rubber moulding operations. From jumbo jets to tennis rackets, truck tyres to O-rings, bathtubs to custom yachts, we have the release agent to fulfill your requirements.

Markets Served

For an initial market overview

Thermoset Plastics

Advanced Composites Epoxy Systems

- Renewable energies
  Wind rotor blades
- Aerospace
  Aircraft, helicopters, etc.
- Recreational
  Bicycles, skis, racquets, etc.
- Special
  Racing parts, medicals, electronics, filament windings, etc.

GRP Composites Polyester, Vinyl Ester

- Marine GRP
  Boats, yachts, jet-skis, etc.
- Transportation GRP
  Panels, roofs, spoilers, etc.
- Construction GRP
  Wind rotor blades, cultured marble sinks and countertops, bathtubs, etc.

Thermoplastics

Rotational Moulding

- Recreational
  Kayaks, pedal boats, etc.
- Construction
  Containers, tanks, chairs, waste bins, etc.

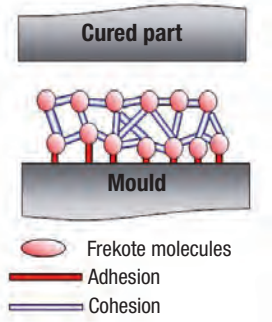
Rubbers

Rubber Industry

- Tyre
  Treads / side walls
- Technical rubber
  Vibration dampers, roller blade wheels, footwear, custom moulding, etc.

How Frekote® release agents work

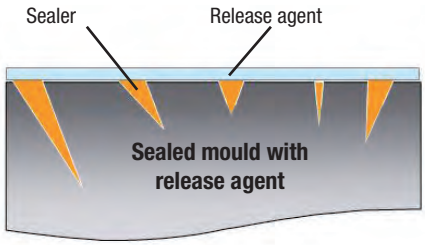
Solvent-based semi-permanent Frekote® products are moisture-curing, while the resins used in the Aqualine range are heat-cured or cured at room temperature. Frekote® release agents can be wiped on or sprayed on. Cured Frekote® release coatings form a solid, non-greasy, durable film which withstands the shear forces encountered in moulding and demoulding operations. The maximum film thickness is 5µm. This prevents mould build-up to minimise costly mould cleaning while achieving excellent part detail and mould geometry retention. Special Frekote® release agents are available that allow post-mould painting or bonding without the need for any cleaning of the released parts.



Semi-permanent technology coats the mould with a low energy film.

Sealing

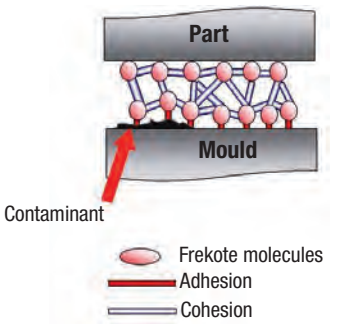
Frekote® sealers are used prior to application of mould release coats to seal mould micro-porosity and provide a uniform, stable base coat for the release agent. Sealers also improve the durability of the Frekote® film, ensuring the maximum number of releases per application. Some release agents contain a mould sealer, for example the water-based Frekote® Aqualine C-600. Previous release contamination, e.g. sacrificial or semi-permanent release agents, should be removed before the sealer coat is applied.



Sealers seal microporosities to achieve a uniform release coating

Cleaning

For maximum performance, Frekote® release agents should be applied to a completely cleaned mould. Therefore, mould cleaning is an important preparatory step to ensure that all cured release agents and other unwanted contaminants left on the mould are removed. Frekote® water-based and solvent-based cleaners remove all contaminants from composite and metal moulds.



Unwanted contaminants may impair adhesion of the Frekote® release agent to the mould.

Frekote® Features – Benefits

- Semi-permanent technology – multiple release performance
- Quick room-temperature cure, heat-accelerated cure – reduces process down time
- Spray on, wipe on – easy to apply with cloth or spray gun
- Low or no transfer – reduces post part cleaning
- 5 µm film ensures low mould build-up – reduces post mould cleaning
- Forms a hard durable and dry thermoset film – extended mould life
- Reduced cleaning and application time – lower cost per part

Mould Release Agents

Product table

Are you releasing composites or rubber?

