

MGS DRILLFILL20

CHARACTERISTICS

Approval	DNVGL
Application	Filling of gaps and cavities with fast curing liquid resin
Operational temperature	-40°C up to 70°C after full cure
Processing	at temperatures above 5°C
Features	Economical, clean and selective application by cartridges
Storage	Shelf life of 48 months in originally sealed containers
Usage category Annex VIII CLP	Professional and Industrial use

APPLICATION

MGS DRILLFILL20 is an epoxy-based solvent-free laminating resin system with the constituents EPIKOTE™ Resin MGS DFR20 and EPIKURE™ Curing Agent MGS DFH20. It is a higher viscous liquid resin with adhesion properties and the intended main application is the filling of gaps and cavities.

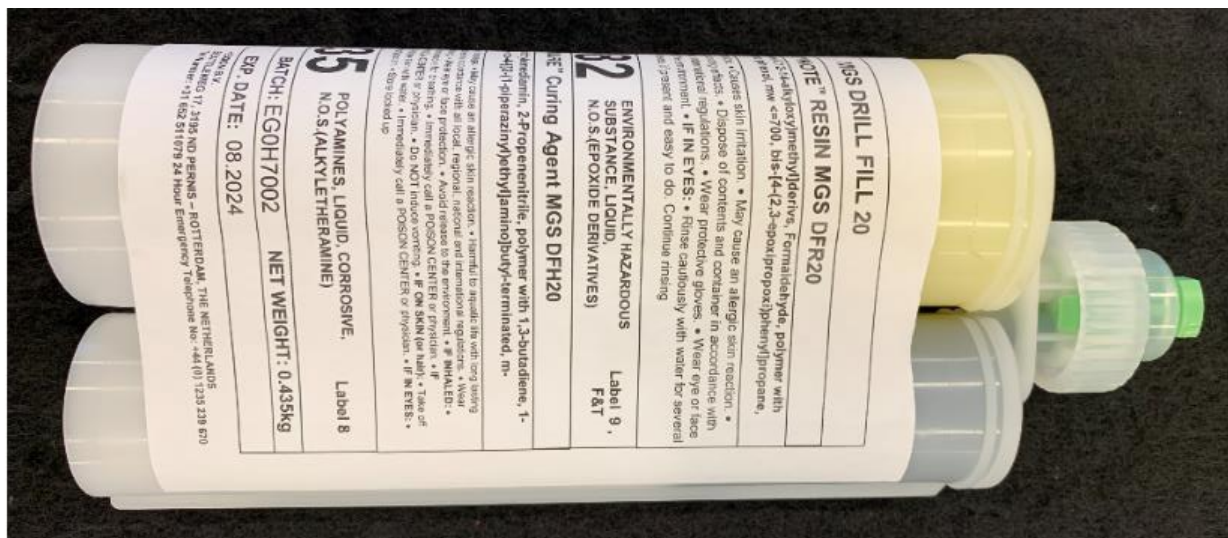
MGS DRILLFILL20 has a good degree of cure even at lower ambient temperatures. Good mechanical properties are already developed after initial curing at room temperature. However, to achieve full mechanical properties and thermal resistance, post-curing of at least 3h 60°C is recommended.

Surface Preparation

No special surface preparation is required, but surfaces should be dry, clean and free from grease or oil.

Applying & Curing

Standard packaging of MGS DRILLFILL20 is a 400ml SBS (side by side) cartridge including resin and curing agent which facilitates easy and accurate application. The cartridges are an ideal solution for repairs in the production and especially in operational environment.



The resin and curing agent components are strongly colored in order to make identification of homogenous mixing possible, especially at the very beginning of the mixing process. MGS DRILLFILL20 is only to be used with the supplied static mixers which provide good mixing and low loss of pressure. The tip of the mixing nozzle can be cut for an adaption of the flow rate.

We recommend processing as follows:

- Remove cap nut and plug.
- Attach mixer and secure with cap nut.
- Reject the first 5-15 grams until color is homogenous.

Processing times must be checked with the intended application and environmental temperatures. The recommended temperature for application is between 15 and 30°C. Higher temperatures are possible but will shorten pot life. A temperature increase of 10°C will halve the pot life. At higher temperatures high exotherm temperatures can occur in case of accumulations of larger quantities. At low temperatures viscosity will increase which need to be considered when filling very thin gaps.

