TEROSON

Technical Data Sheet

TEROSON® EP 5055

Known as Panel Bonder
November 2024

Product description

TEROSON® EP 5055 Panel Bonder provides the following product characteristics:

Technology	Epoxy
Chemical type	Epoxy
Appearance (resin)	Black
Appearance (hardener)	Grey-green
Appearance (mixed)	Dark grey paste
Components	Two components – requires mixing
Viscosity	Medium
Mix ratio, (by volume) Resin : Hardener	1 : 1
Cure	Room temperature cure after mixing, accelerated cure possible at elevated temperature Accelerate Cure @ 60°C for 1h or 30min Cure @ 100°C (IR heater)
Application	Panel Bonding
Application temperature	10 to 35°C (50 to 95°F)
In service temperature	-40 to 80°C (-40 to 176°F)
Short exposure (up to 1 hr)	120°C (248°F)
Specific Benefits	• Improves body stiffness, increases NVH properties • Excellent corrosion resistance • Adheres to a wide range of materials (without primer) • Can be used in combination with spot welding and riveting

TEROSON® EP 5055 Panel Bonder is a solvent-free, two-component, high strength epoxy based structural adhesive with excellent corrosion protection for bonding metal panels (coated and uncoated), e.g. steel, aluminum or sheet molding compounds.

It is made for professionals to be used for stiffening and panel bonding applications in collision repair. It is ideal for non-safety critical panel bonding applications.

It is specially designed for metals used in the automotive industry or body repair shops, where high strength and corrosion protection properties are required.

The adhesive provides the following characteristics:

- Increases quality of work during a collision repair, with the purpose of bringing the vehicle to pre-collision condition
- Allows fewer welds, especially for difficult to reach areas
- Improves body stiffness, increases NVH properties, for extended vehicle lifetime and driving comfort
- Excellent corrosion protection to sustain joint integrity and cycle time
- Compatible with main types of metals used in automotive industry. Adheres to a wide range of materials (without primer)
- Can be used in combination with spot welding and riveting methods to meet OEM repair guidelines

Typical application areas are, side panels, quarter panel, door skin, roof skin, spare wheel housing and all non-safety critical body parts.

The material has very good adhesion to e.g.:

- bare steel
- aluminum and aluminum alloys
- zinc coated steel
- coated body parts

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin

Specific gravity @ 23°C	1.0
Viscosity, mPa·s (cP):	115,000
Physica Rheometer @25°C	
Plate/plate Ø 20 mm, Shear rate: 10 s^{-1}	

Hardener

Specific gravity @ 23°C	1.1
Viscosity, mPa·s (cP):	75,000
Physica Rheometer @25°C	
Plate/plate Ø 20 mm, Shear rate: 10 s^{-1}	

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TYPICAL CURING PERFORMANCE

Working Time

Working Time @ 23°C, minutes ISO 4587-DIN EN 1465	80

Fixture Time

Fixture Time, @ 23°C, hours Achieve 0.1 N/mm^2	7

Final Cure

Final Cure, @ 23°C, hours	48
Final Cure, Accelerated Cure @ 60°C, hours	1
Final Cure, Accelerated Cure @ 80°C, minutes	30

TYPICAL PERFORMANCE OF CURED MATERIAL

Physical properties

Elongation, at break, ISO 527, %		7
E-Modulus, ISO 527, cured for 7 days @23°C	N/mm^2 (psi)	800 (116,000)
Tensile Strength, at break, ISO 527-3	N/mm^2 (psi)	23 (3,300)

Adhesive properties

Cured for 7 days @ 23°C		
Lap Shear Strength, DIN 1465: CRS, sanded w/ 120 grit	N/mm^2 (psi)	21 (3,100)
"T" Peel Strength, ISO 11339: CRS, sanded w/ 120 grit	N/mm (lb/in)	>4 (32.5)

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions for use

During the storage and shipment, a crystallization of the resin may occur. By heating the adhesive above 60°C (140°F) for about 60 minutes, this physical change is reversible. Afterwards, all properties will remain on the same level. It is recommended that the adhesive should be used at a minimum temperature of 15°C (59°F).

Pretreatment:

1. Bonding surfaces must be free of oil, grease, dust, or any other contaminant. Pretreat bonding surfaces with TEROSON® VR 10 and a lint-free cloth.
2. Remove old adhesive from existing body parts to make sure they are back to bare metal and free of any contamination.
3. Both bonding surfaces must be cleaned again to remove grinding dust. Pretreat bonding surfaces with TEROSON® VR 10 and a lint-free cloth. Allow the prepared surfaces to dry for approx. 5 minutes.

Application:

1. Unscrew the coupling ring and remove the cap from TEROSON® EP 5055 Panel Bonder cartridge. Before attaching the static mixer to the cartridge, squeeze out a small amount of material until both adhesive components run equally. This is necessary to achieve a good mix of the two components.
2. Attach the static mixer and fix it with the coupling ring. Insert the cartridge into the application dispenser. Only use dispensers that are equipped with a piston rod. (LOCTITE® HD14 Handheld Pneumatic Dual Cartridge Dispenser or LOCTITE® HD14 Handheld Manual Dual Cartridge Dispenser).
3. When mixed, TEROSON® EP 5055 Panel Bonder is very dark grey in color (almost black). Discard first 5cm (~2 inches) of adhesive.
4. Apply and spread TEROSON® EP 5055 Panel Bonder with a spreader or brush. All bare metal areas should be covered with adhesive for corrosion protection. TEROSON® EP 5055 Panel Bonder can be used on steel and aluminum panels and as part of the preparation: With new panels, the ‘e-coat’ must be removed from the bonded area and adhesive applied and spread to cover the bare metal.
5. It may be necessary to change the static mixer if no material has been passed through it in over 30 minutes.
6. Join and fix components within the 80 minutes processing time (@23°C, 50%RH). The processing time depends on the temperature. If spot welding is required, it must be carried out during this initial period. Do not subject bonded parts to stress before final cure. To avoid the bonded parts being displaced, it is recommended that they should always be fixed during the process of curing.

Curing:

1. Cure speeds may vary based on adhesive and substrate temperatures.
2. TEROSON® EP 5055 cures without additional exterior heat only by chemical reaction after mixing resin and hardener at room temperature.
3. During the curing phase, avoid movement or stress until the product is fully cured.

Cleaning:

1. It is important to clean up excess adhesive from the work area and application equipment before it hardens.
2. Remove excess adhesive immediately with spatula or cloth and TEROSON® VR 10. Cured adhesive can only be removed mechanically.

Painting:

1. TEROSON® EP 5055 can be painted when initial bond strength has been reached.

Storage
Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.
Optimal Storage: 15°C to 25°C (59°F to 77°F). Under certain conditions the product is frost sensitive. It may crystalize but it is reversible 60°C (140°F).
Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel cannot assume responsibility for product which has beencontaminated or stored under conditions other than thosepreviously indicated. If additional information is required, please contact your local Henkel representative.

Product Specification
The technical data contained herein are intended as reference only and are not considered specifications for the product.
Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate
Please contact Henkel representative for related approval or certificate of this product.

Data Ranges
The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer
The information provided in this Technical data sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in the Technical data sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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