Epoxy

High gloss | **Matt**

Sealer FMS | **Sealer CS 122**

Fast cure at RT | **Post bonding / painting** | **Water-based** | **Wipe-on-leave-on**

Solution	Frekote® 770-NC	Frekote® 55-NC	Frekote® C-600	Frekote® WOLO
Description	Release agent	Release agent	Release agent	Release agent
Appearance	Clear, liquid	Clear, liquid	White emulsion	Clear, liquid
Application temperature	15 to +60°C	15 to +60°C	20 to +40°C	15 to +45°C
Drying time between coats	5 min. at RT	5 min. at RT	15 min. at RT	5 min. at RT
Cure time after final coat	10 min. at RT	30 min. at RT	40 min. at RT	15 min. at RT
Thermal stability	up to 400°C	up to 400°C	up to 315°C	up to 400°C

Frekote® 770-NC
- Fast RT cure
- High gloss and high slip
- Releases most polymers

Frekote® 55-NC
- No mould build-up
- No contaminating transfer
- High thermal stability

Frekote® Aqualine C-600
- Fast RT application and cure
- Large parts
- Non-flammable

Frekote® WOLO
- Easy application
- Multiple releases
- High gloss finish

GRP polyester

High gloss

Sealer FMS

Rubber

Water-based

Sealer RS 100

Rubber-to-metal bonding

Highly filled elastomers

Cleaner

Plastic & metal moulds

Polishing liquid

Spray-on-leave-on	Water-based	General purpose	Highest slip / special rubbers	Heavy contaminations
Frekote® 1-Step	**Frekote® C-400**	**Frekote® R-120**	**Frekote® R-220**	**Frekote® 915WB**
Release agent	Release agent	Release agent	Release agent	Pre-cleaning
Clear, liquid	White emulsion	White emulsion	White emulsion	Beige, pasty, liquid
15 to +45°C	15 to +40°C	60 to +205°C	60 to +205°C	10 to +40°C
Immediate RT	5 min. at RT	Immediate at 60°C	Immediate at 60°C	5 min. at RT
30 min. at RT	30 min. at RT	10 min. at 90°C 4 min. at 150°C	10 min. at 90°C 4 min. at 150°C	N.A.
up to 400°C	up to 315°C	up to 315°C	up to 315°C	N.A.

Frekote® 1-Step
- Easy to use
- High gloss finish
- Minimal mould build-up

Frekote® Aqualine C-400
- Water-based system
- Fast RT application and cure
- High gloss finish

Frekote® Aqualine R-120
- Fast cure
- General purpose
- Low transfer

Frekote® Aqualine R-220
- Fast cure
- High slip
- For difficult-to-release rubbers

Frekote® 915WB
- Water-based
- Polishing liquid
- Removes cured release agents

Mould Release Agents

Product list

Product Frekote®		Description	Chemical basis	Mould temperature	Cure system	Drying time between coats at		Cure time after final coat			
						20°C	60°C	20°C	60°C	100°C	150°C
909WB	▲	Pre-cleaner	Water	10 to 40°C	N.A.	1hr	N.A.	N.A.	N.A.	N.A.	N.A.
913WB	▲	Post-cleaner	Water	10 to 40°C	N.A.	*	N.A.	N.A.	N.A.	N.A.	N.A.
915WB	▲	Pre-cleaner	Water	10 to 40°C	N.A.	5 min.	N.A.	N.A.	N.A.	N.A.	N.A.
PMC	▲	Post-cleaner	Solvent	15 to 40°C	N.A.	*	N.A.	N.A.	N.A.	N.A.	N.A.
B-15	●	Mould preparation	Solvent	15 to 60°C	Moisture	30 min.	5 min.	24 hr	120 min.	N.A.	N.A.
CS-122	●	Mould preparation	Solvent	13 to 40°C	Moisture	5 min.	N.A.	2 hr	N.A.	N.A.	N.A.
CS-123	●	Mould preparation	Solvent	13 to 40°C	Moisture	5 min.	N.A.	2 hr	N.A.	N.A.	N.A.
FMS	●	Mould preparation	Solvent	15 to 35°C	Moisture	15 min.	N.A.	20 min.	N.A.	N.A.	N.A.
RS-100	●	Mould preparation	Water	90 to 200°C	Heat	N.A.	N.A.	N.A.	N.A.	30 min.	12 min.
1-Step	■	FRP polyester parts	Solvent	15 to 40°C	Moisture	*	N.A.	30 min.	N.A.	N.A.	N.A.
44-NC	■	Advanced composites	Solvent	20 to 60°C	Moisture	15 min.	5 min.	3 hr	30 min.	15 min.	N.A.
55-NC	■	Advanced composites, FRP polyester parts	Solvent	15 to 60°C	Moisture	5 min.	3 min.	30 min.	10 min.	N.A.	N.A.
700-NC	■	Advanced composites	Solvent	15 to 135°C	Moisture	5 min.	3 min.	20 min.	8 min.	5 min.	N.A.
770-NC	■	Advanced composites, FRP polyester parts	Solvent	15 to 60°C	Moisture	5 min.	1 min.	10 min.	5 min.	N.A.	N.A.
Aqualine C-200	■	Advanced composites	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine C-400	■	Advanced composites	Water	14 to 40°C	2°C, room temperature	5 min	N.A.	30 min.	N.A.	N.A.	N.A.
Aqualine C-600	■	Advanced composites	Water	20 to 40°C	Evaporation	15 min.	1 min.	40 min.	10 min.	N.A.	N.A.

