

Fiberglass Backward Utility Fans

Series 41U



HARTZELL®

Hartzell Fan, Inc., Piqua, Ohio 45356
www.hartzellfan.com

Bulletin A-410-1 August 2007

Series 41U Fiberglass Backward Curved Centrifugal Utility Fan



The Hartzell Series 41U Backward Curved Utility Fan can be used in most applications where corrosive elements exist in fume and vapor form. The backward curved centrifugal blower offers non-overloading efficiency and economy in corrosive atmospheres.

Features

- **Sizes** – 12", 18", and 24" wheel diameters. SWSI only.
- **Arrangement** – 10, packaged unit only.
- **Performance** – 700 CFM to 10,300 CFM; static pressures to 6" W.G.
- **FRP Materials** – solid fiberglass wheel molded with Ashland Derakane 510-A vinyl ester resin. Other standard FRP components constructed of fiberglass and Ashland 693 resin. See Corrosion Resistance Guide on page 5 for resin characteristics and other resins.
- **Temperature Limitations** – suitable for temperatures up to 200°F.
- **Rotation and Discharge** – Clockwise or counterclockwise rotation in all eight discharge positions. Rotatable housing.
- **Wheel** – a high efficiency, one-piece, solid fiberglass, non-overloading backward curved, with single thickness airfoil blades. **Wheel Type FA.**
- **Shaft Seal** – a fiberglass and neoprene shaft seal is placed where the shaft leaves the housing along with a neoprene shaft slinger between the seal and wheel on belt drive units. Seal is not gas tight.
- **Drive Assembly** – Belts are oil, heat and static resistant type. Shafts are turned, ground and polished, keyed at both ends, fiberglass enclosed in the airstream.
- **Base** – epoxy coated hot rolled steel.
- **Easy installation and maintenance** – Motor, drive and bearings are readily accessible for ease in wiring, installation, adjustment and lubrication.
- **Fan inlets and outlets** – Straight inlet and outlet connections are provided for easy "slip-fit" connection to ducting.
- **Options and Accessories** – See page 4.



Hartzell Fan, Inc. certifies that the FRP Backward Curved Centrifugal Fan, Series 41U, shown hereon, is licensed to bear the AMCA Seal for Air and Sound. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

Sound performance data is available upon request. Please contact the factory and ask for Engineering Publication #SD-160.

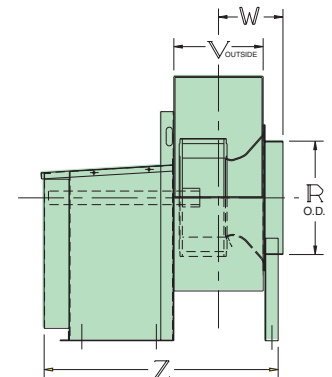
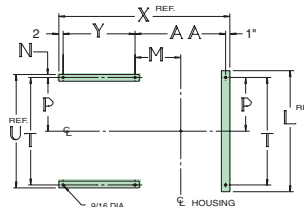
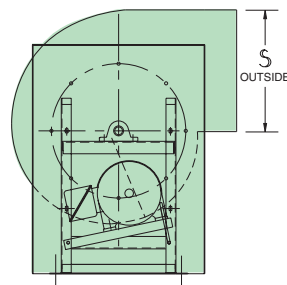
Principal Dimensions (Inches)

| Fan Size | A | B | C | D | E | F | G | H | J | K | L | M | N |
|----------|---------------------------------|--------------------------------|----|----------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|--------------------------------|--------------------------------|---------------------------------|-------------------------------|
| 12 | 18 ¹ / ₁₆ | 13 ¹ / ₈ | 13 | 11 ¹ / ₂ | 12 ¹ / ₄ | 18 ¹ / ₂ | 10 ³ / ₄ | 10 | 9 ¹ / ₄ | 5 ⁵ / ₁₆ | 21 ¹ / ₂ | 7 ⁷ / ₁₆ | 3 ³ / ₄ |
| 18 | 23 | 19 ³ / ₄ | 19 | 17 ¹ / ₄ | 18 ⁷ / ₁₆ | 27 ⁷ / ₁₆ | 16 ³ / ₁₆ | 15 ¹ / ₁₆ | 13 ¹⁵ / ₁₆ | 4 ¹ / ₄ | 27 ³ / ₄ | 9 ⁷ / ₈ | 1 |
| 24 | 29 | 26 ¹ / ₈ | 23 | 22 ¹⁵ / ₁₆ | 24 ⁷ / ₁₆ | 34 ³ / ₄ | 21 ¹ / ₂ | 20 | 18 ¹ / ₂ | 5 ⁵ / ₈ | 30 | 12 ³ / ₁₆ | 1 |

