

## TECHNICAL DATASHEET

### 1680

(Resin 1678 + Hardener 1664)

#### Description

1680 is a non-sag, two-part modified methacrylate adhesive designed for structural bonding. The cured adhesive offers a balanced profile of properties with high stiffness combined with a strong toughness. 1680 is mainly designed as an universal grade for industrial applications where composites are involved.

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

#### Advantages

- Non-dropping 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
- Low odour
- High flashpoint

#### Product data

Chemical base	Modified methacrylate adhesive
Curing system	2-Component-System
Mixing ratio by volume	10 : 1 (Resin 1678 : Hardener 1664)
Colour (after curing)	Olive green

#### Physical properties (uncured):

Viscosity at 25°C	Resin 1678 (Brookfield, spindle 7, 2.5 rpm)		~ 135'000 mPa•s
	Resin 1678 (Brookfield, spindle 7, 20 rpm)		~ 70'000 mPa•s
	Hardener 1664 (cone/plate, shear rate 1 s <sup>-1</sup> )		~ 60'000 mPa•s
	Hardener 1664 (cone/plate, shear rate 35 s <sup>-1</sup> )		~ 6'000 mPa•s
Density	Resin	1678	~ 1.07 g/cm <sup>3</sup>
	Hardener	1664	~ 1.15 g/cm <sup>3</sup>
Colour	Resin	1678	Off-white
	Hardener	1664	Blue
Shelf life	12 month at 4 – 23 °C		
Flashpoint	> 60°C		

Gap filling  
Minimum gap / Spacer

Up to 10 mm  
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 (>1 N/mm<sup>2</sup>)

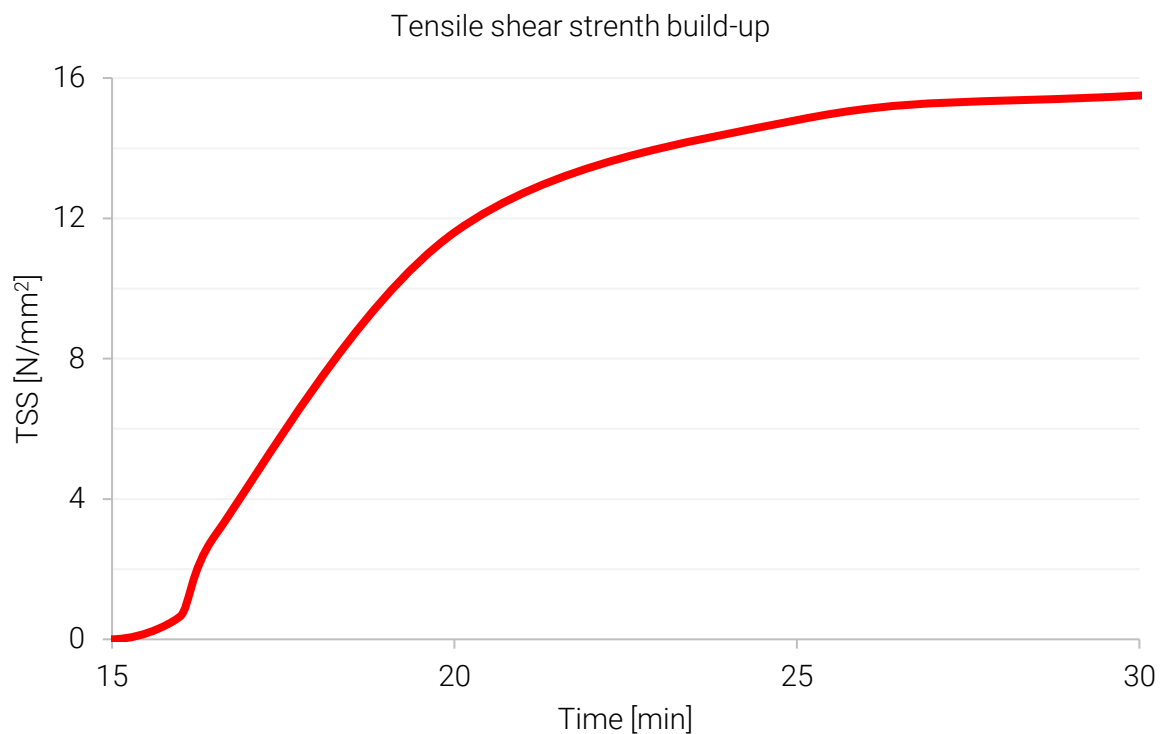
~ 17 minutes

Functional strength at 23°C (>10 N/mm<sup>2</sup>)