■ Release agent ● Mould sealer ▲ Mould cleaner * immediate

	Resulting surface	Type of polymer / elastomer	Application technique	Pack sizes								Comments
				1lt	3.7lt	5lt	10lt	18.7lt	25lt	208lt	210lt	
	All	Steel, nickel, stainless steel	Wipe-on	●								Alkaline foam cleaner, removes cured release agents and other contamination
	All	Esters, epoxies, steel, nickel, aluminium	Wipe-on	●								Antistatic mould cleaner, prevents dust re-contamination, removes fingerprints
	All	Polyesters, epoxies, steel, nickel	Wipe-on	●			●					Removes cured release agents and other contamination
	All	Esters, epoxies, steel, nickel, aluminium	Wipe-on	●		●						Removes dust, dirt, fingerprints, oil
	Matt	Epoxies	Wipe-on	●		●						Seals microporosities, provides uniform release agent coating
	Gloss	Epoxies	Wipe-on			●						Seals microporosities, provides uniform release agent coating, low odour, thicker coating
	High gloss	Epoxies	Wipe-on			●						Seals microporosities, provides uniform release agent coating, low odour, thicker coating
	High gloss	Polyester, vinylester	Wipe-on	●		●						Seals microporosities, provides uniform release agent coating
	All	NR, SBR, HNBR, CR, EPDM	Spray-on	●		●						Seals microporosities, provides uniform release agent coating
	High gloss	Polyester gel-coats	Spray-on	●		●			●			Spray-on-leave-on, no sealer required, high gloss gel-coat parts
	Matt	Epoxies, PA	Wipe-on, Spray-on	●		●			●	●		No mould-build up, non-contaminating transfer, minimised cleaning before bonding and painting
	Satin matt	Epoxies, polyester non-gelcoat, PA	Wipe-on, Spray-on	●		●			●	●		No mould-build up, non-contaminating transfer
	Gloss	Epoxies	Wipe-on, Spray-on	●		●			●	●		High slip, universal for most composites, also for polyester resins
	High gloss	Epoxies, polyester resin, PE	Wipe-on, Spray-on	●		●			●	●		High slip, high gloss, fast curing, universal for most composites
	Matt	Epoxies, PA, PP, PE	Spray-on			●	●					Low mould build up, non-contaminating transfer
	High gloss	Polyester gel-coats, polyester resin	Wipe-on, Spray-on			●						Room temperature curing, high gloss gel-coat parts, 2-component system
	Matt	Epoxies	Wipe-on, Spray-on			●	●				●	Integrated sealer, room-temperature curing

Mould Release Agents

Product list

Product Frekote®		Description	Chemical basis	Mould temperature	Cure system	Drying time between coats at		Cure time after final coat			
						20°C	60°C	20°C	60°C	100°C	150°C
Aqualine PUR-100	■	Polyurethane releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-100	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-110	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-120	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-150	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-180	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Aqualine R-220	■	Rubber releasing	Water	60 to 205°C	Heat	N.A.	*	N.A.	30 min.	10 min.	4 min.
Frewax	■	FRP polyester parts	Solvent	15 to 35°C	Moisture	5 min.	N.A.	10 min.	N.A.	N.A.	N.A.
FRP-NC	■	FRP polyester parts	Solvent	15 to 40°C	Moisture	15 min.	N.A.	20 min.	N.A.	N.A.	N.A.
S-50 E	■	Special product	Water	100 to 205°C	Heat	N.A.	N.A.	N.A.	N.A.	*	*
WOLO	■	FRP polyester parts	Solvent	15 to 40°C	Moisture	5 min.	N.A.	15 min.	N.A.	N.A.	N.A.