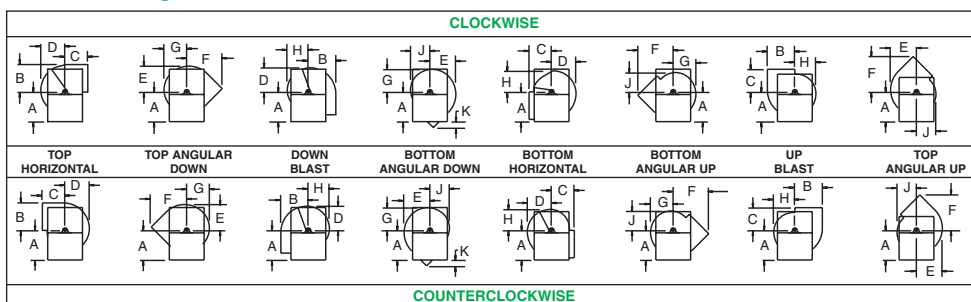
| Fan Size | P | R | S | T | U | V | W | X | Y | Z | AA | Max. Motor Frame |
|----------|--------------------------------|--------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|----|---------------------------------|---------------------------------|------------------|
| 12 | 9 ⁷ / ₈ | 12 ¹ / ₄ | 13 ¹ / ₈ | 19 ³ / ₄ | 21 ¹ / ₄ | 9 ⁹ / ₁₆ | 8 | 28 ⁵ / ₈ | 12 | 32 ⁵ / ₈ | 13 ⁹ / ₁₆ | 182T |
| 18 | 10 ¹ / ₈ | 18 ¹ / ₄ | 19 ¹¹ / ₁₆ | 20 ¹ / ₄ | 22 ¹ / ₄ | 14 ³ / ₈ | 10 ³ / ₈ | 33 ⁵ / ₈ | 12 | 37 ⁵ / ₈ | 18 ¹ / ₂ | 184T |
| 24 | 10 ¹ / ₈ | 24 ¹ / ₄ | 26 ¹ / ₈ | 20 ¹ / ₄ | 22 ¹ / ₄ | 19 | 12 ³ / ₄ | 38 ⁵ / ₁₆ | 12 | 42 ⁵ / ₁₆ | 23 ³ / ₁₆ | 213T |

ABS Certificate of Design Assessment Received

Certificates of Design Assessment are issued by the American Bureau of Shipping. The assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. The certificates, by itself, do not reflect that the products are Type Approved.



Fan Discharges



Note: For angular and/or down blast, contact factory when discharge flanges are required.



Options and Accessories

Drain

Fiberglass half coupling assembled in housing, 1" NPT female threaded fitting.



Combination Drive Guard and Weather Cover

Covers motor and shaft sheaves as well as belts. Combines guarding of the drive as well as protection from the weather. Arrangement 10.

Inlet and Outlet Guards

Spiral ring guard offers protection on inlet side and a wire mesh guard can be furnished for the outlet side. Guards are alphascoat coated steel.

Flanged Outlet

Bolt-on flanges. Drilled flanges can be furnished, if specified.

Discharge Backdraft Damper

Automatic gravity operated backdraft damper eliminates backflow of air when fan is not operating.

Vibration Isolator Rails

Rubber-in-shear or spring-type isolator rails available on all models.