Storage

We recommend storage at temperatures between 15 and 30 °C without exposure to direct sunlight. Please note that exposure to sun light, especially over longer time, can lead to color changes which however has no known effect on the processing and final properties of the product. MGS DRILLFILL20 shows no tendency to crystallize but lower temperatures will make processing more difficult.

In originally packed and closed cartridges the materials have a shelf life of minimum 4 years under the correct storage conditions.

The relevant industrial safety regulations for the handling of epoxy resins and hardeners are to be observed.

TYPICAL PROPERTIES

Property	Unit	Resin MGS DFR20	Curing Agent MGS DFH20
Color		Yellow	Blueish-Green
Density ¹⁾	g/cm ³	1.16	1.04
Viscosity ¹⁾	Pa·s	6	30
Mixed Density ¹⁾	g/cm ³	1.12	
Pot life ²⁾	min	50 – 60	
Ultimate T _G ³⁾	°C	90	

These are typical values and should not be construed as specifications.

Measuring conditions:

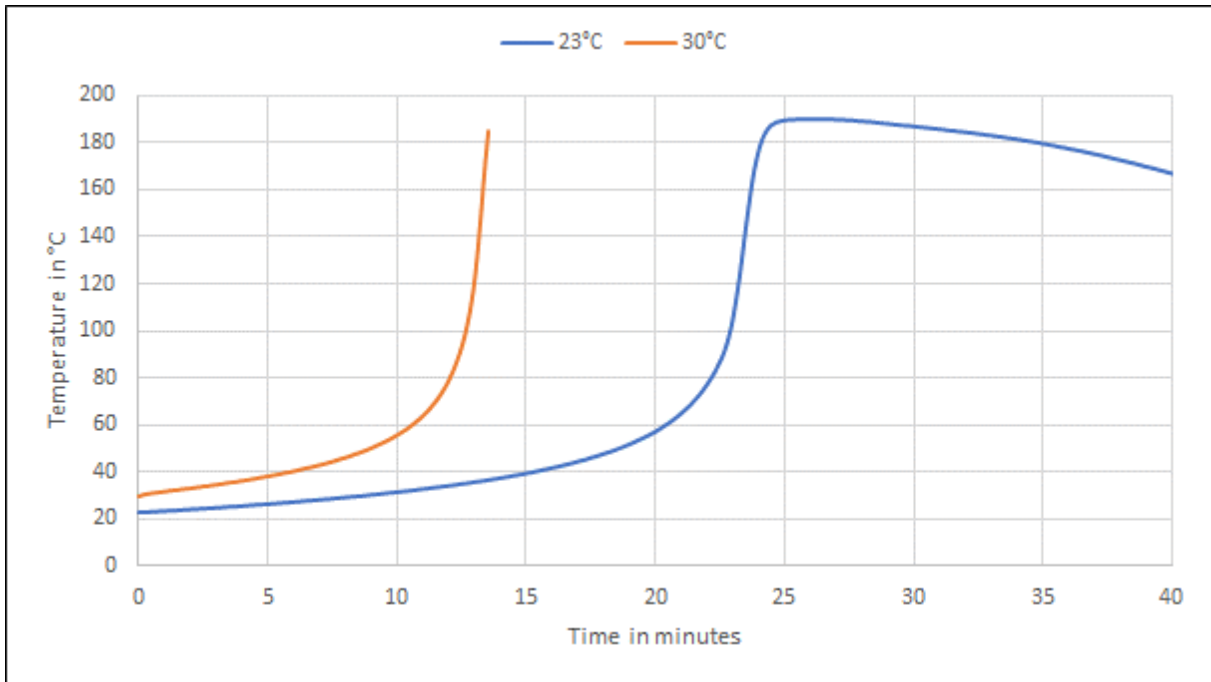
- 1) measured at 23°C
- 2) small quantities at 23°C in representative setup of application (→ see Temperature Development)
- 3) DSC midpoint, 20K/min

