Technical Product Bulletin

TEROSON® EP 5089

(KNOWN AS TEROKAL® 5089)
November 2015

Product Type

One Component Heat Curable Epoxy Based High Performance Impact Resistant Structural Adhesive

Substrate Type

Hot-Dip Galvanized Steel, Electrogalvanized Steel, Cold Rolled Steel

Application

TEROSON EP 5089 (known as TEROKAL 5089) is used in the body shop for metal bonding. Application of TEROSON EP 5089 (known as TEROKAL 5089) provides improved impact resistance, stiffness, and durability in the structure.

Product Technology

TEROSON EP 5089 (known as TEROKAL 5089) is a heat curing, solvent free, metal to metal adhesive with good storage stability based on epoxy resins. The material can be spot-welded through and will reach maximum strength with curing temperatures between 155°C and 190°C. The product exhibits excellent strength and corrosion resistance at temperature extremes or after extensive aging and weathering. TEROSON EP 5089 (known as TEROKAL 5089) provides exceptional impact resistance over a wide temperature range.

Typical Properties

Property	Typical Results
Color	Purple
Odor	None
Consistency	Paste
Solids	> 98.5%
Specific Gravity	1.05 – 1.20
Tensile Strength	>30 MPa
Elongation at break	>8.5%
Young's Modulus	>1400 MPa
Curing Mechanism	Heat Cure
Viscosity (40 mm parallel plate, 50°C, shear rate 30 1/s)	30-50 Pa.s
Impact Peel Resistance ISO 11343 (2m/s), 0.8mm CRS, 23°C Bake 20 minutes at 177°C	 > 25 N/mm
Impact Peel Resistance ISO 11343 (2m/s), 0.8mm CRS, -40°C Bake 20 minutes at 177°C	 > 15 N/mm
Shear Strength at 23°C on EG (0.8 mm) Bake 10 minutes at 155°C	 > 18 MPa
Peel Resistance at 23°C on EG (0.8 mm) Bake 10 minutes at 155°C Bake 20 minutes at 177°C Bake 60 minutes at 190°C	 > 8 N/mm > 10 N/mm > 10 N/mm
Application Temperature	20°C - 50°C

Operating Summary

- It is recommended that testing is completed on substrates to be used to validate this material prior to use.
- To obtain optimum strength the following cure conditions have proven successful:
  >10 min @ 155°C (311°F) metal temperature
  <60 min @ 190°C (374°F) metal temperature
- Deviations from cure cycle may result in deviations from the shear strength which may interfere with material performance.

General Information

- Shutdown - For extended shutdown periods, greater than 8 hours, it is recommended that pressure be removed from the system to reduce possibility of caking in lines.
- Material Purge - Regular purge and cleaning of the application system is recommended, please contact your sales representative for material requirements and instructions.
- As with all materials, it is recommended that to ensure consistent material, this product is used in a First In - First Out stock rotation system.

Equipment

- It is recommended that this material be dispensed using a pumping system. This should include a high pressure ratio pump, with recommended ratio of 55:1 or greater. Care should be taken in system design to insure that flow restrictions are minimized. Flow restrictions occur when headers, hoses, and/or nozzles are too small for the application. By reducing flow restriction, it is possible that lower ratio pumps can be used.
- Equipment with piston, gear, or rotary pumps is suitable for the application of TEROSON EP 5089 (known as TEROKAL 5089) from pails or drums
- As needed the nozzle can be heated from 27°C (80.6°F) to 50°C (122°F) to increase flow and improve initial adhesion to oily substrates
- The application pistol can be used either manually, on a fixed basis, or attached to an automatic application system (robot, CNC). The applicator nozzle may be designed according to individual requirements.
- For smaller production as well as preliminary tests TEROSON EP 5089 (known as TEROKAL 5089) can also be supplied in 310 ml cartridges. These cartridges should be warmed to temperatures to between 25°C - 50°C for about 30 - 45 minutes and finally be applied using standard cartridge guns. (Warning: Risk of burning, wear protective gloves!) If available, using special air-powered guns are even more convenient.
- If required, we will provide you with the necessary information on suitable application equipment.

Metal Surface Preparation

- This material has been developed to adhere to a wide variety of clean or oily material surfaces.
- While no pre-cleaning of the substrate is required, removal of excess lubricants is desired and clean substrate is preferred.
- For best performance, substrate should be free of contamination before material is applied.

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Product Removal

- Fresh, uncured material can be removed with the aid of solvent such as Isopropanol, Mineral Spirits, Xylene or Toluene. Large amounts of material can be removed using towels or rags and then cleaned with solvent.
- Cured material can only be removed mechanically

Health and Safety

- **For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).**
- Prior to application it is necessary to read the Safety Data Sheet for information about precautionary measures and safety recommendations.
- For chemicals exempt from compulsory labeling, the relevant precautions should always be observed.

Product Control Test Method

- No specific test methods are recommended to be used by customer.
- Additional information on product testing is available upon request.

Storage Requirements

- Store product in the unopened container in a dry location
- **Keep away from heat and direct sunlight.**
- **Store between 10°C and 30°C (50°F and 86°F)**
- **Shelf life of product is 120 days.**
- Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Waste Disposal

- Refer to MSDS for further information

Order Information

- Bulk IDH Number **1360074**
- Please call for available packaging

Creation Date 31 March 2008
Revision Date 02 November 2015 **Revision Number** 4

REVISION HISTORY

01.18.13	Updated IDH number. Updated storage conditions and temperatures.
04.09.13	Updated name due to rebranding. Updated results in typical properties table.
11.02.15	Updated shelf life from 90 to 120 days

Conversions

(°C x 1.8) + 32 = °F
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm^2 x 145 = psi
MPa x 145 = psi

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