

TECHNICAL DATASHEET

Flexforce 1690

(Resin 1690A + Hardener 1690B)

Description

Flexforce 1690 composed of resin 1690A + hardener 1690B is a fast-curing two-part modified methacrylate adhesive to be combined in a 10:1 (V:V) mixing ratio, the cured adhesive is tough-elastic in character and as such offers excellent resistance to dynamic loads.

It is designed for structural bonding of a wide range of plastic, metal and composite assemblies – e.g. in white goods, caravan or railway applications where aesthetic gap bridging combined with great toughness is appreciated.

1690 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
- Tough-elastic – for bigger and longer parts out of different materials
- Non-drip paste
- Bridges gap up to 8 mm
- Minimum gap 200 – 300 µm (Spacer)
- Excellent resistance against dynamic loads
- Resistant against outside conditions and humidity
- Lower odour than MMA adhesives
- Safe processing - High flash point > +60°C

Product data

Chemical base		Modified methacrylate adhesive
Curing system		2-Component-System
Mixing ratio		Resin 1690A : Hardener 1690B
	by volume	10 : 1
	by mass	10 : 1.49
Colour (resin / hardener / after curing)		pale pink / white / Off-white*
Shrinkage		7.8%
Flashpoint		> +60°C
Gap filling		up to 8 mm
Minimum gap / Spacer		200 – 300 µm
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
Shelf life Resin 1690A in 20kg		<i>in testing</i> at 4 – 23 °C
Shelf life Hardener 1690B in 2.5kg up to 20kg		12 months at 4 – 23 °C

Physical properties (uncured)

Viscosity at 25 °C acc. to DIN 53019 (cone/plate; shear rate 1 s⁻¹)

Resin 1690A	~ 220'000 mPa•s
Hardener 1690B	~ 40'000 mPa•s

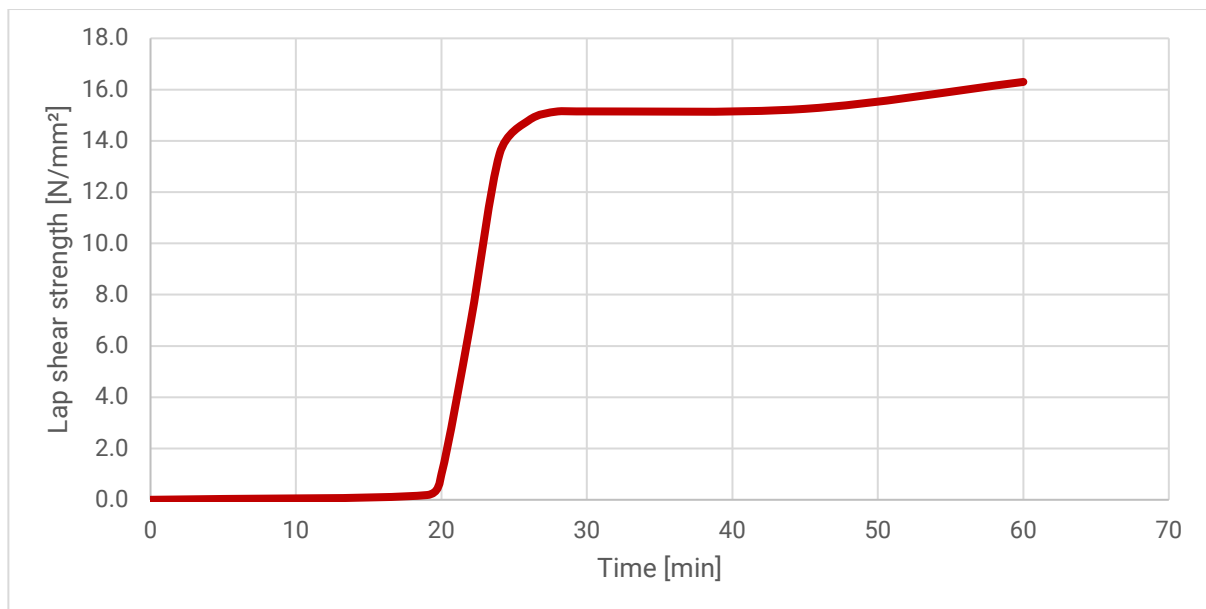
Viscosity at 25 °C acc. to DIN 53019 (cone/plate; shear rate 35 s⁻¹)