■ Release agent ● Mould sealer ▲ Mould cleaner * immediate

	Resulting surface	Type of polymer / elastomer	Application technique	Pack sizes								Comments
				1 lt	3.7lt	5lt	10lt	18.7lt	25lt	208lt	210lt	
	Matt	Rigid PUR	Spray-on		●			●		●		For rigid PUR materials
	Matt	NR, SBR, HNBR, CR	Spray-on				●				●	High slip, difficult-to-release rubbers, synthetic rubbers
	Matt	NR, SBR, HNBR	Spray-on			●	●				●	Low transfer, low mould build up, standard rubbers
	Matt	NR, SBR, HNBR	Spray-on			●	●				●	General purpose, standard rubbers, low mould build up
	Matt	NR, SBR, HNBR, CR	Spray-on			●	●				●	Low slip, low mould build up, standard rubbers, rubber-to-metal
	Satin matt	NR, SBR, HNBR, CR, EPDM	Spray-on			●	●				●	High slip, difficult-to-release rubbers
	Gloss	NR, SBR, HNBR, CR, EPDM	Spray-on			●		●		●		High slip, most difficult-to-release rubbers, for highly filled elastomers, synthetic rubbers
	High gloss	Polyester gel-coats, polyester resin	Wipe-on	●		●						Easy to use, visible, no sealer required, high gloss gel-coat parts
	High gloss	Polyester gel-coats, polyester resin	Wipe-on	●		●			●			Low mould build-up, high gloss gel-coat parts
	Matt	Silicone rubber	Spray-on			●	●					For silicone elastomers
	High gloss	Polyester gel-coats, polyester resin	Wipe-on	●		●			●			Wipe-on-leave-on, no sealer required, high gloss gel-coat parts

Equipment

Manual hand-held applicators

Manual hand-held applicators for 1-component cartridges

Cartridge size	Technology	Mechanical applicator	Pneumatic applicator
30ml	All, including acrylics and Light cure adhesives	**98815** (IDH 1544934) 	see Syringe dispenser page 144
50ml	Elastic adhesives and sealants, gasketing products	**96005** (IDH 363544) 	
300ml	Elastic adhesives and sealants, gasketing products		**97002** (IDH 88632) 
300ml, 310ml	Elastic adhesives and sealants, e.g. silicones, silane modified polymers	**142240** (IDH 142240) 	**97046** (IDH 1047326) electrical 
310ml	Very high viscosity elastic adhesives and sealants, e.g. Terostat 1K-PU		**PowerLine II** (IDH 960304) 
310ml	Spraying of Terostat 9320* or Terostat MS 9302*		**Multi-Press** (IDH 142241) 
Foilpack 400ml, 570ml	Silane modified polymers, polyurethanes		**Softpress** (IDH 250052) 

* Special spray nozzle set IDH 547882

Manual hand-held applicators for 2-component cartridges

Cartridge size	Mix ratio	Technology	Mechanical applicator	Pneumatic applicator
37ml **50ml**	**10:1** **1:1, 2:1**	Epoxies, polyurethanes, acrylics and silane modified polymers	**96001** (IDH 267452) 	**97042** (IDH 476898) 
50ml	**10:1**	Acrylics, cyanoacrylates	IDH 1034026 	**97047** (IDH 1493310) for acrylics only 
200ml	**1:1, 2:1**	Epoxies	**96003** (IDH 267453) 	**983437** (IDH 218315) 
400ml, **415ml**	**1:1, 2:1**	Epoxies, acrylics, silicones and polyurethanes	**983438** (IDH 218312) 	**983439** (IDH 218311) 
	4:1	Polyurethanes	+ Conversion Kit 984211 (IDH 478553)	+ Conversion Kit 984210 (IDH 478552)
400ml	**1:1**	Silane modified polymers		IDH 1279011** 
490ml	**10:1**	Acrylics	**985246** (IDH 478600) 	**985249** (IDH 470572) 
2 x 300ml	**1:1**	Loctite® 3295	2022315 (88747)	**1911001** (IDH 307418)
2 x 310ml	**1:1**	Teromix 6700		**1911001** (IDH 439869) 
900ml	**2:1**	Loctite® Nordbak® 7255*		**97048** (IDH 1175530) 