Hartzell Model Code

A 4 1 U 0 - 18 - F A 1 0 0 F G O P J 3

Type _____
 A – Production Item
 S – Stock Item
 Q – Special Quote

Product Series _____

Arrangement (centrifugals only) _____

Size (nominal wheel diameter, inches) _____

Class _____

Wheel Code _____

Wheel Width (entries represent percents) _____

Material of Construction _____

Motor Enclosure _____

Motor Horsepower _____

Motor RPM/Phase _____

| Motor RPM/Phase | |
|-----------------|----------|
| 3 Phase | 1 Phase |
| 2 = 3450 | B = 3450 |
| 3 = 1750 | C = 1750 |
| 4 = 1140 | D = 1140 |
| 5 = 870 | E = 870 |
| 6 = 690 | F = 690 |
| 7 = 575 | G = 575 |

Motor Horsepower

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-----|-----|-----|-----|---|-------|---|---|---|-------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| Horsepower | 1/4 | 1/3 | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 3 | 5 | 7 1/2 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 200 |
| Code Letter | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

EXAMPLE:

Assume a performance of 3000 CFM at 3" S.P.W.G., at standard conditions, is required. Reading the table on page 3, we find a series 41U Fiberglass Backward Curved Centrifugal Utility Fan, size 18", will deliver that performance at 1681 fan RPM and 1.97 BHP. Looking at the model code above, we specify the fan series, Arrangement 10 (0=10), type FG wheel, fiberglass material of construction, with an Open Protected, 1.15 S.F. motor, 2 HP, 1750 RPM, 3 phase.

SAFETY ACCESSORIES, APPLICATION AND USE WARNING

The safe application and use of equipment supplied by Hartzell Fan, Inc. is the responsibility of the installer, the user, the owner, and the employer. Since the application and use of its equipment can vary greatly, Hartzell Fan, Inc. offers various product types, optional safety accessories, and sound performance data per laboratory tests. Hartzell Fan, Inc. sells its equipment with and without safety accessories, and accordingly, it can supply such safety accessories only upon receipt of an order. The need for safety accessories will frequently depend upon the type of system, fan location and operating procedures being employed. The proper protective safety accessories to meet company standards, local codes, and the requirements of the Occupational Safety and Health Act must be determined by the user since safety requirements vary depending on the location and use of the equipment. If applicable local conditions, standards, codes or OSHA rules require the addition of the safety accessories, the user should specify and obtain the required safety accessories from Hartzell Fan, Inc. and should not allow the operation of the equipment without them.

Owners, employers, users and installers should read "RECOMMENDED SAFETY PRACTICES FOR USERS AND INSTALLERS OF INDUSTRIAL AND COMMERCIAL FANS" published by the Air Movement and Control Association International, Inc., 30 West University Drive, Arlington Heights, Illinois 60004. A copy of this publication is enclosed with each fan shipped from Hartzell Fan, Inc., and is also available upon request at Hartzell's office in Piqua, Ohio 45356.

Please contact Hartzell Fan, Inc. or your local Hartzell representative for more information on product types, safety accessories, and sound performance estimates.

Remember, the selection of safety accessories and the safe application and use of equipment supplied by Hartzell Fan, Inc. is **your** responsibility.

General Construction Options

Abrasive/Erosive Resistant Coating

HartKoate is an abrasive/erosive resistant coating developed by Hartzell Fan for application in environments where abrasive/erosive conditions may exist. HartKoate helps prevent premature deterioration of equipment in environments where uncoated fans may fail.

Impact resistant HartKoate is applied to a 50-60 mil thickness suitable for temperatures to 200°F.

HartKoate is particularly appropriate for use when water mist and/or abrasive particles exist in the air stream.

Contact your Hartzell representative for further details concerning the application of HartKoate coating to fiberglass fans in corrosive atmospheres.

Hi-Cor Construction

All airstream surfaces exposed to the corrosive environment will be reinforced with a layer of surfacing veil. An additional final coat of resin will be applied for extra corrosion resistance.

When Hi-Cor construction is required, the factory should be consulted concerning the corrosive environment involved.

Electrostatically Grounded Fiberglass Fans

For applications in which fiberglass fans are handling gas fumes that are not only corrosive but also potentially explosive, the equipment should be specially constructed to control and remove static electricity. Interior airstream surfaces can be coated with a "carbon rich" resin coat and grounding straps secured from the side of the housing to the fan's steel base. All that remains to effectively ground the airstream is to ground the fan base at the time of installation.

