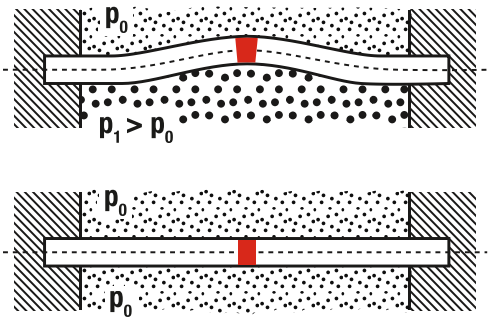
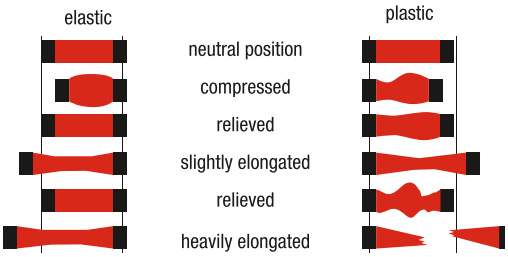
Why use Henkel products for elastic / plastic bonding and sealing?

The Henkel portfolio of industrial elastic / plastic bonding and sealing products offers a wide range of solutions to meet the different requirements and conditions that apply to industrial design and construction.



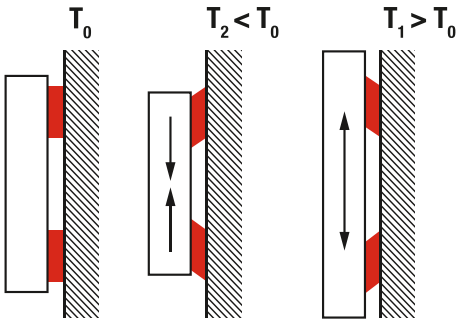
Elastic Sealing

Elastic sealing involves applying an appropriate product in the joint in order to prevent the penetration of moisture/or the passage of air between elements, components and assemblies made of the same or dissimilar materials. The elastic sealing material seals by adhesion to the substrates. The elastic behaviour of the sealant acts as a media barrier while relative part movements are tolerated.



Plastic Sealing

Plastic sealing involves applying an a appropriate product in the joint in order to act as a media barrier. The primary criterion for selection of a plastic sealant (besides the sealing/ media barrier performance) is its mechanical behaviour under deformation. When exposed to forces, each sealant shows both a plastic (deformable) and an elastic (e.g. rubber like) reaction. If the plastic response is dominant, the sealant is referred to as plastic.



Elastic Bonding

Elastic bonding is a process in which two similar or dissimilar materials are joined with an elastic adhesive. Elastic bonding adhesives are selected mainly for their capability to tolerate relative movements of the parts while the parts are bonded by adhesion to the substrates. Besides their elastic properties, many elastic adhesives from Henkel exhibit high inherent strength (cohesion) and a relatively high modulus, producing friction-locked joints which, at the same time, have elastic properties.

Advantages of Elastic / Plastic Bonding and Sealing

- Improved aesthetic aspects
- New designs
- Use of new materials incl. advanced composites
- Fewer parts
- Increased reliability & durability
- Higher quality
- Weight reduction, light weight design
- Efficient production process, fewer production steps
- Cost reduction

Choosing the right Henkel Industrial Elastic / Plastic Adhesive or Sealant

Technical aspects/considerations of elastic/plastic bonding and sealing

- Elastic bonding and sealing assembly needs a gap for elasticity to achieve more even stress distribution and higher elasticity (figure 1 and 2)
- Adhesion to the substrates enables elongation of the product during relative movements without loosening surface contact (figure 3)
- Joint design needs to take into account service conditions, environmental factors and specific durability, compatibility and aesthetic requirements

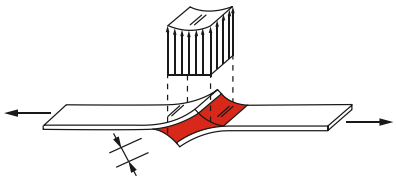


Figure 1: Larger gap

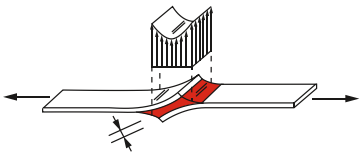


Figure 2: Smaller gap

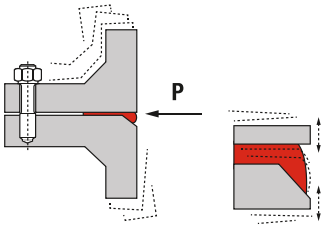


Figure 3: Adhesive & sealant

Silicones

The LOCTITE Silicones are based on silicon – oxygen backbones with organic side groups. Products incorporating this technology undergo moisture curing (1K, RTV*), after mixing (2K) or by temperature (1K, heat cure) to a high performance rubber-like elastomer.