* For spray application with Hand-Held Applicator, preheat product to T= 50°C. Use heating box IDH 796993

** Available on request

Equipment

Manual dispensers

Peristaltic dispensers

Pack size	Technology	Mechanical	Electrical
50ml	Anaerobic Threadlockers, Anaerobic Thread Sealants, Retaining Compounds	**98414** (IDH 608966) 	
250ml	Anaerobic Threadlockers, Anaerobic Thread Sealants, Retaining Compounds	**97001** (IDH 88631) 	
All pack sizes	All 1K-technologies*		**98548** (IDH 769914) 

* Anaerobic Threadlockers, Anaerobic Thread Sealants, Anaerobic Gasketing, RTV Gasketing, Retaining Compounds, Cyanoacrylates, Gel-Cyanoacrylates, Acrylics, Light Cure Adhesives

Syringe dispensers

Pack size	Technology	Mechanical	Pneumatic
10ml or 30ml	All 1K-technologies	See hand-held applicators for 1-component cartridges, page 142	**97006** (IDH 88633) 

Accessories – Syringes

Pack size	Item no.	Product	Description
10ml **30ml**	97207 (IDH 88656) 97244 (IDH 88677)		Clear Syringe Barrel Kit
10ml **30ml**	97263 (IDH 218287) 97264 (IDH 218286)		Black Syringe Barrel Kit for UV and INDIGO adhesives
10ml **30ml**	97208 (IDH 88657) 97245 (IDH 88678)		Syringe Airline Adapter

Accessories – Mixers and Nozzles

Pack size	Mix	Technology	Item no.	Product
10ml	10:1	Cyanoacrylates	IDH 1453183	
50 ml	1:1	Acrylics	8958231 (IDH 1646836)	
50ml	1:1, 2:1	Epoxies, polyurethanes and silane modified polymers	984569 (IDH 1487440)	
50ml	1:1	Acrylics	8958234 (IDH 1646832)	
50ml	10:1	Cyanoacrylates	8957509 (IDH 1509102)	
50ml	10:1	Acrylics	IDH 1034575	
2 x 125ml	1:1	Polyurethanes	IDH 780805	
200ml **400ml**	1:1 2:1	Epoxies	984570 (IDH 1487439)	
400ml	1:1, 2:1, 4:1	Silicones	98457 (IDH 720174)	
400ml	1:1	Silane modified polymers	IDH 367545	
400ml **415ml**	2:1 4:1	Polyurethanes	IDH 639381	
490ml	10:1	Acrylics	8953187 (IDH 1104046)	
2 x 300ml	1:1	Acrylics	IDH 8958238*	
2 x 310ml	1:1	Polyurethanes	IDH 253105	
900ml	2:1	Epoxies	IDH 1248606	

310ml	Silane modified polymers	IDH 547882 (for spraying)	
310ml	Silane modified polymers, polyurethanes	IDH 581582	
310ml	1K silicone	IDH 546017**	
310ml	Silane modified polymers, polyurethanes	IDH 648894 (triangle nozzle)	
Foilpack 400ml, 570ml	Silane modified polymers, polyurethanes	IDH 582416	

* Y-adapter Manifold (IDH 270517) can be ordered separately

** Available on request

Equipment

Semi-automatic dispensing systems

The systems are designed for integration into automated assembly lines and can be externally triggered by a PLC or robot control. They are suitable for dispensing microdots, dots, drops or beads of low to high viscosity products. Each system is equipped with Controller 97152, Reservoir 97108 accommodating up to 1ltr Loctite® bottles, Footswitch 97201 and Airline Filter / Regulator 97120 for combination with the appropriate valve. The valve is selected to suit the viscosity of the product and the amount to be dispensed. Please see table below.