Corrosion Resistance Guide

Temperature values shown are for immersion or condensate contact applications. Where temperature values are shown, resin is suitable for hood and duct type applications for the full operating temperature range of the product. See product specifications for materials of construction and maximum operating temperature limits.

| Environment | Hetron 693 Ashland F. | Hetron FR992 Ashland F. | 510A Ashland F. | Environment | Hetron 693 Ashland F. | Hetron FR992 Ashland F. | 510A Ashland F. | Environment | Hetron 693 Ashland F. | Hetron FR992 Ashland F. | 510A Ashland F. |
|------------------------------|-----------------------------|-------------------------------|-----------------------|----------------------------------|-----------------------------|-------------------------------|-----------------------|--------------------------------|-----------------------------|-------------------------------|-----------------------|
| ACIDS | | | | ALKALIES (Synthetic Veil) | | | | SALTS (cont'd.) | | | |
| Acetic to 10% | 180 | 200 | 210 | Ammonium Bicarbonate to 50% | 140.00 | \$170 | 160.00 | Sodium Ferricyanide | 220.00 | 220.00 | 210.00 |
| Acetic to 50% | 90 | 160 | 180 | Ammonium Carbonate | 120.00 | \$140 | 150.00 | Sodium Fluoride | — | \$180 | \$180 |
| Acetic to 100% | — | NR | NR | Ammonium Hydroxide to 5% | \$90 | \$180 | \$180 | Sodium Nitrate | 220.00 | 220.00 | 210.00 |
| Acrylic to 25% | — | 100 | 100 | Ammonium Hydroxide to 10% | \$90 | \$170 | \$150 | Sodium Nitrite | — | 220.00 | NR |
| Benzene Sulfonic to 25% | 180 | 210 | 150 | Ammonium Hydroxide to 29% | NR | \$100 | \$100 | Sodium Silicate PH less than 1 | 160.00 | 210.00 | NR |
| Benzene Sulfonic 25% up | 90 | 210 | NR | Barium Carbonate | 180.00 | \$240 | 210.00 | Sodium Sulfate | 180.00 | 240.00 | 210.00 |
| Benzoic | 250 | 220 | 210 | Barium Hydroxide to 10% | — | \$170 | 150.00 | Sodium Sulfite | — | 220.00 | 210.00 |
| Boric | 180 | 220 | 210 | Calcium Hydroxide to 15% | 160.00 | \$210 | \$180 | Stannic Chloride | *180 | *220 | *210 |
| Butyric to 50% | 150 | 150 | 210 | Magnesium Carbonate | 160.00 | \$210 | 180.00 | Stannous Chloride | *200 | *220 | *210 |
| Butyric 50% up | — | 100 | 80 | Potassium Bicarbonate to 10% | 90.00 | \$170 | \$150 | Zinc Chloride | 200.00 | *220 | *210 |
| Carbonic | 160 | 220 | NR | Potassium Carbonate to 10% | 90.00 | \$180 | \$150 | Zinc Nitrate | 180.00 | 220.00 | 210.00 |
| Chloroacetic to 25% | NR | *180 | *150 | Potassium Hydroxide to 25% | NR | \$120 | \$150 | Zinc Sulfite | 150.00 | 220.00 | NR |
| Chloroacetic 25% to 50% | NR | *150 | *120 | Sodium Bicarbonate to 10% | 140.00 | \$210 | \$180 | | | | |
| Chromic to 5% | 100 | 110 | 150 | Sodium Carbonate to 35% | 90.00 | \$180 | \$180 | SOLVENTS | | | |
| Chromic to 10% to 20% | — | NR | 150 | Sodium Hydroxide to 10% | NR | \$160 | \$180 | Acetone to 10% | NR | 180.00 | 180.00 |
| Citic | *200 | *220 | *210 | Sodium Hydroxide to 25% | NR | \$160 | \$180 | Benzene | 90.00 | 80.00 | NR |
