



**ESG-215 SERIES
EPOXY PATCHING
PASTE**
GRAPHITE FILLED
HIGH TEMPERATURE



www.axson-technologies.com
31200 Stephenson Hwy

800.344.7776
Madison Heights, MI 48071

axsonmh@axson.com
Ph 248.588.2270 Fax 248.588.5909

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.

TYPICAL HANDLING CHARACTERISTICS @ 77°F (25°C)

	<u>ESG-215 Hardener</u>	<u>ESG-215-T Hardener</u>
Mix Ratio (parts by weight)	100R/14H	100R/14.7H
Density (mixed)	11 lbs/gallon	10.4 lbs/gallon
Mixed Specific Gravity	1.32 g/cc	1.25 g/cc
Resin Viscosity	9,000,000cps	9,000,000cps
Hardener Viscosity	20cps	100,000cps
Mixed Viscosity	thixotropic paste	thixotropic paste
Work Life	35-50 minutes	35-50 minutes
Cure-To-Sanding-Time	2-4 hours	2-4 hours
NOTE: See optional accelerated cure information on page 2.		
Resin Color	Black	Black
Hardener Color	Amber	Amber
Mixed Color	Black	Black
Shelf Life ESG-215 Resin (in original unopened containers)		1 year
Shelf Life ESG-215 and ESG-215-T Hardener (in original unopened containers)		2 years

TYPICAL PHYSICAL PROPERTIES (Following oven cure at 350°F (177°C))

Ultimate Tensile Strength (ASTM D-638.91)	6,276psi (43MPa)	7,101psi (49MPa)
Tensile Modulus (ASTM D-638.91)	989,600psi (6,823MPa)	803,400psi (5,540MPa)
Tensile Elongation (ASTM D-638.91)	0.88%	0.91%
Ultimate Compressive Strength (ASTM D-695.91)	14,420psi (99MPa)	21,700psi (150MPa)
Compressive Modulus (ASTM D-695.91)	250,800psi (1,729MPa)	241,600psi (1,666MPa)
Ultimate Flexural Strength (ASTM D-790.92)	11,500psi (79MPa)	8,416psi (58MPa)
Flexural Modulus (ASTM D-790.92)	667,400psi (4,602MPa)	428,400psi (2,954MPa)
Coefficient of Thermal Expansion (ppm/°F (°C))	28.5 (15.8)	25 (13.9)
Heat Deflection Temperature @ 66 psi (ASTM D-648.82)	268°F (131°C)	371°F (188°C)
Heat Deflection Temperature @ 264 psi (ASTM D-648.82)	249°F (121°C)	385°F (196°C)
Notched Izod Impact Strength (ASTM D-256.93A)	4.01 in-lb/ft	n/a
Moisture Absorption (ASTM D-570.88)	0.142%	n/a
Hardness	90 Shore D	90 Shore D
Shrinkage	0.005 in/in	0.003 in/in

POST CURE SCHEDULE

8 hours @ 77°F (25°C)
+3 hours @ 350°F (177°C)

OPTIONAL ACCELERATED CURE

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 ADTECH 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).

SPECIFICATIONS

Boeing MMS-101 and M41-03-01 Code HPAP

ESG-215 Series/Revised 1/12/15
Supersedes 5/21/14

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AXSON TECHNOLOGIES US +1 248 588 2270 axsonmh@axson.com axson-na.com	CHINA +86 21 58 68 30 37 marketing.china@axson.com	GERMANY +49 6 07 44 07 11-0 verkauf@axson.com	INDIA +91 20 25 56 07 10-11 info.india@axson.com	ITALY +39 02 96 70 23 36 axson@axson.it	JAPAN +81 5 64 26 25 91 sales.japan@axson.com	FRANCE Global Headquarters +33 1 34 40 34 60 axson@axson.com axson-technologies.com
	MEXICO +52 55 52 64 49 22 marketing@axson.com.mx	MIDDLE EAST +971 7 2432227 axsonmideast@axson.com	SLOVAKIA +42 1 76 42 25 26 axson.sk@axson.com	SPAIN +34 9 32 25 16 20 spain@axson.com	U.K. +44 16 38 66 00 62 sales.uk@axson.com	