Viscosity	Microdot Micro bead	Dot Medium bead	Drop Bead
Low* —	IDH 1388647 IDH 1388646	IDH 1388648 (not for UVCA) IDH 1388647 IDH 1388646	IDH 1388648 (not for UVCA)
Medium** —	IDH 1388647 IDH 1388646	IDH 1388648 (not for UVCA) IDH 1388649 (not for UVCA) IDH 1388651	IDH 1388651
High*** —	On Request	On Request	IDH 1388650

* Low viscosity up to 2,500 mPa·s

** Medium viscosity approx. 2,500 – 7,500 mPa·s

*** High viscosity over 7,500 mPa·s

IDH 1388651
- Includes: 97113 Stationary Applicator Valve 1/4"
- Suitable for all 1-component technologies

IDH 1388650
- Includes: 97114 Stationary Applicator Valve 3/8"
- Suitable for all 1-component technologies

IDH 1388647
- Includes: 98009 Light Cure Dispensing Valve
- Suitable for light cure adhesives

IDH 1388648
- Includes: 97135 Diaphragm Valve
- Suitable for all low viscosity methacrylates and acrylic adhesives

IDH 1388649
- Includes: 97136 Diaphragm Valve
- Suitable for all low to medium viscosity methacrylates and acrylic adhesives

IDH 1388646
- Includes: 98013 (Cyanoacrylate Dispensing Valve)
- Suitable for all 1-component technologies except light cure adhesives

1-component technologies: e.g. methacrylates, acrylics, light cure acrylics and cyanoacrylates. For other technologies please contact us.

Hand-held dispensing systems

The systems are designed for single user manual workstations. They are suitable for dispensing dots, drops or beads of low to medium viscosity products.

The systems comprise an Integrated Controller & Reservoir 97009, Footswitch 97201 and Airline Filter / Regulator 97120 for combination with the appropriate valve. The valve is selected to suit the viscosity of the product and the amount to be dispensed. Please see table below.

Viscosity	Microdot Micro bead	Dot Medium bead	Drop Bead
Low* ——	On Request	IDH 1388652	IDH 1388652
Medium** ▬	On Request	IDH 1388653	IDH 1388653
High*** ▬	On Request	IDH 1388653	on request

* Low viscosity up to 2,500 mPa·s

** Medium viscosity approx. 2,500 – 7,500 mPa·s

*** High viscosity over 7,500 mPa·s

IDH 1388652
- Includes: 97121 Pinch Valve Applicator
- Suitable for all 1-component adhesive technologies

IDH 1388653
- Includes: 97130 LV Hand-Held Applicator
- Suitable for all 1-component adhesives technologies, except light cure adhesives

Customised systems

Henkel offers a wide range of stand alone dispensing equipment and turnkey packages for all adhesive and sealant dispensing needs. Systems range from bulk sealant dispensing pumps to custom built UV cure systems to fully integrated robot and special machine systems. Henkel engineers can support customers with recommendations and specification for custom built equipment.
Contact the Henkel equipment team on 01442 278100

Equipment

Light curing equipment

Four major effects must be taken into consideration when designing a successful light cure application: emission spectrum of the cure system, light intensity, transmission properties of substrate and required cure characteristics. As a manufacturer of both the chemistry and the curing equipment, Henkel knows how to match light cure adhesives to the correct dispensing and curing system.

Flood cure systems

Bulb technology

Loctite® 97055 / 97056

- Loctite® 97055 (IDH 805741) high intensity light cure chamber system for manual loading
- Loctite® 97056 (IDH 838778) tunnel version designed for integration into automated lines

Three different bulbs are available for appropriate emission spectrums

Bulb	IDH No.	UV C	UV A	UV Visible
Loctite® 97346	870098	✳✳✳	✳✳	✳
Loctite® 97347	870097	✳✳	✳✳✳	✳✳
Loctite® 97348	870096	✳	✳✳	✳✳✳

LED technology

Loctite® 97070 / 97071

- Loctite® 97070 high intensity, cool radiation LED system, designed to emit UV A light
- Loctite® 97071 high intensity, cool radiation LED system, designed to emit UV visible light

Mounting stand or cure chamber available on request.

LED head	IDH No.	UV C	UV A	UV Visible
Loctite® 97070	1427234	–	✳✳✳	–
Loctite® 97071	1427233	–	–	✳✳✳

✳ Medium intensity

✳✳ High intensity

✳✳✳ Very high intensity

1000 W Energy consumption of bulb

C Emission spectrum contains UV C light

A Emission spectrum contains UV A light

Emission spectrum contains UV Visible light

LED LED system

Exposure timer

Interface for PLC connection, e.g. external start

Internal intensity monitoring

Spot cure system

Flood cure system

Spot cure systems

Bulb technology

Loctite® 97057 (IDH 941764)
High intensity light guide system emitting UV A and UV visible. To be combined with appropriate light guide.

