

Apex Advanced Technologies Static Dissipative /Conductive tube All Lubricants

Apex Advanced Technologies recommends a change of the tubing from the hopper to the press and properly grounding the whole system. All lubricants can build static as they flow across incompatible surfaces such as a rubber hose feeding the press. This can cause a static build up in the tubing/hose and cause flow to be erratic to the press. This leads to variation in height and weight. When making high density parts additional complications arise due to the effects being magnified. All lubricants exhibit this effect, Apex is no exception. Since Apex lubricants are used for high density applications, these effects are magnified.

Cincinnati press did a study a number of years back. They studied different tubing and different lubricants. They concluded that the type of tube was important and that there were differences between lubricants in uniformity of fill. They concluded that a static conductive, static dissipative and with a low coefficient of friction tube gave the least variation of fill for all types of lubricants. They also recommended a minimum of 2 inch diameter I.D. tube in as close to vertical position as possible worked best. They had concluded that a Goodyear Artrac tubing worked the best. We have some clients using this tubing successfully, but have some issues with the tubing being too stiff.

There are several other tubes being used successfully. The Hi-Tech Duravent type SDH is one. McMaster Carr supplies this as their part no. 5916T with the last digits specifying the diameter of the tube. McMaster Carr also sells 5179k with the last digits specifying the diameter. Both tubes have copper wire embedded in them. It is imperative that the copper wire makes connection to ground.

We further recommend that grounding be added between the shoe and the hopper or transition piece if the hopper is portable. This grounding needs to be connected to a true ground. The earth is the best ground; the next best is the main electrical ground. Connecting to the press is not recommended since it may not be a good ground for static. The need for this grounding has been demonstrated. With the right tubing and an incomplete circuit (hopper and shoe) not connected to a true ground, the results can be poor. With a complete connection and correct tubing, dramatic improvements have been verified repeatedly. Here is one example:

With the Artrac tubing we quantified the results with a spur gear on the same mix. The spur gear with a very fine spline was ~105 grams pressed to a 7.25g/cc density. The weight variation went from a standard deviation of 1.51 to 0.13. The length variations went from a standard deviation of 8.54 to 2.19. The only changes that were made, were the ones discussed above.

Websites

www.goodyearep.co.za/productdetails

www.hitechduravent.com/products Type SDH

www.mcmaster.com



ARTRAC® ABRASIVE MATERIAL HANDLING



Product Specifications

APPLICATION: The Artrac® hose is used for a variety of abrasive, material-handling applications to transfer sand, gravel, cement, fly ash, glass, metals, plastic pellets, fertilizers, rock salts and slurries.

CONSTRUCTION TUBE: Thermoplastic alloyed blend of polyurethane and PVC (static dissipating/static conductive)

COVER: Thermoplastic alloyed blend of nitrile, polyurethane, and PVC (nonconductive)
(Available with conductive cover—see order code below.)

REINFORCEMENT: Rigid high-density PVC helix

TEMPERATURE: -40°F to 158°F (-40°C to 70°C)

PACKAGING: 1¼"-6" 100' lengths, coiled and polywrapped
8"-10" 20' lengths, polytube

BRANDING: Not branded

COUPLINGS: Contact fitting manufacturer for proper fitting recommendation and coupling procedure.

NON-STOCK/SIZES: Contact customer service

ORDER CODES: 586-462 586-522 (with conductive cover)