~ 20 minutes

Final strength at 23°C

24 hours



**Physical properties (cured):**

E Modulus (DIN EN ISO 178)  
after 24 h at 23°C

~ 550 N/mm<sup>2</sup>

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

~ 14 N/mm<sup>2</sup>

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

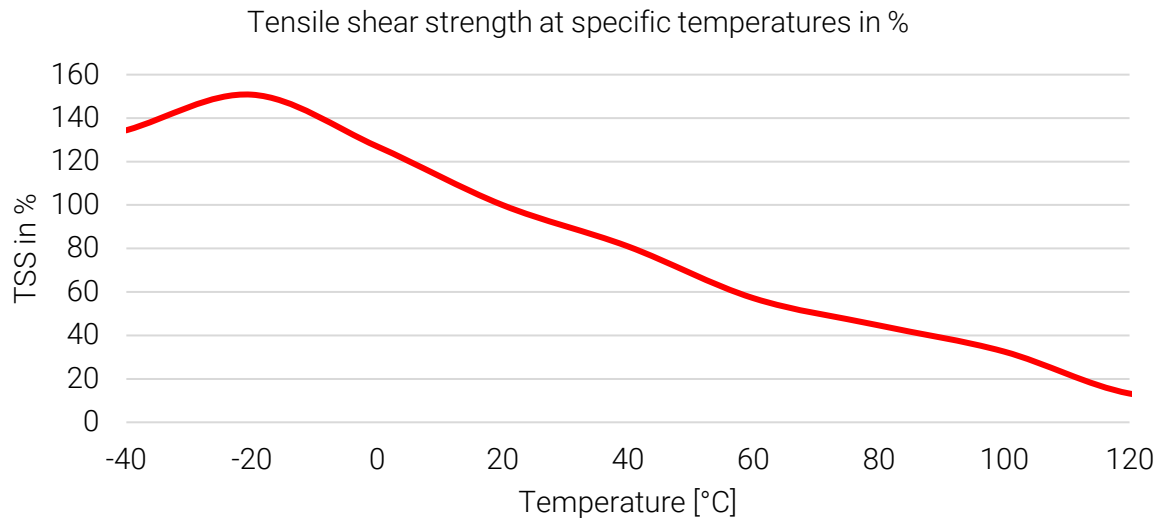
~ 65 %

Shore D

~ 63

Usage temperature

- 55°C to + 120°C



#### Lap shear strength (DIN EN 1465)

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

Steel	~ 19 N/mm <sup>2</sup>
Stainless Steel	~ 18 N/mm <sup>2</sup>
Aluminium	~ 17 N/mm <sup>2</sup>
Brass	~ 14 N/mm <sup>2</sup>
Copper	~ 13 N/mm <sup>2</sup>
GFRP Epoxy	~ 16 N/mm <sup>2</sup>
CFRP	~ 19 N/mm <sup>2</sup>
ABS	> 5 N/mm <sup>2</sup> (X)
PMMA	> 5 N/mm <sup>2</sup> (X)
PVC	> 4 N/mm <sup>2</sup> (X)
PC	> 8 N/mm <sup>2</sup> (X)
PA	~ 2 N/mm <sup>2</sup>

(X) = Failure of test specimen

### Chemical resistance

Excellent in

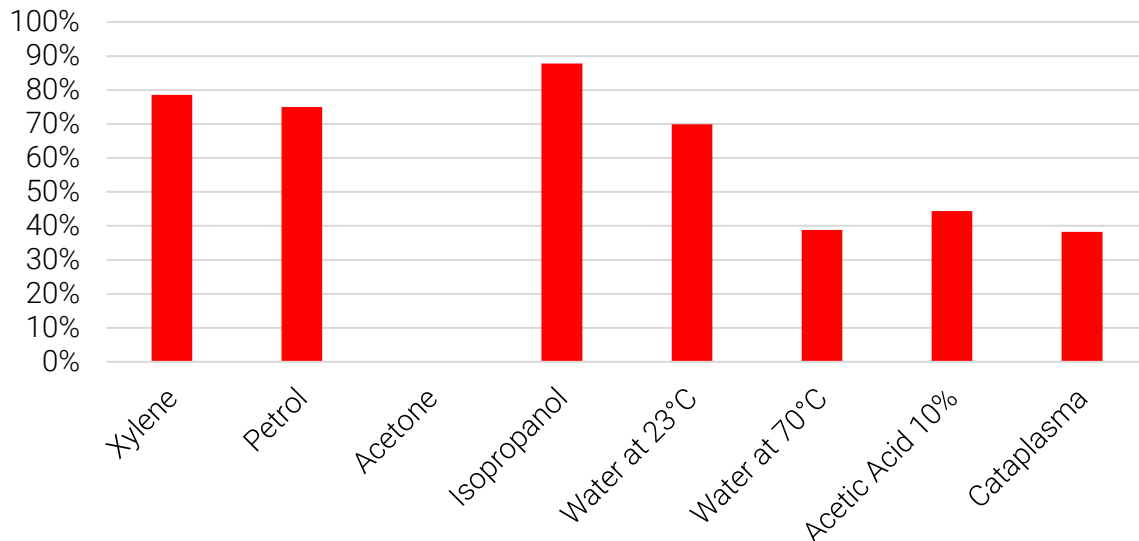
Hydrocarbons  
Acidic solutions (pH 3 – 10)  
Alkaline solutions (pH 3 – 10)  
Salt solutions

Unstable in

Polar solvents  
Strong Acidic/alkaline solutions

### Chemical resistance

Tensile shear strength acc. to DIN EN 1465; steel plates degreased and corundum-blasted;  
curing for 7 days at 23 °C, storage for 30 days at 23 °C (excepted: Cataplasma); % to the reference



### 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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