

Material Corrosion Resistance Guide

Hartzell fans and blowers have rings, frames, housings, and supports fabricated from low carbon steel. All steel parts are phosphatized or sandblasted and finished with an enamel coating.

The standard axial flow propeller material is a sand-cast aluminum equivalent to Federal Spec. QQ-A-601, and chosen for its good strength, durability, and casting qualities. Other high strength alloys can be furnished at extra cost for special applications. Standard centrifugal wheels are fabricated from ASTM Standard A569 carbon steel.

Hartzell standard coatings specifications are tied to ASTM standards used within industry. These coatings are considered to be good to excellent for indoor/outdoor structures in an industrial environment.

Corrosion-Resistant Materials and Coatings

For installations where extreme corrosive fumes are encountered, Hartzell fiberglass fans give unsurpassed resistance to the great majority of corrosive elements at a cost substantially below that of corrosion resistant metals. These fan units feature special high grade fiberglass propellers, duct sections, drive housings, bearing covers and seals - plus efficient shaft seals and slingers to protect bearings.

The special vinylester resin used in the construction of Hartzell's regular fiberglass duct fans, offers tremendous advantages over general purpose polyester and epoxy resins. It has higher corrosion resistance and it retains its strength when wet to a much greater degree than other polyester resins.

As a further refinement of the resin system, additives are made which give a flame spread rate of 25 or less without materially affecting the corrosion resistance. This feature is particularly desirable where both extreme corrosion resistance and high flame resistance are required.

Extra strength is built into all Hartzell fiberglass fans by the use of heavy flanges, extra glass tape joints, and extra glass reinforcing. In addition, all fans are given a finish brush coat of resin after assembly for more complete protection.

All bearing bolt and nut heads as well as bearing cover bolts and nuts exposed to the airstream are of stainless steel (or Monel, if specified) and are coated with resin after assembly. Shafts are normally of stainless steel but can be specified Monel for special service.

A modification can be furnished with special flange drilling to meet chemical plant specifications.

Hartzell can also furnish coatings to resist attack to fans made of metal. When conditions are moderate and the corrosive agent is a common acid or mild alkali, an epoxy coating can be used on steel and aluminum. This coating is also moisture and abrasion resistant. Based on converted epoxy/cycloaliphatic amine technology the epoxy coating has superior flexibility and toughness plus resistance to thermal shock. It may be used in air temperatures up to 250°F.

For more severe corrosive fumes and for excellent abrasion resistance plastisol and phenolic coatings are recommended. Applications for coatings of this type are usually sufficiently severe to justify a call to the factory to check on exactly what is needed for your specific application.

Housings and frames can be furnished in all stainless steel, aluminum or Monel. The exact grade of metal used depends on the nature of the installation. Unless otherwise specified, #304 housings will be furnished when stainless steel is ordered. #316 stainless steel is also available. All Hartzell fans and blowers for corrosive applications are guaranteed for one full year from the date of shipment.

Hartzell engineers are continually experimenting with special materials and coatings. Your Hartzell sales representative is prepared to recommend the most dependable solution to your corrosion problem.