MATERIAL HANDLING
Abrasives
Bulk Transfer
Cement & Concrete

ARTRAC® ABRASIVE MATERIAL HANDLING

| ID | | NOM. OD | | MAX. WP | | BEND RADIUS | | VACUUM HG | | WEIGHT | |
|-----|-------|---------|-------|---------|------|-------------|------|-----------|-----|---------|-------|
| in. | mm. | in. | mm. | psi | Mpa | in. | mm. | in. | mm. | lb./ft. | kg/m |
| 1¼ | 31.8 | 1.63 | 41.4 | 45 | 0.31 | 3 | 76 | 29 | 737 | 0.34 | 0.51 |
| 1½ | 38.1 | 1.89 | 48.0 | 40 | 0.28 | 3 | 81 | 29 | 737 | 0.40 | 0.60 |
| 2 | 50.8 | 2.47 | 62.7 | 40 | 0.28 | 6 | 140 | 29 | 737 | 0.67 | 1.00 |
| 2½ | 63.5 | 3.05 | 77.5 | 35 | 0.24 | 6 | 152 | 29 | 737 | 0.87 | 1.29 |
| 3 | 76.2 | 3.69 | 93.7 | 30 | 0.21 | 8 | 191 | 29 | 737 | 1.16 | 1.73 |
| 4 | 101.6 | 4.81 | 122.2 | 30 | 0.21 | 11 | 279 | 29 | 737 | 2.16 | 3.21 |
| 5 | 127.0 | 5.78 | 146.8 | 30 | 0.21 | 10 | 381 | 29 | 737 | 2.60 | 3.87 |
| 6 | 152.4 | 7.08 | 179.8 | 25 | 0.17 | 20 | 508 | 29 | 737 | 3.43 | 5.10 |
| 8 | 203.2 | 9.22 | 234.2 | 20 | 0.14 | 30 | 762 | 29 | 737 | 5.84 | 8.69 |
| 10 | 254.0 | 11.21 | 284.7 | 20 | 0.14 | 45 | 1143 | 29 | 737 | 7.96 | 11.85 |

For more information, call 1-800-235-4632 (US), 1-888-275-4397 (Canada), or visit www.goodyear.com/hose.

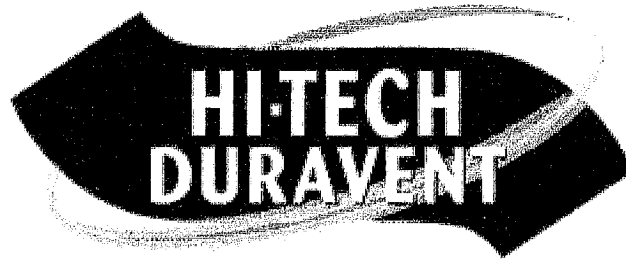
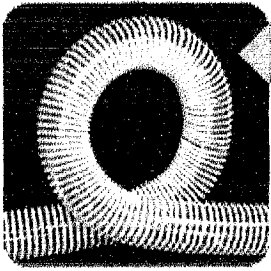
The GOODYEAR (and Winged Foot Design) trademark is used by Veyance Technologies, Inc. under license from The Goodyear Tire & Rubber Company. Goodyear Engineered Products are manufactured and sourced exclusively by Veyance Technologies, Inc. or its affiliates. ©2009 Veyance Technologies, Inc. All Rights Reserved.



09GHOS104 - 11/09

GOODYEAR
ENGINEERED PRODUCTS

VEYANCE
TECHNOLOGIES



SDH

Temperature Range: -20F to 180F

Construction: Specially formulated thermoplastic polyurethane reinforced with a plastic helix and copper grounding wire

Standard Colors: Clear with opaque helix

Standard Lengths: 25', 50'

Size Range: 3/4", 1", 1 1/4", 1 1/2", 1 3/4", 2", 3", 4" (*without static wire)

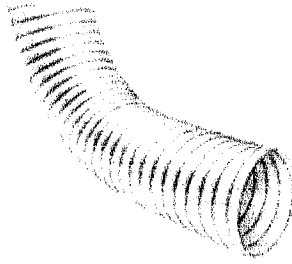
Description:

- Smooth interior
- Possesses inherent static dissipation
- Materials are FDA acceptable
- Does not outgas and is free of fillers, halogens and surface oils
- Excellent flexibility, abrasion resistance and clarity
- Ideal for clean rooms, powder and plastic pellet transfer
- Supplemental helix available
- Available with PVC screw-on cuff

Applications:

- Material Handling
- Pellet Transfer
- Pharmaceutical
- Plastic Bag Extrusion
- Plastics Industry
- Static Control

Static-Dissipative Clear Duct for Chips and Shavings



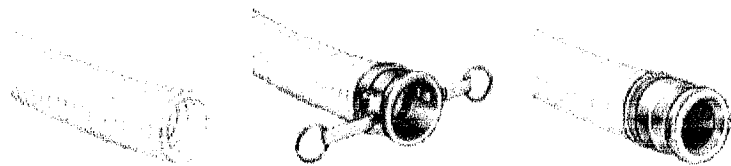
- Ideal for wood chips, metal shavings, corrugated fibers, plastic pellets, and powders; also for air, smoke, and dust
- Flexible
- Temperature Range: -20° to +200° F
- Internal Abrasion Resistance: Excellent
- Color: Clear
- Clamps: Use worm-drive clamps

Just crimp a grounding wire to the wire support on this hose and you'll create an escape route for electrostatic buildup. Made from 0.035" thick TPU (thermoplastic polyurethane) with an enclosed bronze-coated steel wire support, this clear hose allows you view the material flow. The TPU material is FDA CFR21 177.2600 compliant. Hose compresses 50% of its length. Can be used indoors and out.

To Order: Please order hose in 5-ft. increments up to the full coil length of 50 ft.

| Hose | | Bend Radius | Max. psi @ 72° F | Vacuum @ 72° F | | Per Ft. | |
|--------|----------|-------------|------------------|----------------|--------|--------------|-----------|
| ID | OD | | | | | Partial Coil | Full Coil |
| 2" | 2 9/32" | 2 1/2" | 13 | 29" Hg | 5916T1 | \$11.20 | \$9.08 |
| 2 1/2" | 2 3/4" | 3" | 13 | 29" Hg | 5916T2 | 11.90 | 9.65 |
| 3" | 3 9/32" | 3 1/2" | 12 | 29" Hg | 5916T3 | 12.59 | 10.22 |
| 4" | 4 5/16" | 4 1/2" | 10 | 20" Hg | 5916T4 | 14.01 | 11.36 |
| 5" | 5 5/16" | 5 1/2" | 10 | 15" Hg | 5916T5 | 17.57 | 14.25 |
| 6" | 6 5/16" | 6 1/4" | 9 | 13" Hg | 5916T6 | 19.31 | 15.66 |
| 8" | 8 11/32" | 8 3/4" | 7 | 10" Hg | 5916T7 | 21.60 | 17.53 |
| 10" | 10 3/8" | 11 1/4" | 5 | 7" Hg | 5916T8 | 30.51 | 24.75 |
| 12" | 12 3/8" | 13 1/4" | 5 | 6" Hg | 5916T9 | 39.91 | 32.38 |

Clear Dry-Food Hose



Hose with Static Wire

Cam-and-Groove Socket

Cam-and-Groove Plug

- Use with dry food products
- Temperature Range: -4° to +150° F
- Color: Clear
- Hose: PVC
- Cover: PVC
- Reinforcement: PVC spiral

Clear hose allows you to visually monitor flow. The hose material is FDA CFR21 170-199 and USDA compliant. Hose is smooth for unrestricted flow. Can be used indoors and out.

Hose with Static-Control Wire—Just crimp a grounding wire to the static-control wire that's built into this hose and you'll create an escape route for electrostatic buildup.

Cam-and-groove sockets and plugs come in your choice of *aluminum*, which are lightweight with good corrosion resistance, or *Type 316 stainless steel*, which have excellent corrosion resistance. To connect, insert the plug into the socket and push the handle down. *Note:* Fittings do not meet the standards shown for the hose material.

Hose—To Order: Please order in 5-ft. increments up to the full coil length.

Fittings (Attached to the Hose)—Assembled in lengths of 5-, 10-, 15-, 20-, 25-, or 50-ft., or any length you choose up to the full length.