Resin 1690A	~ 30'000 mPa•s
Hardener 1690B	~ 10'000 mPa•s

Density	Resin 1690A	1.07 g/cm ³
	Hardener 1690B	1.59 g/cm ³

Curing properties:

Application temperature	+10 °C to +40 °C
Open time at 23°C	> 9 minutes
Fixture time at 23°C [>1 N/mm ²]	20 - 30 minutes
Functional strength at 23°C [~ 10 N/mm ²]	35 - 45 minutes
Final strength at 23°C	~ 24 hours

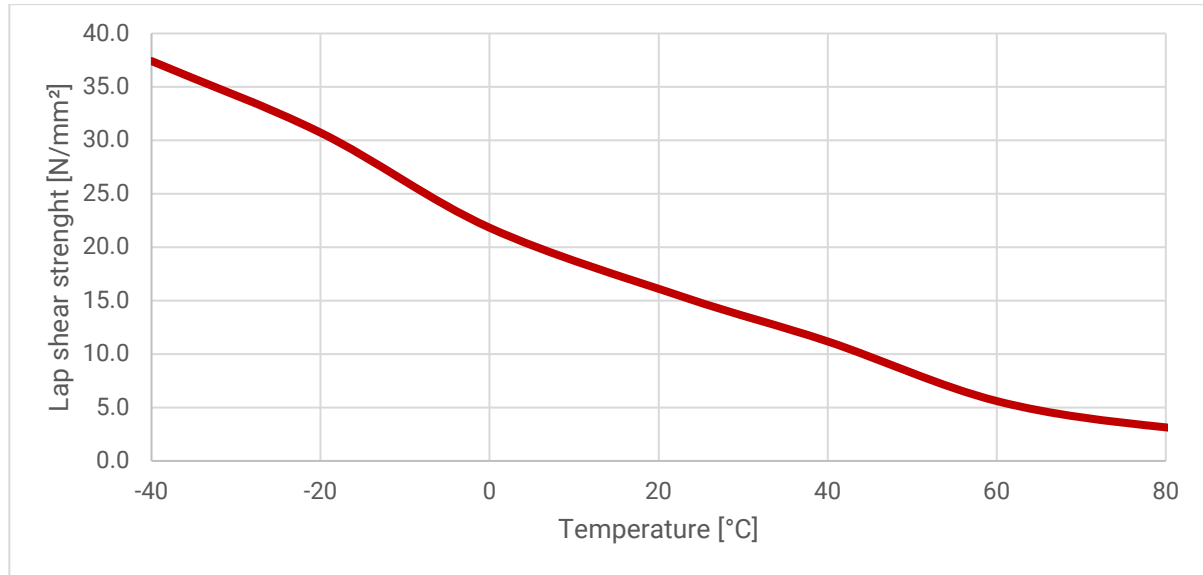


Strength build up

Physical properties (cured)

Thermal range

-40 °C to +80 °C



Strength vs. temperature

Shore D hardness

~ 60

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

~ 10 N/mm²

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

~ 150 %

Lap shear strength (DIN EN 1465)

Curing: 24 hours at 23 °C, test temperature 23 °C, metals & composites corundum blasted / plastics cleaned

Steel	~ 15 N/mm ²
Stainless steel	~ 15 N/mm ²
Aluminium	~ 15 N/mm ²
GFRP (Epoxy)	~ 14 N/mm ²
ABS	> 6 N/mm ² (X)
PMMA	> 5 N/mm ² (X)
PC	> 8 N/mm ² (X)
PVC	> 7 N/mm ² (X)

(X) = Failure of test specimen

Impact strength (referring to ASTM D-950)

~ 13 kJ/m²

Chemical resistance (cured)

Stable in:

Isopropyl alcohol
Water
Acetic acid
Seawater
Hot water (70°C)

Unstable in:

Xylene
Petrol
Acetone

Flammability characteristics

DIN EN 45545-2 chart 5, R1, R7 and R17
UL 94

HL1-3
HB

Handling and storage

Due to the high reactivity of the product and the exothermic curing process, never mix large amounts of the adhesive. The heat can cause evaporation of certain components and create a strong odour. Do not collect large amounts of excess material in plastic containers, because of the danger of melting.

Precautions

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

* Exposure to weather conditions may cause discoloration of the adhesive.

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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