

TECHNICAL DATASHEET

1680-1

(Resin 1678-1 + Hardener 1664)

Description

1680-1 is a fast-curing two-part modified methacrylate adhesive designed for structural bonding of a wide range of plastic, metal and composite assemblies. Combined at a 10:1 (V:V) mixing ratio, the cured adhesive offers a balanced profile of properties and excellent resistance to dynamic loads. 1680-1 is mainly used as a universal grade for industrial applications.

1680-1 fulfills the requirements according to DIN EN 45545-2 chart 5, R1, R7 and R17 with HL1-3.

Advantages

- Good adhesion to a wide range of materials
- Non-drip paste
- Bridges gap up to 10 mm
- Minimum gap 200 – 300 µm (Spacer)
- Excellent resistance against dynamic loads
- Optically visible hardening process – colour changes from blue to green
- Resistant against outside conditions and humidity
- 100% reactive compound
- Lower odour than MMA adhesives
- High flashpoint > 60 °C

Product data

Chemical base	Modified methacrylate adhesive
Curing system	2-Component-System
Mixing ratio by volume	10 : 1 (1678-1 : Hardener 1664)
Mixing ratio by mass	10 : 1.10 (1678-1 : Hardener 1664)
Colour (after curing)	Olive green
Shelf life in 50ml 10:1 cartridge	12 months at 4 – 23 °C
Shelf life in 490ml 10:1 cartridge	12 months at 4 – 23 °C

Physical properties (uncured):

Viscosity acc. to DIN EN ISO 3219 (cone/plate shear rate 1 s^{-1})

Resin	1678-1	~ 200'000 mPa•s
Hardener	1664	~ 60'000 mPa•s

Viscosity acc. to DIN EN ISO 3219 (cone/plate shear rate 35 s^{-1})

Resin	1678-1	~ 20'000 mPa•s
Hardener	1664	~ 6'000 mPa•s

Density	Resin	1678-1	1.04 g/cm ³
	Hardener	1664	1.15 g/cm ³

Colour	Resin	1678-1	Off-white, pale pink
	Hardener	1664	Blue

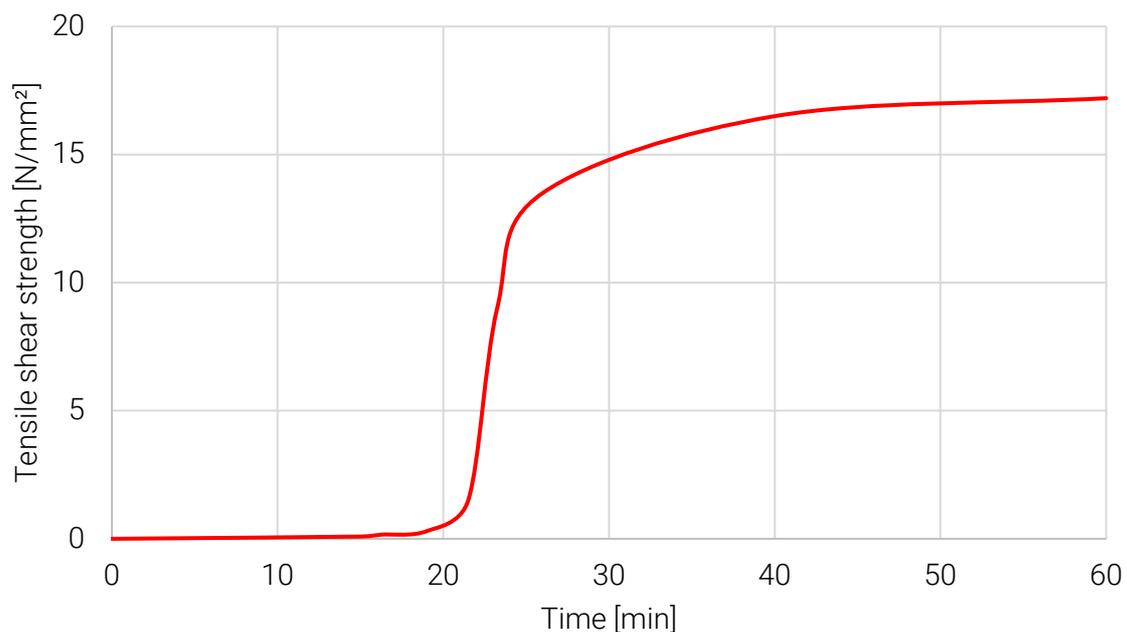
Gap filling	Up to 10 mm
Minimum gap / Spacer	200 – 300 μm

Curing properties:

Application temperature	+10 °C to +40 °C
Open time at 23°C	8 – 12 minutes
Fixture time at 23°C [$\sim 1 \text{ N/mm}^2$]	~ 20 minutes
Functional strength at 23°C [$\sim 10 \text{ N/mm}^2$]	~ 24 minutes
Final strength at 23°C	~ 24 hours

Tensile shear strength on steel (corundum-blasted) acc. to EN 1465 at 23°C

Strength build-up



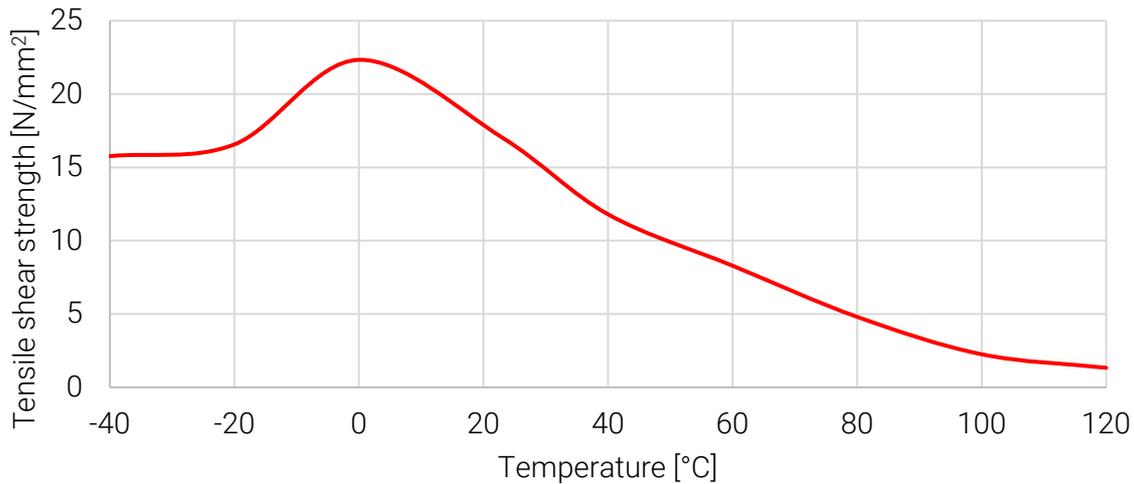
Physical properties (cured):

Usage temperature

-40 °C to +100 °C

Tensile shear strength according to DIN EN 1465, steel-steel corundum-blasted

Strength at different temperatures



Flexural modulus (DIN EN ISO 178)
after 24 h at 23°C

~ 500 N/mm²

Tensile strength (ISO 527-2/1A)
after 24 h at 23°C

~ 14 N/mm²

Elongation at break (ISO 527-2/1A)
after 24 h at 23°C

~ 65 %

Lap shear strength (DIN EN 1465)

Curing: 24 hours at 23 °C, test temperature 23 °C, metals and composites corundum blasted

Steel	~ 16 N/mm ²
Stainless steel	~ 16 N/mm ²
Aluminium	~ 17 N/mm ²
GFRP (Epoxy)	~ 16 N/mm ²
GFRP (Polyester)	~ 9 N/mm ² (X)
CFRP	~ 18 N/mm ²
ABS	> 5 N/mm ² (X)
PMMA	> 4 N/mm ² (X)
PC	> 4 N/mm ² (X)
PS	> 2 N/mm ² (X)

(X) = Failure of test specimen

Chemical resistance

Excellent in

Hydrocarbons
Acidic solutions (pH 3 – 10)
Alkaline solutions (pH 3 – 10)
Salt solutions

Unstable in

Polar solvents
Strong acidic/alkaline solutions

Handling and storage

Due to the high reactivity of the product and the exothermic curing process, never mix bigger amount of the components. The heat might evaporate parts of the formulation and cause strong smell. Do not waste exceeded material in plastic containers, because of the danger of melting.

Slight serum formation may occur during storage.

The serum does not imply any quality issues and can be ejected when levelling the cartridge before first use.

Precautions

For your own safety, please refer to the information of the concerned MSDS and for the correct handling the “user instructions”.

The information in this data sheet is based on the results of our research and experience. However, the suggestions herein concerning the use, application, and processing of the products (collectively, „the methods“) **are non-binding recommendations only**. It is the user’s sole responsibility to determine the suitability and safety of these methods, based on the user’s particular purpose in using the products. Before relying on the reliability and safety of any parts that are bonded using the products, it is extremely important that the user test the reliability and safety of the parts that are bonded. Failure to do so could result in serious personal injury. Because of the use of the products are within the purchaser’s sole control, Kisling Corporation specifically disclaims all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose, arising from the sale or use of the products described herein. Kisling Corporation specifically disclaims any liability for consequential, incidental, or other damages of any kind, including lost profits. Kisling Corporation’s liability for damages shall not exceed the purchase price of the products used.

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