MIXING RATIO

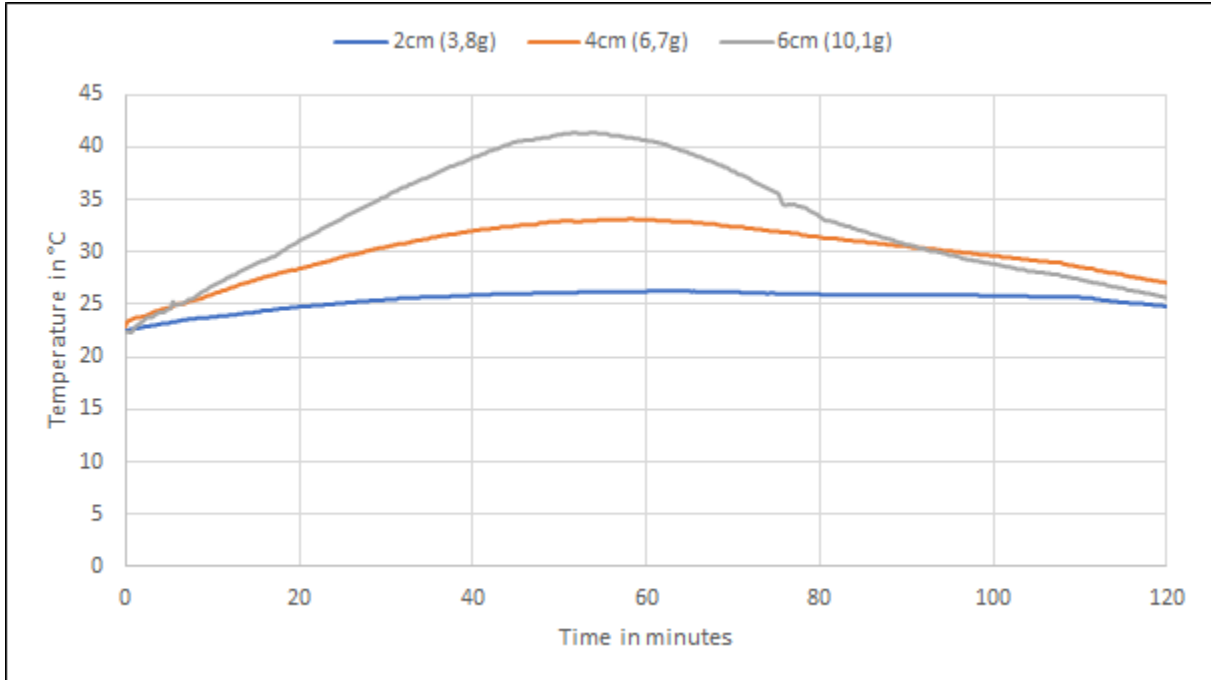
	Parts curing agent MGS DFH20 per 100 parts resin MGS DFR20
Parts by weight	45 ± 2
Parts by volume	50 ± 2

The mixing ratio is included for information only, the kit of DRILLFILL20 is prepared with the correct mixing ratio.