- Elastic bonding and sealing with high flexibility
- 1K or 2K solution
- Outstanding temperature resistance
- Excellent UV and chemical resistance - e.g. in the presence of oil, water and glycol
- Primerless adhesion to many substrates

*Room Temperature Vulcanization

Silane Modified Polymers

The TEROSON MS line is based on silane-modified polymers (SMP). Products incorporating this technology undergo moisture curing and react to form high-performance elastomers. SMP products contain an adhesion promoter (primer) as part of the formulation.

- 1K or 2K solution
- Excellent adhesion on almost all substrates
- Excellent weathering and ageing resistance
- Elastic bonding, sealing and coating

Butyls

The TEROSON RB line is based on butyl rubber and/or polyisobutylene. Due to their inherent tackiness, butyl and PIB sealants adhere to metals, glass, ceramics, mineral substrates, wood, PS, EPDM and other plastics.

- Plastic sealing
- 1K solution
- Final properties directly upon application
- High flexibility even at low temperatures
- Excellent adhesion to almost all substrates
- Good resistance to water and ageing
- Low permeability to water vapour and gases
- Self-welding

Henkel classification of plastic sealants

Flat, Round, Pre-Cut Profiles

- Wound on reels or cut to length
- No application equipment required

Putties

- Easily shapeable kneading mass
- Shaped by hand and pressed into gaps, joints or openings
- Excellent seal against water, moisture, gases and dust

Hotmelt Butyls

- Highly viscous and very tacky at room temperature
- Must be heated to 80°C to 120°C (or even higher) for application
- Applied from hobbocks (pails) or drums

Gun Grade Butyl Sealants

- Cold processable sealants applied at room temperature
- Applied from cartridges or foil cartridges

Industrial Sealants / Adhesives – Silane Modified Polymers

Product Table

What main function are you looking for?

	Elastic sealing		
	General purpose	High / medium strength	Self-levelling
Solution	**TEROSON MS 930**	**TEROSON MS 935**	**TEROSON MS 931**
			
Colour	White, grey, black	White, grey, black	White, grey, black
Consistency	Pasty, thixotropic	Pasty, thixotropic	Self-levelling
Shore A hardness (DIN EN ISO 868)	30	50	30
Depth of cure after 24 hr	4 mm	3 mm	3 mm
Skin formation time	18 min.	8 min.	20 min.
Tensile strength (DIN 53504)	0.9 MPa	2.8 MPa	0.8 MPa
Elongation at break (DIN 53504)	250%	230%	100%
Service temperature range	-50°C to +80°C	-40°C to +100°C	-40°C to +80°C
Pack sizes	290ml, 310ml, 570ml, 27kg	290ml, 310ml, 570ml	290ml
	TEROSON MS 930 • For sealing and bonding of plastics and metals • Universal range of applications • Broad adhesion range without use of primers • Excellent UV and weathering resistance	**TEROSON MS 935** • Elastic sealant/ adhesive • Broad adhesion range without use of primer • Excellent UV and weathering resistance • Good overpaintability	**TEROSON MS 931** • Self-levelling/ pourable • For the coating of surfaces • Broad adhesion range without use of primers • Good overpaintability • Universal range of applications

Handy Hints

- To improve adhesion on materials difficult to bond please use cleaner/adhesion promoter TEROSON SB 450 or Corona/Plasma treatment
- To increase cure speed, all TEROSON MS products (except MS 9399 and MS 500) can be accelerated by using the B-component TEROSON MS 9371B with a mix ratio of 10:1
- Application of TEROSON 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 additional UV protection of the bond line where it is directly exposed to intense UV light through the transparent material

Elastic bonding				Coating
High / medium strength	**General purpose**	**Flame retardant**	**2K rapid cure**	**Fast cure**
TEROSON MS 650	**TEROSON MS 939**	**TEROSON MS 939 FR**	**TEROSON MS 9399**	**TEROSON MS 9320 SF**
				
Black	White, off-white, grey, black	Black, grey	White, grey, black	Grey, ochre, black
Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic	Pasty, thixotropic
55	55	55	55	30
3 mm	3 mm	3 mm	2K system	4.5 mm
5 min.	5 min.	20 min.	35 min.	12 min.
3 MPa	3.0 MPa	3.5 MPa	3.0 MPa	–
200%	250%	180%	150%	–
-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C
Not available in the U.K.	290ml, 570ml, 25kg, 280kg	290ml, 570ml, 25kg	2 x 25ml*, 2 x 200ml**	300ml
TEROSON MS 650 • Fast skin formation • High green strength	**TEROSON MS 939** • Broad adhesion range without use of primers • Excellent UV and weathering resistance • Universal range of applications	**TEROSON MS 939 FR** • Good fire resistance and low smoke emission • High strength assembly and vibration damping • Broad adhesion range without use of primers • Excellent UV and weathering resistance	**TEROSON MS 9399** • Curing Independent of air/ humidity • Easy handling 2K system • Short tack-free time • High initial strength	**TEROSON MS 9320 SF** • Sag resistant • Sprayable and brushable • Overpaintable • Fast curing

