# MGS Coolset05
## EPIKOTE™ Resin MGS CSR05
## EPIKURE™ Curing Agent MGS CSH05

## CHARACTERISTICS

| | |
|---|---|
| **Approval** | DNV |
| **Application** | Repair lamination of composite structures |
| **Operational temperature** | -40 °C up to +60 °C after appropriate cure |
| **Processing** | At temperatures between 5 °C and 20 °C |
| **Features** | Pot life of approx. 10 – 20 min<br>Easy-to-use bag solution |
| **Storage** | Shelf life of 48 months in originally sealed packaging |

## APPLICATION AND USAGE

MGS Coolset05 is a laminating resin which is especially suited for fast-setting repairs of wind rotor blades. It contains no solvents and fillers and can be used for processing of all common fibers.

Coolset05 cures already at temperatures of 5°C. After precuring at room temperature, the manufactured components are workable and demoldable. The final properties, however, will only be reached after postcuring at temperatures of more than 40°C.

Due to the chemical characteristics of this system we do not expect any problems concerning compatibility (e. g. blistering, tearing or changes in color), when it is processed with gelcoats. However, comprehensive tests are indispensable.

Although Coolset05 is very unlikely to crystallize at low temperatures, storage conditions of 10-20 °C are recommended.

To use Coolset05, the following procedure need to be followed:

- Remove the clip which separates the two compartments containing resin and curing agent
- Knead the bag for at least 1 minute to thoroughly mix resin and curing agent. Pay attention not to forget the edges of the bag. At low temperatures, mixing is more difficult due to the increased viscosity of the material and may take longer
- Cut a desired opening into the bag, e.g. on an edge.
- After opening the bag, pay attention to any visual signs of an inhomogeneous mixture.

*Alternatively*:
Empty the bag completely into a cup and mix with a stick or appropriate tool for 1 minute

The materials have a shelf life of minimum 4 years, when stored in their originally sealed packaging.

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

**Attention:**

**Coolset 05 is a highly reactive system. Do not mix big quantities. Especially at higher environmental temperatures spread out quickly after mixing to decrease the temperature peak of exothermic reaction.**

## TYPICAL PROPERTIES

| Property | Unit | Resin CSR05 | Curing agent CSH05 |
|---|---|---|---|
| **Density[1)]** | g/cm³ | 1,19 | 1,06 |
| **Viscosity[1)]** | mPa·s | 800 | 850 |
| **Pot life[2)]** | min | Approx. 15 | |
| **Ultimate $T_G$** | °C | Approx. 80 | |

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

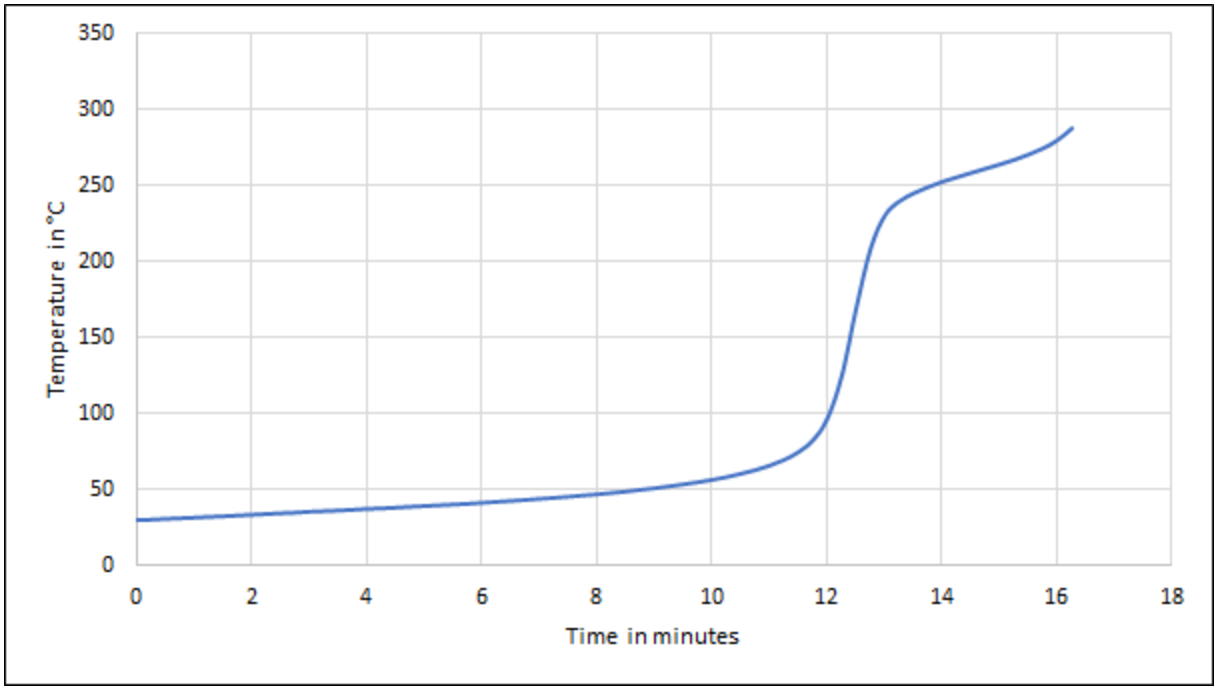
**Measuring conditions:**
1) measured at 25°C
2) 100g mixture at 23°C in PP cup
   Pot life is a standardized lab test under fixed conditions which does not necessarily reflect real process conditions. The usage or working time varies depending on real processing conditions (environmental temperature, lay-up thickness)
3) DSC after full cure, 20K/min, midpoint