Loctite® 97323 (IDH 376720): Ø 5 x 1,500 mm, Loctite® 97324 (IDH 298849): Ø 8 x 1,500 mm, Loctite® 97318 (IDH 951637): 2x Ø 3 x 1,500 mm

Loctite® 97034 (IDH 131219)
High intensity light guide system emitting UV C, UV A and UV visible. To be combined with appropriate light guide.

Loctite® 97326 (IDH 329278): Ø 5 x 1,500 mm, Loctite® 97327 (IDH 376721): Ø 8 x 1,500 mm, Loctite® 97328 (IDH 352194): 2x Ø 3 x 1,500 mm

LED technology

Loctite® 97079 (IDH 1473952)
High intensity, long lifetime system designed for curing Loctite® UV adhesives and coatings with UV light. Modern LED technology provides “cool” radiation at narrow bandwidth within UVA range.

AssureCure technology

The Loctite® AssureCure Monitoring System is designed to detect, measure, analyse, record and provide a degree of cure metric, relative to the transition of specially formulated adhesives from a liquid to a solid state, ie the cure.

System Components:

Interface Module with LED light source
Measures, analyses and records multiple optical measurements.

Light source Fibre
Transmits light to adhesive bond line (up to 4 points)

Detector Fibre
Directs adhesive's optical response to Optic Module

Optic Module
Analyses multiple optical measurements.

Optic Processor
Accepts input from multiple optic modules and provides output to PC / PLC.

Equipment
UV Accessories

For UV

Product	Item no.	IDH no.	Description
	Loctite® 98787 Loctite® 98770	1390323 1265282	The Dosimeter-Radiometer measures light dose (energy) and light intensity of the UV curing equipment and is a self-contained one channel device. Loctite® 98787 for UV A light, Loctite® 98770 for UV Visible light.
	Loctite® 98002	1406024	The Loctite® Spot Radiometer 7020 is a self-contained, electro-optic instrument designed to measure and display the UV power density (irradiance) emitted by a UV light guide. For light guides Ø 3 mm, Ø 5 mm and Ø 8 mm.
	Loctite® 8953426 Loctite® 8953427	1175127 1175128	UV protection glasses Loctite® 8953426: protection glasses grey, best to use for UV A and UV C light Loctite® 8953427: protection glasses orange, best to use for UV Visible light.

Dispensing needles

Dispensing tips are colour coded to indicate the inner diameter of the needle. All dispensing tips have a helical thread and can be attached to all Loctite® valves via 97233 (IDH 88672) Luer-Lock® Adapter. All needles below are supplied in a pack if 50.

Needle size	 Flexible dispensing tips Polypropylene (PPF)	 Tapered dispensing tips (PPC)	 Stainless steel dispensing tips (SSS)
15 (= Amber) ID 1.37 mm	97229 (IDH 142640)		97225 (IDH 88664)
16 (= Grey) ID 1.19 mm		97221 (IDH 88660)	
18 (= Green) ID 0.84 mm	97230 (IDH 142641)	97222 (IDH 88661)	97226 (IDH 88665)
20 (= Pink) ID 0.61 mm	97231 (IDH 142642)	97223 (IDH 88662)	97227 (IDH 88666)
22 (= Blue) ID 0.41 mm		97224 (IDH 88663)	
25 (= Red) ID 0.25 mm	97232 (IDH 142643)		97228 (IDH 88667)
Kit containing 2 each of the above tips		97262 (IDH 218288)	

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Loctite® 3556[Med]	25ml, 1lt	46
Loctite® 366	250ml	64
Loctite® 382	20g kit, 500g, 2kg	36
Loctite® 3921[Med]	25ml, 1lt	46
Loctite® 3922[Med]	25ml, 1lt	42
Loctite® 3924 AC	Not available in the U.K.	46
Loctite® 3926[Med]	25ml, 1lt	43
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Loctite® Nordbak® 7204	19kg	98
Loctite® Nordbak® 7218	1kg, 10kg	97
Loctite® Nordbak® 7219	1kg, 10kg	97
Loctite® Nordbak® 7221	5.4kg	98
Loctite® Nordbak® 7222	1.3kg	98
Loctite® Nordbak® 7226	1kg, 10kg	97
Loctite® Nordbak® 7227	1kg	98
Loctite® Nordbak® 7228	1kg	98
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By product name

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