| Fluoboric | *\$90 | *\$220 | *\$210 | Sodium Sulfide | 90.00 | \$220 | \$210 | Carbon Disulfide | NR | NR | NR |
| Gluosilicic up to 10% | \$100 | \$150 | \$180 | Trisodium Phosphate to 50% | — | \$175 | 210.00 | Carbon Tetrachloride | 90 VAPOR | 110.00 | 150.00 |
| Formic up to 10% | 200 | 150 | 180 | | | | | Chlorobenzene | NR | NR | NR |
| Gluconic to 50% | 120 | 180 | 180 | SALTS | | | | Ethyl Acetate | NR | NR | NR |
| Hydrobromic to 25% | *160 | *170 | *180 | Aluminum Chloride | *120 | *240 | *210 | Ethyl Chloride | 90 VAPOR | NR | NR |
| Hydrochloric to 15% | *230 | *210 | *180 | Aluminum Potassium Sulfate | 160.00 | 240.00 | 210.00 | Ethylene Dibromide | NR | NR | NR |
| Hydrocyanic to 10% | 200 | 170 | 210 | Aluminum Sulfate | 250.00 | 240.00 | 210.00 | Ethylene Glycol | 250.00 | 220.00 | 210.00 |
| Hydrofluoric to 10% | ***\$100 | ***\$150 | ***\$150 | Ammonium Chloride | *200 | *220 | *210 | n-Heptane | 120.00 | 210.00 | 210.00 |
| Hydrofluorosilicic up to 10% | *\$100 | *\$150 | *\$180 | Ammonium Nitrate | 200.00 | 220.00 | 220.00 | Hexane | — | 150.00 | 160.00 |
| Hypochlorous to 20% | 90 | 110 | NR | Ammonium Persulfate | 150.00 | 200.00 | 180.00 | Methyl Ethyl Ketone to 10% | NR | 80.00 | NR |
| Lactic | *200 | *220 | *210 | Ammonium Persulfate, saturate | 150.00 | NR | NR | Naphtha | 200.00 | 210.00 | 180.00 |
| Maleic | 170 | 210 | 210 | Ammonium Sulfate | 200.00 | 220.00 | 220.00 | Naphthalene | 130.00 | 220.00 | 210.00 |
| Nitric to 5% | 200 | 170 | 150 | Aniline Sulfate to 25% | 150.00 | 220.00 | 210.00 | Tetrachloroethylene | NR | 100.00 | 80.00 |
| Nitric 5% to 20% | — | 140 | 120 | Aniline Sulfate, saturated | 150.00 | 220.00 | NR | Toluene | 90.00 | NR | 80.00 |
| Oleic | 200 | 220 | 210 | Barium Chloride | 200.00 | 240.00 | 210.00 | Xylene | 90.00 | 80.00 | 80.00 |
| Oxalic | *220 | *220 | *210 | Barium Sulfide | NR | \$210 | 180.00 | | | | |
| Perchloric to 10% | H&D | **150 | **150 | Calcium Chlorate | 180.00 | 220.00 | 220.00 | BLEACHES | | | |
| Phosphoric | *220 | *\$210 | *\$210 | Calcium Chloride | 250.00 | 240.00 | 220.00 | Calcium Chlorate | 180.00 | 220.00 | 220.00 |
| Phosphoric, super | — | *\$210 | *\$210 | Calcium Sulfate | *200 | *240 | *210 | Calcium Hypochlorite | 100.00 | NR | \$160 |
| Phthalic Anhydride | *150 | *210 | *210 | Copper Chloride | *250 | *220 | *220 | Chlorine Dioxide up to 15% | — | 160.00 | *200 |
| Picric to 10% | 100 | 170 | NR | Copper Cyanide | 90.00 | \$220 | 210.00 | Chlorine Water | *125 | *210 | *200 |
| Silicic | — | 220 | NR | Copper Fluoride | NR | \$170 | NR | Hydrogen Peroxide to 30% | 120.00 | 100.00 | 150.00 |
| Stearic | 200 | 220 | 210 | Copper Sulfate | 250.00 | 240.00 | 210.00 | Sodium Chlorate | 90.00 | 210.00 | 210.00 |
| Sulfamic to 25% | 160 | 150 | NR | Ferric Chloride | *250 | *220 | *210 | Sodium Hypochlorite to 15% | NR | 125.00 | \$180 |
| Sulfuric to 25% | *200 | *220 | *210 | Ferric Nitrate | 170.00 | 220.00 | 210.00 | | | | |