*Only available in white
**Available in white, grey, black

Industrial Sealants / Adhesives – Silane Modified Polymers
Product List

Product	Colour	Consistency	Shore A hardness (DIN EN ISO 868)	Depth of cure after 24 hr	Skin formation time	Tensile strength (DIN 53504)
TEROSON MS 500	White, black	Pasty, high holding force	63	3 mm	12 min.	3 MPa
TEROSON MS 647	White, black	Pasty, thixotropic	50	3 mm	15 min.	2.8 MPa
TEROSON MS 650	Black	Pasty, thixotropic	55	3 mm	5 min.	3 MPa
TEROSON MS 930	White, grey, black	Pasty, thixotropic	30	4 mm	18 min.	0.9 MPa
TEROSON MS 931	White, grey, black	Self-levelling	30	3 mm	20 min.	0.8 MPa
TEROSON MS 935	White, grey, black	Pasty, thixotropic	50	3 mm	8 min.	2.8 MPa
TEROSON MS 937	White, grey, black	Pasty, thixotropic	50	4 mm	8 min.	3.0 MPa
TEROSON MS 939	White, off-white, grey, black	Pasty, thixotropic	55	3 mm	5 min.	3.0 MPa
TEROSON MS 939 FR	Black, grey	Pasty, thixotropic	55	3 mm	20 min.	3.5 MPa
TEROSON MS 9302	Grey, brown	Thixotropic	30	3 mm	10 min.	1.1 MPa
TEROSON MS 9320 SF	Grey, ochre, black	Pasty, thixotropic	30	4.5 mm	12 min.	–
TEROSON MS 9360	Black	Pasty, thixotropic	60	3 mm	5 min.	3.5 MPa
TEROSON MS 9380	White, grey	Pasty, thixotropic	70	3 mm	5 min.	3.5 MPa
TEROSON MS 9399	White, grey, black	Pasty, thixotropic	55	2K system	35 min.	3.0 MPa

Cleaner
TEROSON SB 450 – alcoholic solution designed for cleaning and to improve adhesion (thin fluid, colourless)

B-Component (Hardener) for 2K Curing
TEROSON MS 9371 B – accelerator paste for TEROSON MS adhesives and sealants (pasty, thixotropic, white)

	Elongation at break (DIN 53504)	Service temperature range	Pack sizes	Comments / special features
	200%	-40°C to +100°C	310ml, 25kg	UL QMFZ2 electrical safety, hot applicable
	200%	-40°C to +100°C	Not available in the U.K.	2K / UL QOQW2 mechanical safety
	200%	-40°C to +100°C	Not available in the U.K.	Unique ultra-fast curing as 2K
	250%	-50°C to +80°C	290ml, 310ml, 570ml, 27kg	2K / UL QMFZ2 electrical safety
	100%	-40°C to +80°C	290ml	Sensory analysis acc. to DIN 10955
	230%	-40°C to +100°C	290ml, 310ml, 570ml	1K/2K / UL QMFZ2 electrical safety
	220%	-40°C to +100°C	290ml, 570ml, 27kg	ILH fungus resistance to DIN EN ISO 864 (VDI 6022)
	250%	-40°C to +100°C	290ml, 570ml, 25kg, 280kg	1K/2K / UL QOQW2 mechanical safety
	180%	-40°C to +100°C	290ml, 570ml, 25kg	Flame retardant approvals: Flammability + smoke DIN 5510-2, ASTM E162 + E 662, NF F, 16-101 M1/F0
	250%	-40°C to +80°C	Not available in the U.K.	ILH fungus resistance to DIN EN ISO 864 (VDI 6022)
	–	-40°C to +100°C	300ml	Fast curing, no cracks, no rust penetration
	200%	-40°C to +100°C	290ml, 25kg, 250kg	High strength
	120%	-40°C to +100°C	290ml, 25kg	GL (Germanischer Lloyd) approved elastomeric adhesive
	150%	-40°C to +100°C	2 x 25ml*, 2 x 200ml**	ILH fungus resistance to DIN EN ISO 864 (VDI 6022), ASTM E 162 + E 662

*Only available in white
**Available in white, grey, black