## MIXING RATIO

| | Parts curing agent per 100 parts resin CSR05 |
|---|---|
| **Parts by weight** | 37 ± 2 |
| **Parts by volume** | 42 ± 2 |

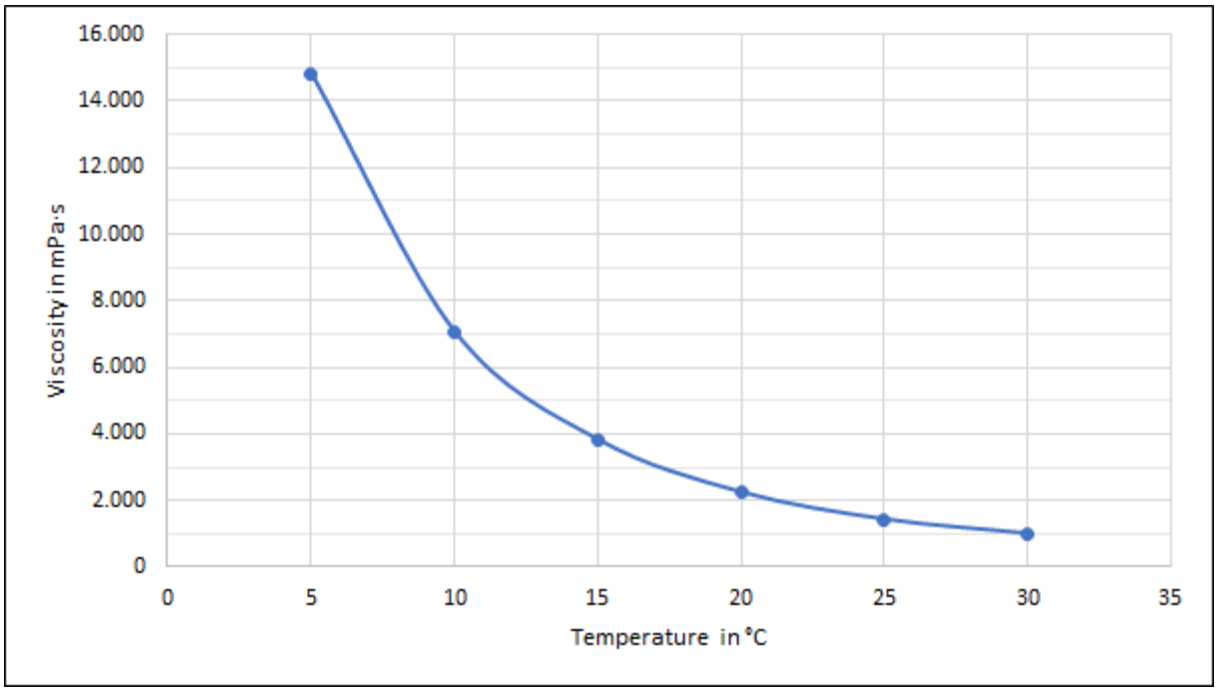
The mixing ratio is included for information only, the kit is prepared with the correct mixing ratio.