	FIBERGLASS ***							COATINGS						
	Aluminum	Stainless 304	Stainless 316	Carbon Steel	Monel	Neoprene	Interplastics 8441	Hetron FR992	Ashland 510A	Epoxy (250 deg F)	Inorganic Zinc (150 deg F)	Coal Tar Epoxy (300 deg F)	Teflon	Viton
Acetic Acid, to 10% (Fumes Only)	F	F	G	NR	F	G	210	210	210	G	NR	G	G	F
Acetone (Fumes Only)	G	G	G	G	F	NR	NR	180	G	G	-	-	NR	
Alcohol - Ethyl	F	G	G	F	F	G	150	NR	80	G	G	-	-	F
Aluminum Acetate	NR	-	G	-	F	NR	-	-	-	G	NR	-	G	NR
Aluminum Hydroxide	G	G	G	NR	NR	G	180	-	180	G	NR	-	G	-
Aluminum Sulphate	NR	F	-	NR	NR	G	-	210	210	G	NR	-	G	G
Ammonia (Dry - 1%)	F	G	G	F	NR	G	100	100	100	G	NR	G	-	-
Ammonia (Moist - 1%)	F	G	G	F	NR	G	150	100	NR	G	NR	-	-	-
Ammonium Chloride	NR	F	F	NR	F	G	*210S	*210	*210	G	NR	G	G	G
Ammonium Hydroxide to 5%	NR	G	G	NR	NR	G	180S	180S	180S	G	NR	G(10)	F	F
Ammonium Nitrate	F	G	G	NR	NR	F	210	210	220	G	NR	G(30)	G	G
Ammonium Perchlorate	-	-	G	-	-	-	-	-	-	NR	-	-	-	-
Ammonium Persulfate (Saturated)	NR	G	G	NR	NR	G	180	180	180	NR	-	-	NR	G
Ammonium Phosphate	G	G	G	NR	NR	G	210	210	210	G	-	-	G	G
Ammonium Sulphate	NR	G	F	NR	F	G	210	210	220	F	-	G(10)	G	F
Ammonium Sulphite	NR	G	F	NR	NR	G	-	100	150	G	-	-	-	-
Barium Chloride	NR	G	NR	NR	F	G	210	210	210	G	-	-	G	G
Barium Hydroxide	NR	F	G	NR	F	G	150S	150	150	G	NR	-	G	G
Barium Nitrate	F	G	G	G	NR	G	-	-	-	F	-	-	-	-
Barium Sulphate	NR	G	F	NR	F	G	210	210	210	F	-	-	G	G
Benzene	F	G	G	F	G	NR	NR	NR	NR	G	-	-	G	G

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	Aluminum	Stainless 304	Stainless 316	Carbon Steel	Monel	Neoprene	Interplastics 8441	Hetron FR992	Dow 510A	Epoxy (250 deg F)	Inorganic Zinc (150 deg F)	Coal Tar Epoxy (300 deg F)	Teflon	Viton
Benzoic Acid	F	G	G	NR	F	NR	210	210	210	G	G	-	-	G
Boric Acid (5%)	F	G	G	NR	F	NR	-	210	210	G	NR	-	G	-
Bromine, Wet Gas	NR	NR	NR	NR	NR	NR	-	*90	NR	G	NR	G	-	-
Butyric Acid, to 50%	F	G	F	NR	F	NR	210	160	210	NR	-	-	-	-
Calcium Carbonate	NR	G	F	NR	F	G	180S	180	180	G	-	-	G	-
Calcium Chlorate	F	F	F	F	F	F	210S	210	210	G	-	-	G	-
Calcium Chloride	NR	F	NR	NR	F	G	210S	210	210	G	NR	-	G	G
Calcium Hydroxide	NR	G	G	NR	G	G	180S	-	180S	G	NR	-	G	G
Carbolic Acid	-	G	F	NR	F	NR	NR	-	NR	NR	-	G(5)	-	G
Carbon Monoxide Gas	G	G	F	F	NR	NR	210	210	250	G	-	-	F	G
Carbon Tetrachloride	F	G	G	NR	G	NR	100	150	150	G	F	G	G	G
Chlorine Gas (Dry)	F	F	F	F	G	NR	*210S	*180S	*220S	F	NR	-	G	G
Chlorine Gas (Moist)	NR	NR	NR	NR	F	NR	180S	180S	220S	F	NR	-	G	F
Chlorine Water	NR	F	F	NR	NR	NR	*180S	*180	*180	G	NR	G	-	-
Chlorobenzene	F	G	G	F	G	NR	NR	NR	NR	F	F	-	G	G
Chromic Acid, to 5%	NR	F	NR	NR	NR	NR	150	100	150	G(20)	NR	NR	F	G
Citric Acid	F	G	F	NR	F	G	*210	*210	*210	G	NR	G	G	G
Copper Acetate	NR	-	G	NR	NR	F	-	160	-	G	-	-	-	NR
Copper Chloride	NR	NR	NR	NR	NR	G	*210	*210	*220	G	-	-	G	G
Copper Cyanide	NR	G	F	NR	NR	G	210	210	210	G	-	-	G	G
Copper Nitrate	NR	G	F	NR	NR	G	210	210	210	F	-	-	-	-
Copper Sulphate	NR	G	F	NR	NR	G	210	210	210	F	-	-	G	G
Detergents	F	G	F	G	F	F	210	100	150	G	-	G	-	G

