

TECHNICAL DATA SHEET

ESG-215 SERIES

EPOXY PATCHING PASTE HIGH TEMPERATURE USE, GRAPHITE FILLED, TWO HARDENER CHOICES

DESCRIPTION

ESG-215 GRAPHITE FILLED HIGH TEMPERATURE EPOXY PATCHING PASTE was developed to meet the requirement of the aircraft and aerospace industry for use in repairing surface defects on composite molds and for making minor engineering changes. ESG-215 resin is available with 2 hardener options: ESG-215 hardener is a lower viscosity hardener for filling minor surface defects; ESG-215-T is a thicker hardener for filling large repairs requiring greater sag resistance.

- Good mechanical properties
- Up to 380°F use (hardener dependant)
- Black color
- Excellent handling properties
- No MDA or VCHD ingredients
- High dimensional stability

APPLICATIONS

- Composite tools or part
- Thermoforming molds
- RTM molds
- Epoxy laminate or cast tools
- RHL or IHL heat environments
- Prepreg compatible

PHYSICAL PROPERTIES

Property	Test Method	Units	ESG-215 R ESG-215 H	ESG-215 R ESG-215-T H
Mix ratio by weight			100/14	100/15
Mixed aspect			Thick liquid	Thick liquid
Mixed color			Black	Black
Mixed specific gravity		g/cc	1.32	1.25
Mixed density		lbs/gallon	11.0	10.4
Mixed viscosity at 77°F (25°C)	ASTM D2393	Cps	Thixotropic paste	Thixotropic paste
Work life at 77°F (25°C) (226g)	ASTM D2471	Minutes	35-50	35-50
Cure to sand time		Hours	2-4	2-4

Mechanical and Thermal Properties

Properties	Method	Unit	ESG-215 R ESG-215 H	ESG-215 R ESG-215-T H
Hardness	ASTM D2240	Shore D	90	90
Tensile strength	ASTM D638	psi (MPa)	6,276 (43)	7,101 (49)
Tensile elongation	ASTM D638	%	.88	.91
Flexural strength	ASTM D790	psi (MPa)	11,500 (79)	8,416 (58)
Flexural modulus	ASTM D790	Psi (Mpa)	667,400 (4,602)	428,400 (2,954)
Compressive strength	ASTM D695	Psi (MPa)	14,420 (99)	21,700 (150)
Compressive modulus	ASTM D695	Psi (MPa)	250,800 (1,729)	241,600 (1,666)
Izod impact (notched)	ASTM D256	(ft-lb)/ft	4.01	Not tested
CTE – (TMA test method)	ASTM D696	PPM/°F (°C)	15.8 (28.5)	13.9 (25.0)
HDT – Heat deflection temperature @ 66 psi @ 264 psi	ASTM D648	°F (°C)	268 (131) 249 (121)	371 (188) 385 (196)

POST CURE SCHEDULE

- 8 hours minimum @ 77°F (25°C)
- +1 hours @ 200°F (93°C)
- +1 hours @ 250°F (121°C)
- +2 hours @ 300°F (149°C) – For ESG-215 with **ESG 215 H**
- +2 hours @ 350°F (177°C) – For ESG-215 with **ESG 215-T H**

OPTIONAL ACCELERATED CURE Product Technical Bulletin Cont. ESG-215 can be cured to a sandable condition by directing a localized heat source, such as a heat gun, heat lamp or infrared heater at the repaired area until material has hardened. A complete cure of ESG-215-T can then be achieved during the high temperature use of the mold.

HEATING AND COOLING RATES DURING POST CURE

Always allow tools made with Sika high temperature systems to gel at room temperature before subjecting them to post cure (24 hours is usually sufficient). This will prevent excessive exotherm and shrink stress from occurring. When oven curing laminated molds, always place the mold in a room temperature oven. Increase oven temperature at a rate of no more than 50°F (30°C) per hour. When heat cure is completed, turn off oven and allow molds to remain in the oven. Never remove mold from oven until mold temperature has been lowered to less than 100°F (38°C).

HANDLING PRECAUTIONS

Normal health and safety precautions should be observed when handling these products:

- Ensure good ventilation.
- Wear gloves, glasses and protective clothes.

For further information, please consult the Safety Data Sheets.

STORAGE CONDITIONS

- This product has a shelf life of 24 months for the resin and hardener as indicated by the expiration date on the container when stored in original unopened containers.

PACKAGING

Packaging information on request, please contact your local sales representative or find your local contact on www.sikaadvancedresins.us

LEGAL NOTICE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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