## TEMPERATURE DEVELOPMENT



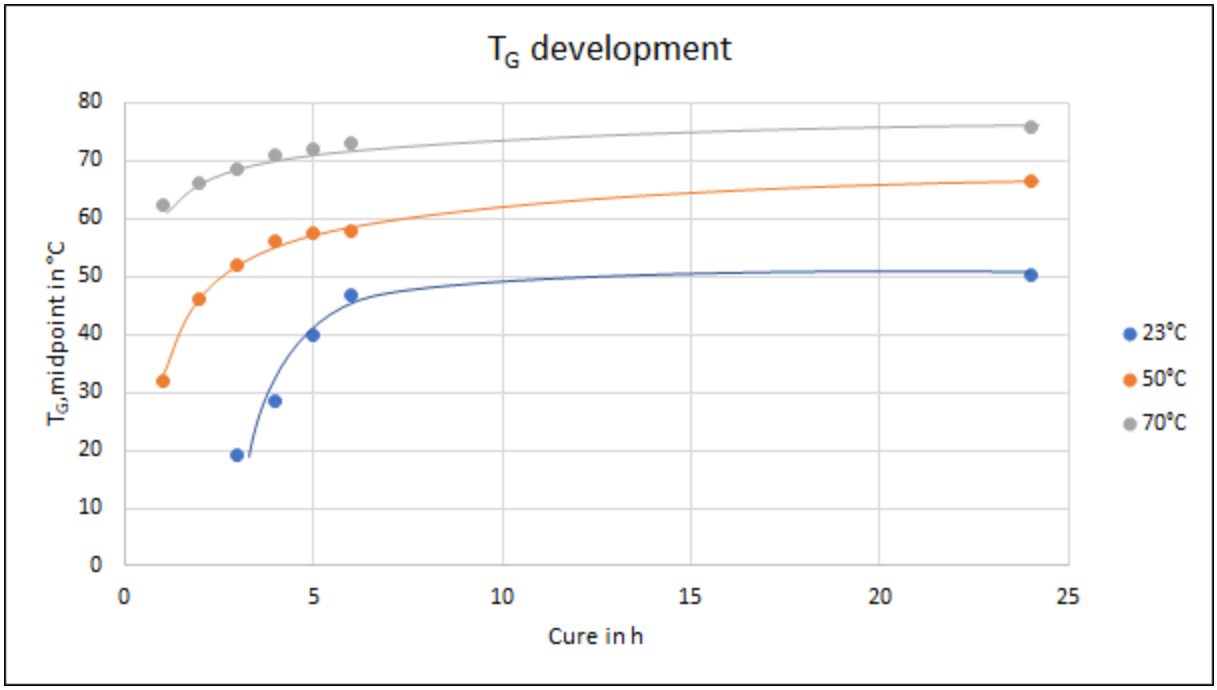

**Measuring conditions:** 100g in a paper cup at 30°C

## VISCOSITY OF MIXTURE




**Measuring conditions:** Viscometer, cone-plate configuration, diameter 50 mm, gap 0.1 mm

## $T_G$ DEVELOPMENT




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

## PYHISICAL AND MECHANICAL DATA

| Property | Unit | Typical Values |
|---|---|---|
| **Cured density**<br>DIN EN ISO 1183-1 | **Density [g/cm³]** | 1,21 |
| **Tensile test**<br>DIN EN ISO 527-2 | **Tensile strength [MPa]** | 79 |
| | **Tensile modulus [GPa]** | 3,7 |
| | **Tensile strain at break[1)] [%]** | > 4 |
| **Flexural test**<br>DIN EN ISO 178 | **Flexural strength [MPa]** | 130 |
| | **Flexural modulus [GPa]** | 3,7 |
| Curing: RT over night, heat with 1/3 K/min to 80°C, 2h @ 80°C | | |

[1)] Tensile strain at break results strongly depends on specimen quality, especially void content.
All tests accomplished at standard climate