

Technical Information

Use of Adhesives

Introduction

A variety of adhesives can be used to join VESPEL® parts to themselves or other plastics, metals, and elastomers. The choice of an adhesive depends on the particular application, especially on the end-use temperature. The table below shows some of the adhesives that are compatible with Du Pont SP polyimide resins.

Surface Preparation

Surface contaminants such as dirt and oils must be removed with solvents. Exposure to sonic cleaning in FREON® cleaning agent is recommended. Metal surfaces can be etched either mechanically or by acid treatment or both. After etching, rinse the surfaces thoroughly in water and in a solvent such as acetone if the metal is subject to severe oxidation.

Adhesives Compatible with VESPEL® SP polyimide parts

Type & Trade Name	Supplier	Typical Cure Cycle		Continuous Service Temp., °F (°C)
		Time	Temp., °F (°C)	
Phenolic "Plastilock PL605-4"	B.F. Goodrich Co. Adhesives Systems Division 123 West Bartges Street Akron, OH 44311	20 min	360 (182)	Up to 600 (316)
Phenolic "WM 35-35"	Permafuse Corp. Westbury, L.I., NY 11590	8 hrs then 12 min	73 (23) 425 (218)	Up to 450 (232)
Modified Epoxy "HT 424"	American Cyanamid Co. Havre de Grace, MD 21078	40 min	340 (171)	Up to 300 (149)
Epoxy "Eccobond 104"	Emerson & Cuming, Inc. Dielectric Materials Div., Canton, MA	6 hrs or 3 hrs or 2 hrs	250 (121) 300 (149) 350 (177)	Up to 450 (232)
Epoxy "Scotchweld 2216 B/A"	3M Company Adhesives, Coatings, and Sealers Div. 900 Bush Ave., St. Paul, MN 55144 or local sales office	7 days 30 min	75 (23) 200 (93)	Up to 350 (177)
Epoxy "Armstrong A-1/A"	Morton International Chicago, IL 60606	2 hrs	165 (74)	Up to 217 (103)
"Armstrong A-661"		10 min	300 (149)	Up to 239 (115)
"Armstrong A-701"		1 hr	400 (204)	Up to 338 (170)
"Armstrong A-702"		1 hr	400 (204)	Up to 291 (144)
Polyimide "FM 34B-18"	American Cyanamid Co. Havre de Grace, MD 21078	2 hrs	500 (260)	Up to 500 (260)

NOTE: The order of adhesives listed does not indicate any preference nor does inclusion in this list constitute an endorsement. Other adhesives may be available which adhere as well as or better than these. (The above data are taken from information supplied by the adhesive manufacturer and Du Pont makes no claims regarding the cure cycles or service temperatures of these products.)

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Only mechanical etching by abrasive blasts should be used in preparing VESPEL® part surfaces for adhesion. Cleaning of VESPEL polyimide parts can be achieved by the same solvents previously mentioned for metals.

Application Techniques

The adhesive should be mixed strictly according to the manufacturer's recommendations. It should be applied to both etched surfaces using a clean brush. Add particles to the adhesive, if necessary, to maintain the glue line. Particle size should be controlled to fit the situation.

Curing

Cure cycles in the table are general guidelines only and may not achieve optimum bond strengths. Some variations may be due to geometric configurations and area of mating surfaces. Procedures for curing should follow adhesive manufacturer's recommendations. Cure cycles should not exceed the temperature limits of the VESPEL parts.

Safety

The adhesive manufacturer's recommendations for safe handling of a particular product should be scrupulously observed.

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