| Sulfuric to 50% | *200 | *200 | *180 | Ferric Sulfate | 200.00 | 220.00 | 210.00 | OTHERS | | | |
| Sulfuric to 70% | *150 | *180 | *100 | Ferrous Chloride | *220 | *220 | *210 | Alum. Chlorohydroxide to 50% | — | 220.00 | 210.00 |
| Sulfuric to 80% | NR | 80 | NR | Ferrous Nitrate | 160.00 | 220.00 | 210.00 | Ammonium Phosphate | 150.00 | 210.00 | 210.00 |
| Sulfurous to 10% | 90 | 110 | 120 | Ferrous Sulfate | 220.00 | 220.00 | 210.00 | Aqua Rega | NR | *80 | NR |
| Tannic | 200 | 220 | 210 | Lead Acetate | 160.00 | 220.00 | 210.00 | Detergents | 120.00 | 170.00 | 150.00 |
| Tartaric | 220 | 220 | 210 | Magnesium Chloride | 220.00 | 240.00 | 210.00 | Glycerine | 200.00 | 220.00 | 210.00 |
| Trichoroacetic to 50% | *90 | *220 | *200 | Magnesium Hydroxide | — | \$210 | 210.00 | Kerosene | 120.00 | 210.00 | 180.00 |
| | | | | Magnesium Sulfate | 200.00 | 210.00 | 210.00 | Photographic Solutions | — | 80.00 | NR |
| ALCOHOLS | | | | Mercuric Chloride | *210 | *220 | *210 | Perchloroethylene | NR | 100.00 | 80.00 |
| Amyl | 200 | 210 | 120 | Mercurous Chloride | 210.00 | 220.00 | 210.00 | Sodium Tetraborate | 180.00 | \$210 | 180.00 |
| Benzyl | NR | 100 | NR | Nickel Chloride | 220.00 | 220.00 | 210.00 | Sodium Tripolyphosphate | 125.00 | 210.00 | 210.00 |
| Butyl | 190 | 150 | 120 | Nickel Nitrate | 220.00 | 220.00 | 210.00 | Sodium Xylene Sulfonate | — | 170.00 | 160.00 |
| Ethyl | 90 | 120 | 80 | Nickel Sulfate | 220.00 | 220.00 | 210.00 | Sorbitol Solutions | 180.00 | 220.00 | 160.00 |
| Methyl | 90 | 80 | NR | Potassium Chloride | 200.00 | 240.00 | 210.00 | Urea | 90.00 | 170.00 | 150.00 |
| | | | | Potassium Dichromate | 200.00 | 220.00 | 210.00 | Urea-Ammonium-Nitrate | — | 120.00 | 120.00 |
| GASES AND VAPORS | | | | Potassium Ferricyanide | 200.00 | 220.00 | 210.00 | Fertilizer Fumes | 100.00 | 120.00 | 150.00 |
| Ammonia, Dry | 90 | 170 | 100 | Potassium Nitrate | 200.00 | 220.00 | 210.00 | Shell-D-D | NR | 100.00 | NR |
| Ammonia, Wet | 90 | NR | NR | Potassium Permanganate | 150.00 | 210.00 | 210.00 | Steam Vapor | 180.00 | 210.00 | 180.00 |
| Bromine, Wet | 90 | *100 | NR | Potassium Persulfate | 90.00 | 220.00 | 210.00 | | | | |
| Carbon Dioxide | 250 | 250 | 250 | Potassium Sulfate | 200.00 | 240.00 | 210.00 | | | | |
| Carbon Monoxide | 200 | 250 | 250 | Silver Nitrate | 200.00 | 220.00 | 210.00 | | | | |
| Chlorine, Dry | *200 | *210 | NR | Sodium Acetate | 150.00 | 220.00 | 210.00 | | | | |
| Florine | — | NR | 80 | Sodium Bisulfate | 200.00 | 220.00 | 210.00 | | | | |
| Hydrogen Fluoride, Vapor | *90 | *\$180 | *\$180 | Sodium Chloride | 200.00 | 240.00 | 180.00 | | | | |
| Hydrogen Sulfide to 5% | 250 | 240 | 180 | Sodium Chlorite to 10% | 175.00 | 170.00 | 150.00 | | | | |
| Sulfur Dioxide, Dry | 200 | 250 | 210 | Sodium Cyanide | 100.00 | 220.00 | 210.00 | | | | |
| Sulfur Dioxide, Wet | 200 | 250 | 210 | Sodium Dichromate | 160.00 | 220.00 | 210.00 | | | | |
| Sulfur Trioxide, Wet | — | 220 | 210 | | | | | | | | |

