



DESCRIPTION

PFR-405 is a quick setting, flame retardant, low density filler paste meeting FAR 25.853a for stringent requirements in the aerospace, aircraft, transportation, and industrial industries. It is specifically formulated for use in the aircraft, aerospace, and other industries that perform manufacturing and repair work on items requiring above normal temperature ranges. The service temperature for PFR-405 is up to 400°F (204°C). PFR-405 offers the user a smooth, creamy system that will withstand cleaning solutions used in routine maintenance. PFR-405 is both chemical and water resistant. Applications of PFR-405 are both fast and permanent. Excellent machining and finishing results are achieved by grinding, sanding, scraping, etc. PFR-405 has excellent bonding and filling qualities to fiberglass, carbon, SMC, BMC, and Kevlar composites. PFR-405 is non-metallic, non-conductive, and non-sparking. It contains no styrene and is low odor. **Typical applications include: filling porosity and cloth impression in prepreg or wet layup / infused composites, filling porosity and surface blemishes on exterior composites, surface filling on interior composites, renewing and repairing broken or cracked areas, overhaul and refinishing on interior parts, edge fill, and many more areas of final fabrication and finish.**

PROPERTIES

- Exceptional adhesion
- Very quick setting
- Minimal shrinkage
- High service temperature
- Self-extinguishing
- Lightweight (low density)
- Meets or exceeds Flame, Smoke, and Toxicity (FST) requirements
- Excellent finishing and machinability
- Easy to use
- High gloss finish
- Low moisture absorption
- Non-halogen/non-styrene
- Excellent shelf-life
- RoHS and REACH compliant

PHYSICAL PROPERTIES

		PFR-405	Cream Hardener	Mixed
Composition		Polyester Resin	BPO	Polyester paste
Mix ratio – by weight		100	2	100/2
Aspect		Grain free paste	Paste	Thixotropic paste
Color		Lt. pale yellow	Red	Pink
Viscosity – Brookfield (Sp. 7@ 5)	Cps.	300,000 – 500,000	N/A	300,000-500,000
Density at 77°F (25°C)	lbs./gal (g/cc)	8.0-8.5 (.96-1.02)	10.0 (1.20)	8.0 – 8.5 (.96-1.02)
Pot life (102 g) at 77°F (25°C)	minutes			4.0 – 8.0
Vertical sag	inches			<.05

PROCESSING CONDITIONS

- Thoroughly blend 100 parts resin with 2 parts hardener by weight for 1 to 1 ½ minutes in a clean dry container or on a clean dry surface.
- Carefully scrape the surfaces while blending to ensure complete mixing and uniformity.

SURFACE PREPARATION and APPLICATION

- The area to be filled or repaired should be thoroughly cleaned, roughened, cleaned again and allowed to dry prior to application to ensure the best possible adhesion.
- The mixed PFR-405 should be buttered into the area, avoiding trapping air during application.
- After curing to a tack-free state, the material can be sanded and finished as needed.

MECHANICAL AND THERMAL PROPERTIES *

Property	Test Method	Units(s)	Test Results
Hardness	ASTM D-2240	Shore D	73
Flexural strength	ASTM D-790	psi (MPa)	1,770 (12.2)
Flexural modulus	ASTM D-790	psi (MPa)	338,500 (2,336)
Tensile strength	ASTM D-638	psi (MPa)	1,034 (7.1)
Compressive strength	ASTM D-695	psi (MPa)	4,159 (28.7)
Compressive modulus	ASTM D-695	psi (MPa)	179,100 (1,236)
Linear shrinkage	ASTM C-531	inch/inch	≤ 0.007
Linear shrinkage	ASTM C-531	%	0.7
Water absorption (%) 24 hr @ room temperature	ASTM C531	%	≤ 0.3
Peak service temperature		°F (°C)	400 (204)
Lap shear strength-mechanical etched aluminum ¹	ASTM D-1002	psi (MPa)	420 (2.9)
Lap shear mode of failure			CF

* Cure schedule: 6 days/77°F (25°C)

¹Aluminum 6111 mechanically etched with 100 grit. 2 g spacer beads in 50 g mix (0.007" bond line)

Flame Retardant Properties*

Property	Test Method	Units(s)	Test Results
Smoke density-flaming mode	ASTM E 662	D _s 4 minutes	91
Smoke density-non-flaming mode	ASTM E 662	D _s 4 minutes	56
Smoke toxicity—flaming mode	Combustion by-products 4 minutes (ppm)	CO - 373 HF - 10.5 HCL - < 1.0 HCN - <.5 SO ₂ - 0 NO, NO ₂ - 39.5	Pass Pass Pass Pass Pass Pass
Smoke toxicity- non-flaming mode	Combustion by-products 4 minutes (ppm)	CO - 19 HF - 5.3 HCL - < 1.0 HCN - < .5 SO ₂ - 0 NO, NO ₂ - 2.8	Pass Pass Pass Pass Pass Pass
¹ Burn panel (extinguishing time)	FAR 25.853A	seconds	0
¹ Burn through (middle) - 1/8" and 1/64"	FAR 25.853A	inches	0
¹ Burn length - 1/8"	FAR 25.853A	inches	≤ 4
¹ Burn length - 1/64"	FAR 25.853A	inches	≤ 4

*Cure schedule: 7 days/77°F (25°C). Testing done at third party laboratory

¹ Two thicknesses (1/8" and 1/64") on fiberglass test panels. Pre-cured 18hrs/77°F (25°C) + Post-cured 2hrs/200°F (94°C)



STORAGE CONDITIONS

- Product shelf life of polyester resin is 12 months when stored in original unopened containers between 65 – 77°F (15 – 25°C). Any opened can must be tightly closed. Product shelf life of BPO hardener is 18 months when stored in original unopened containers between 65 – 77°F (15 – 25°C). Any opened can must be tightly closed.
- Polyester resin contains filler which has the potential to separate in time, please re-homogenize prior to use.

HANDLING PRECAUTIONS

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

- Ensure good ventilation
- Wear gloves, and safety glasses.

For additional information, please consult the safety data sheet (SDS).

DISCLAIMER

The information contained in this technical data sheet results from research and tests conducted in our laboratories under precise conditions. Seller cannot anticipate all conditions under which seller's products, or the products of other manufacturers in combination with seller's products, may be used. It is the responsibility of the user to determine the suitability of the SikaAxson's products, under their own conditions, before commencing with the proposed application. In no event shall SikaAxson US be liable for any direct, indirect, punitive, incidental, special, and/or consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of our products.

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