Hose with Optional Aluminum Fittings

| Hose | | Bend | | Max. psi | Vacuum | Full | Per Ft. | | FITTINGS (ATTACHED TO THE HOSE) One Cam-and-Groove Socket and One Plug | | |
|---|----------|--------|---------|----------|----------|--------------|-----------|---------------|---|---------|---------|
| ID | OD | Radius | @ 72° F | @ 72° F | Coil Lg. | Partial Coil | Full Coil | Coupling Size | | Per Set | |
| Hose without Static-Control Wire | | | | | | | | | | | |
| 1" | 1 5/16" | 2" | 55 | 28" Hg | 100 ft. | 5199K71 | \$2.45 | \$1.92 | 1" | 5199K51 | \$21.27 |
| 1 1/4" | 1 19/32" | 2" | 50 | 28" Hg | 100 ft. | 5199K72 | 2.95 | 2.32 | 1 1/4" | 5199K52 | 27.55 |
| 1 1/2" | 1 15/16" | 3" | 50 | 28" Hg | 100 ft. | 5199K73 | 3.44 | 2.71 | 1 1/2" | 5199K53 | 26.37 |
| 2" | 2 13/32" | 4" | 40 | 28" Hg | 100 ft. | 5199K74 | 4.72 | 3.72 | 2" | 5199K54 | 31.09 |
| 2 1/2" | 3" | 5" | 40 | 28" Hg | 100 ft. | 5199K75 | 7.29 | 5.74 | 2 1/2" | 5199K55 | 47.18 |
| 3" | 3 21/32" | 6" | 40 | 28" Hg | 100 ft. | 5199K76 | 9.36 | 7.36 | 3" | 5199K56 | 51.45 |
| 4" | 4 23/32" | 10" | 35 | 24" Hg | 100 ft. | 5199K78 | 16.30 | 12.82 | 4" | 5199K58 | 90.55 |
| 5" | 5 3/4" | 16" | 30 | 24" Hg | 20 ft. | 5199K89 | 26.93 | 21.56 | 5" | 5199K59 | 151.85 |
| 6" | 6 29/32" | 18" | 30 | 24" Hg | 20 ft. | 5199K81 | 30.64 | 25.27 | 6" | 5199K61 | 191.84 |
| 8" | 8 31/32" | 36" | 20 | 20" Hg | 20 ft. | 5199K84 | 46.93 | 36.95 | 8" | 5199K62 | 451.35 |
| Hose with Static-Control Wire | | | | | | | | | | | |
| 1 1/4" | 1 21/32" | 2" | 50 | 28" Hg | 50 ft. | 5179K23 | 6.90 | 5.42 | 1 1/4" | 5179K11 | 27.55 |
| 1 1/2" | 1 15/16" | 3" | 50 | 28" Hg | 50 ft. | 5179K24 | 7.17 | 5.65 | 1 1/2" | 5179K12 | 26.37 |
| 2" | 2 15/32" | 4" | 40 | 28" Hg | 50 ft. | 5179K25 | 9.92 | 7.81 | 2" | 5179K13 | 31.09 |
| 2 1/2" | 3 1/16" | 5" | 40 | 28" Hg | 50 ft. | 5179K26 | 11.98 | 9.42 | 2 1/2" | 5179K14 | 47.18 |
| 3" | 3 21/32" | 6" | 40 | 28" Hg | 50 ft. | 5179K27 | 15.99 | 12.59 | 3" | 5179K15 | 51.45 |
| 4" | 4 23/32" | 10" | 35 | 24" Hg | 50 ft. | 5179K28 | 26.15 | 20.59 | 4" | 5179K16 | 90.55 |
| 5" | 5 3/4" | 16" | 30 | 24" Hg | 50 ft. | 5179K45 | 39.96 | 31.47 | 5" | 5179K17 | 151.85 |
| 6" | 6 13/16" | 18" | 30 | 24" Hg | 50 ft. | 5179K46 | 44.31 | 34.89 | 6" | 5179K18 | 191.84 |