Reference
C.R.G.13

NOTES: NR = Not Recommended S = Synthetic surfacing veil or mat required. Contact factory. “—” = No test data available

- * Special shaft and hardware required, contact factory.
- ** Special design considerations required (explosive environment), contact factory.
- *** Do not use HartKoate. Special shaft and hardware required, contact factory.
- For environments not shown, or when temperatures exceed the maximum listed, contact factory.
- Hydrocarbon fuel environments may require static grounding, contact factory.
- Do not use HartKoate (Alum. Oxide) with Hydrofluoric acid.



Hartzell Warranty

LIMITED WARRANTIES

Hartzell represents to Buyer that any goods to be delivered hereunder will be produced in compliance with the requirements of the Fair Labor Standards Act of 1938 as amended.

Hartzell also warrants to Buyer its goods to be free from defects in workmanship and material under normal use and service for one (1) year after tender of delivery by Hartzell, plus six months allowance for shipment to approved stocking dealers and distributors. No warranty extends to future performance of goods and any claims for breach of warranty or otherwise accrues upon tender of delivery. The foregoing constitute Hartzell's sole and exclusive warranties and are in lieu of all other warranties, whether written, oral, express, implied or statutory.

LIMITATION OF LIABILITY FOR BREACH OF WARRANTY

Hartzell's obligation for any breach of warranty is limited to repairing or replacing, at its option, without cost to Buyer at its factory any goods which shall, within such a warranty period, be returned to it with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been defective. Any request for repair or replacement should be directed to Hartzell Fan, Inc., P.O. Box 919, Piqua, Ohio 45356. Hartzell will not pay for any repairs made outside its factory without its prior written consent. This does not apply to any such Hartzell goods which have failed as a result of faulty installation or abuse, or incorrect electrical connections or alterations, made by others, or use under abnormal operating conditions or misapplication of the goods.

LIMITATION OF LIABILITY

To the extent the above limitation of liability for breach of warranty is not applicable, the liability of Hartzell on any claim of any kind, including negligence, for any loss or damage arising out of or connected with, or resulting from the sale and purchase of the goods or services covered by these Terms and Conditions of Sale or from the performance or breach of any contract pertaining to such sale or purchase or from the design manufacture, sale, delivery, resale, installation, technical direction installation, inspection repair, operation or use of any goods or services covered by these Terms and Conditions shall, in no case exceed the price allocable to the goods or services which gave rise to the claim and shall terminate one year after tender of delivery of said goods or services, plus six months allowance for shipment to approved stocking dealers and distributors. In no event will Hartzell be responsible or liable for any labor or other incidental costs associated with the removal or replacement of defective products or materials.

In no event whether as a result of breach of contract, or warranty or alleged negligence, defects, incorrect advice or other causes, shall Hartzell be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of the equipment or any associated equipment, cost of substitute equipment, facilities or services, down time costs, or claims of customers of the Buyer for such damages. Hartzell neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of its goods or services.

NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS

HARTZELL DOES NOT WARRANT THAT SAID GOODS ARE OF MERCHANTABILITY QUALITY OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY AND THERE IS NO IMPLIED WARRANTY OF FITNESS.



Propeller Fans



Cooling Tower & Heat Exchanger Fans



Duct Fans



Duct Axial Fans



Vaneaxial Blowers



Cool Blast & Utility Fans



Steel Centrifugal Blowers



Roof Ventilators - Steel & Fiberglass



Heating Equipment - Gas & Steam



Fiberglass Axial Flow Fans



Fiberglass Centrifugal Blowers



Marine - Mine Duty Blowers

Hartzell Fan, Inc., Piqua, Ohio 45356 • Plants in Piqua, Ohio and Portland, Indiana.