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# BETAMATE 2096

## Crashresistant 2-Component Structural Adhesive

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### **Description / Application:**

**BETAMATE 2096** is a two component, epoxy based adhesive especially developed for the body shop and the repair of vehicles. The adhesive is used in the car to increase the operation durability, the crash performance and the body stiffness.

### **Properties:**

- Excellent adhesion to automotive steels, including coated steels and pretreated aluminium with good tolerance to oil and drylubes.
- Helps to increase or restore the stiffness and the crash stability of the entire car body.
- High durability of the adhesive and the adhesive bond.
- Due to its sealing capability the metal and weld points are protected against corrosion.
- Compatible with other mechanical and thermal joining techniques.

### **Application:**

The product is cold pumpable and applicable as a bead (mixing ratio 2:1; static or dynamic). It can be applied with the following parameters:

<b>application speed</b>	200 - 500 mm/s
<b>temperatures:</b> follower plate follower plate - doser	cold cold
nozzle	25 - 40°C

For an optimum tack of the adhesive, the parts to bond should be stored at 15°C or higher. In case of an application break longer than 30 minutes the heating of the application equipment should be switched of.

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**All Dow Automotive products are primarily developed in co-operation with the automobile manufacturers, according to their needs and their specifications; they are approved for the specific applications as defined by the customer.**

**The use of the product other than approved application have to be released in written form by the Technical Service of Dow Automotive.**

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## Technical Data:

<b>Basis</b>	component A: epoxy resin / component B: polymeric amines
<b>Colour</b>	A: blue / B: white
<b>Density 23°C (DIN 52451)</b>	1.12 g/ml
<b>Mixing Ratio</b>	A:B = 2:1
<b>Viscosity/Yield Point (23°C, Bohlin, Casson)</b>	component A: 142 Pas / 1.7 Pa component B: 1.6 Pas / 269 Pa
<b>Time to Handle</b>	approx. 1 hour
<b>Curing Condition</b>	ambient temperature: after 2 days 90% of end toughness temperatures up to 180 °C feasible
<b>Standard Curing</b>	60°C / 2 hours, 2 or 7 days at room temperature (Drive away strength after approx. 10 hours)
<b>Tensile Strength (DIN EN ISO 527-1 ); after 7 days at room temperature</b>	29 MPa
<b>Elongation at Break (DIN EN ISO 527-1); after 7 days at room temperature</b>	approx. 9 %
<b>E-Modulus (DIN EN ISO 527-1); after 7 days at room temperature</b>	1700 MPa
<b>Precuring: CRS 14O3 0.75mm induction 60s/105°C 30s/115°C</b>	3 MPa 2.5 MPa
<b>Lap Shear Strength (EN 1465) CRS 14O3, 0.75 mm 2d rt 2h 60°C 30min 180°C AA6016, pretreated 1.3mm 2d rt 2h 60°C 30min 180°C</b>	18 MPa 20 MPa 18 MPa 18 MPa 20 MPa 21 MPa
<b>Impact Peel Strength (ISO 11343) (CRS 14O3, 1.0 mm, 23°C, 2m/s) 2d rt 2h 60°C 30min 180°C</b>	11 N/mm 13 N/mm 13 N/mm

## Bonding Surface Preparation

Oily surfaces should be cleaned before the application. Depending on the oil, bonding on such surfaces may be possible. Further careful tests have to be done.

## Application Tool

**Cartridges: side by side cartridge:** hand-operated gun with mechanical piston: Mixpac DM 200-01.

**Single cartridge** (components one after another). Application with a standard 1-component hand-operated or pneumatic gun with piston bar (**no direct air guns !**). 1-component battery guns may be used, if they are equipped with adjustable feed.

**Drums, pails:** With standard 2K-based systems

1. For the Aftermarket (curing temp  $\leq 60^{\circ}\text{C}$ ) it is recommended to clean the surface with Betaclean 3350 before the application. On oily surfaces lower mechanical properties might be achieved.

2. If BM 2096 is applied from cartridges it is necessary to equalize the filling levels.

3. For the best performance it is recommended to reject the first few grammes of mixed adhesive.

4. During the storage time a crystallization of the resin may occur. By heating the adhesive to  $40 - 50^{\circ}\text{C}$  this physical process is reversible. All properties stay on the same level.

5. Before the application the material temperature of both the resin and the hardener should be at min.  $15^{\circ}\text{C}$ .

## Cleaning

Uncured material can be removed with BETACLEAN 3510.

**Attention:** The contact with bonded areas should be avoided.

## Containers

20 kg pails with PE-liner.

Cartridges:

side by side 0,24 kg (215ml /A+B)

universal single cartridge 0,22 kg (195 ml) / A+B) usable volume: 180ml

side by side 56g (50ml /A+B)

## Shelf life

Storable at temperatures below  $25^{\circ}\text{C}$  for 12 months.

The given data are standard values.

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## Health and Safety

### - Bulk Exothermic Reaction

The material curing reaction is exothermic. If the material is held in bulk the reaction is accompanied by a rapid build-up of exothermic heat. To avoid the risk of this bulk exothermy, containers of the material should in no circumstances be heated by e.g. hot plates or simple drum heaters. If heating a bulk quantity of the material is considered necessary, advice should be sought.

### - Caution

The adhesive resins are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should also be taken to prevent the uncured materials, from coming into contact with skin, since people with particularly sensitive skins may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleaned at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. For further and more detailed precaution measures see the Health and Safety Data Sheet.

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