TEMPERATURE DEVELOPMENT

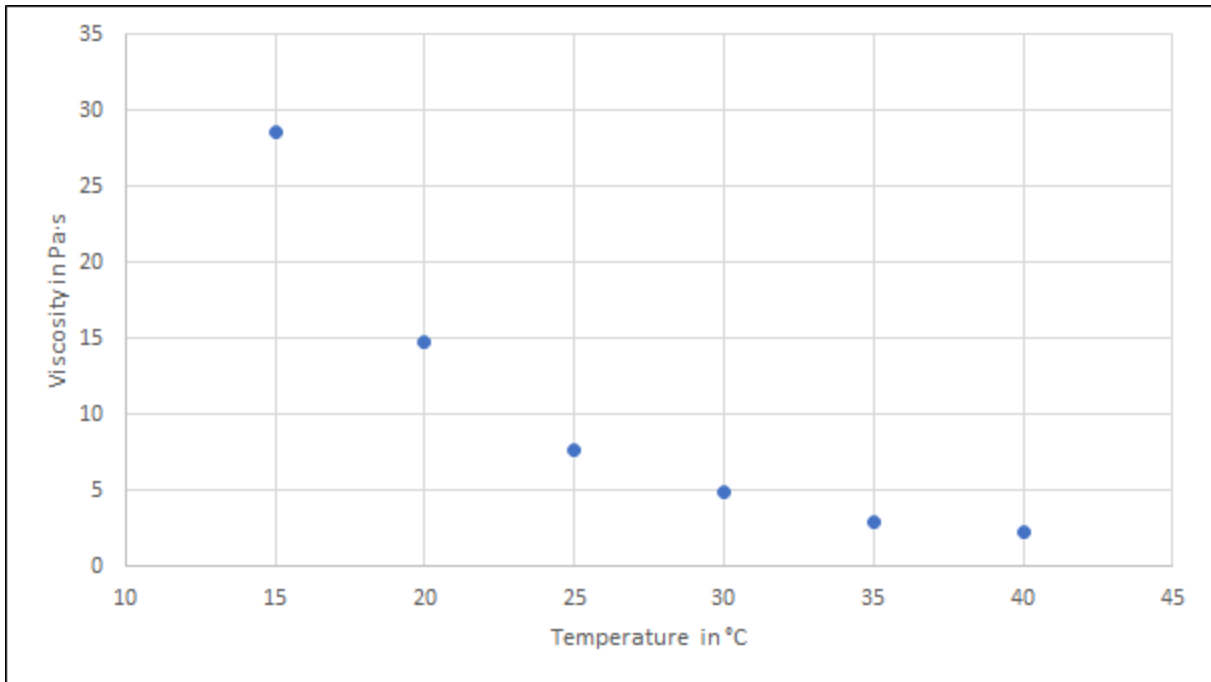


Measuring conditions: 100g sample (standard lab test)



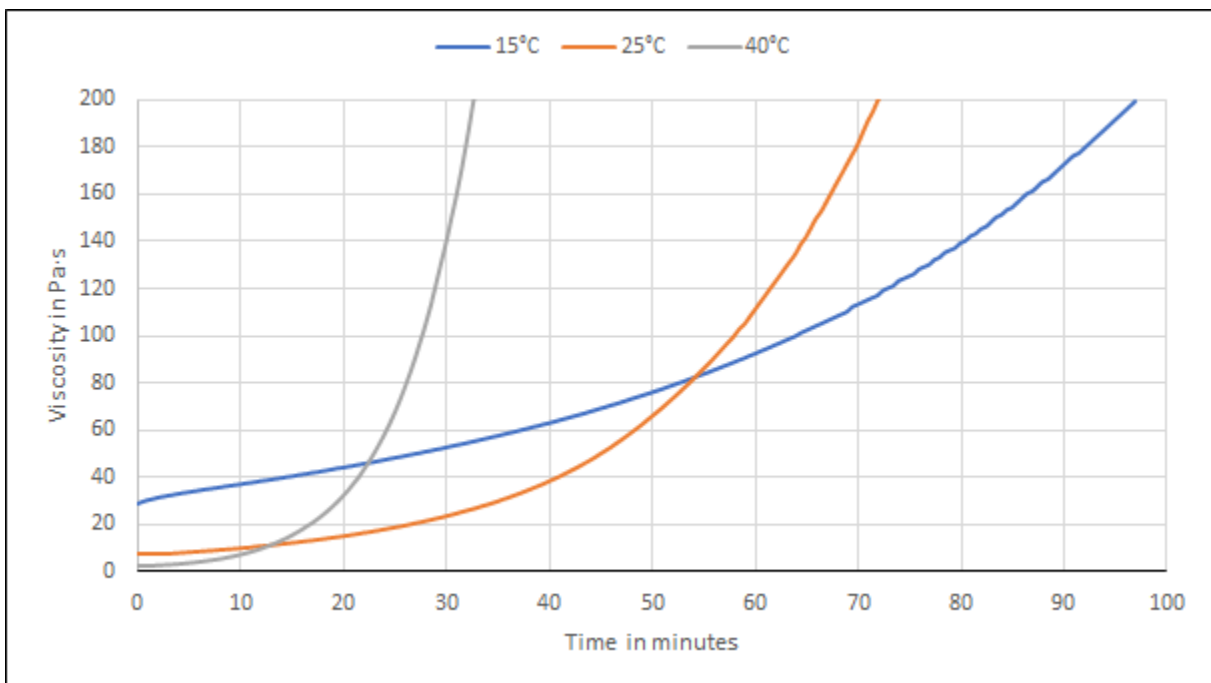
Measuring conditions:
Filling levels and quantities in test tube at 23°C (representative of intended application)

MIXTURE VISCOSITY



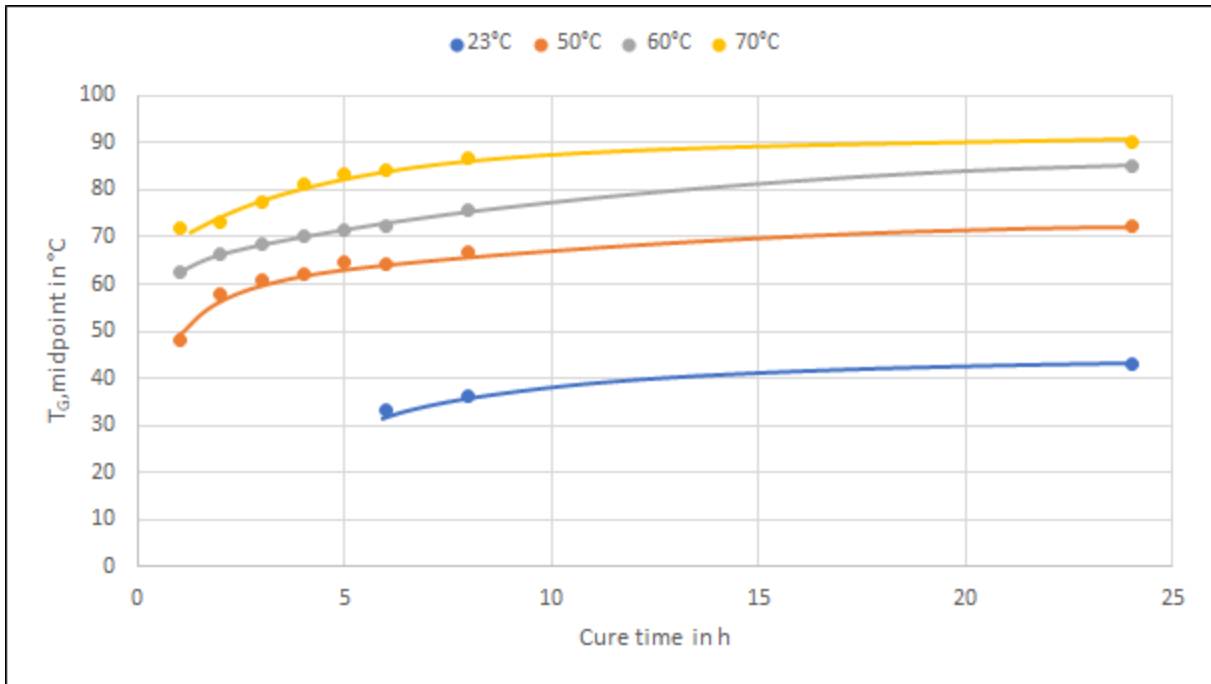
Measuring conditions: Rotational viscometer, 25mm parallel plate, gap 0.5mm

VISCOSITY DEVELOPMENT



Measuring conditions: Rotational viscometer, 25mm parallel plate, gap 0.5mm

T_g DEVELOPMENT



Measuring conditions: DSC-measuring heat rate: 20°C/min, sample mass 10-20 mg

MECHANICAL DATA

Single lap shear test¹⁾ DIN EN ISO 1465	Bond line [mm]	0.5	3.0
	Lap Shear Strength¹⁾ [MPa]	~ 31	~ 18
Peel strength DIN EN ISO 11339	> 2 N/mm		
Tensile test²⁾ DIN EN ISO 527-2	Tensile strength [MPa]	~ 54	
	Tensile modulus [GPa]	~ 2.5	
	Tensile strain at break²⁾ [%]	~ 4.2	
All specimens cured 5h 80°C			

1) Lap shear Strength strongly depends on specimen configuration, especially laminate thickness

2) Tensile strain at break results strongly depends on specimen quality, especially void content

All tests accomplished at standard climate

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