Corrosion Resistant Products for the Chlor-Alkali Industry
PureFlex, Inc.

• Founded in 1994
• Products
  • Fluoropolymer Hoses
  • Composite Valves
  • Specialty PTFE Gaskets
  • FEP Sight Tube
  • Composite Flanges
Ethylene, LLC

- Founded in 1950’s
- Acquired in August 2005
- Products
  - PTFE Expansion Joints
  - PTFE Dip Tubes / Spargers
  - Glass Sight Flow Indicators
  - Specialty Lined Pipe / Fittings
  - Lined Pump Strainers
PureFlex & Ethylene Facility

- Location in Kentwood (Grand Rapids), MI
- 170,000 ft² Manufacturing Space
- ~ 100 employees
PureFlex Durcor-62™

- Fiberglass / Vinyl Ester Composite with High Glass / Resin Ratio
- 1” Fiber Length
- High Tensile Strength
  - 50,000 psi per ASTM D-638
- High Impact Resistance.
  - 30 ft-lb/in per ASTM D-256
- High Lug Torque Strength
  - Tested to 250 ft-lbs
  - No Metal Inserts Required!
PureFlex Durcor-62™

No Exterior Corrosion!

Durcor-62™ Ductile Iron
PureFlex 800 Series Butterfly Valves

- Sizes 2” – 12”
- Wafer & Lug Style
- Locking Lever, Gear Operators, or Automated
- ANSI Dims
- Lightweight, High Strength, Corrosion Resistant, Durcor-62™ Body
- Applications
  - Chlorine Header
  - Caustic
  - HCL
  - H2SO4
PureFlex 800 Series Butterfly Valves

- PTFE or UHMWPE Seats with Viton® or Silicone Energizers
- One-piece disk stems:
  - PFA lined
  - UHMWPE Lined
  - 316 SS
  - Hastelloy C276, Titanium
- Triple Stem Seals Top and Bottom
  - Coil Spring & Taper Ring
  - Machined Barbs on Stem Seal w/ Interference Fit on Seat
  - Machined Disk Hub to Match Seat Radius
PureFlex 860 Series Butterfly Valves

- Sizes 2” – 12”
- Wafer & Lug Style
- ANSI Dimensions
- Locking Lever, Gear Operators, or Automated
- EPDM or Hypalon® Rubber Seats
- One-piece disk stems:
  - EPDM Lined
  - Hypalon® Lined
  - 316 SS
  - Hastelloy C276, Titanium
- Durcor-62™ Body
PureFlex 890 Series Butterfly Valves

- 14” – 42” Sizes!
- Wafer & Lug Style
- Gear Operator or Automated
- Glass / Derakane® 411 Body
- Derakane® 470 Liner
- Double Offset Design
- Derakane® 470 Encapsulated 17-7 Stainless Steel Shaft
- Glass / Derakane® 470 Disk
- Viton® Seat

The worlds FIRST all-composite butterfly valve in sizes 14” and larger
PureFlex Ball Valves

- 1” – 6” Sizes
- ANSI B16.10, B16.5
- Resin Encapsulated Hastelloy Stem
- Durcor-62™ Live Loaded Packing Gland
- PTFE Chevron Packing
- Micropolished Carbon Graphite / Resin Ball
- Cavity Filling, Energized, PTFE Seats
- Locking Hand Lever or Automated
- Ball Check Valves Available
**PureFlex Ball Valves**

- **Derakane® 470 Vinyl Ester**
  - Glass Fiber Reinforced
  - -50 to 215°F

- **Derakane® 470 Vinyl Ester**
  - Carbon Graphite Fiber Reinforced
  - -50 to 250°F

- **Z-Core® Epoxy Resin**
  - Glass Fiber Reinforced
  - -50 to 250°F

- **Z-Core® Epoxy Resin**
  - Carbon Graphite Fiber Reinforced
  - -50 to 275°F
PureFlex 459 Series Ball Valve

- Zirconia Ceramic Ball & Seats
  - Excellent Abrasion Resistance
  - Superior Mechanical & Thermal Shock Resistance v. Alumina
- 1” – 6” Sizes
- ANSI B16.10, B16.5
- Carbon Graphite / Z-Core® Epoxy Resin
- Resin Encapsulated Hastelloy Stem
- Durcor-62™ Live Loaded Packing Gland
- Locking Hand Lever or Automated
- Characterized Balls Available
PureFlex Valve Applications

- HCl
- NaOH
- KOH
- Brine
- H$_2$SO$_4$
- H$_3$PO$_4$
- NaOCl
- Demineralized Water
- Chlorine Wastewater
- Liquid Chlorine
PureFlex Durcor-62™ Flanges

- Corrosion Resistant, High Strength Composite Flanges
- 1/4 Weight of Stainless Steel
- Less Expensive than Stainless Steel
- 1” – 6”, ANSI B16.5 Class 150
- Lap Joint, Blind, & PTFE Lined Blind
- -60° to 300° F
- Applications
  - FRP Piping Systems
  - Thermoplastic Piping Systems
  - FRP, PPL & PE Tanks
  - Stainless Steel / Alloy Piping
  - Hose Assemblies
  - Plastic Lined Pipe
PureFlex Hose Assemblies

- ⅛” – 6” sizes
- PTFE / PFA / FEP
- Conductive Available
- Convoluted & Smooth Bore
- SS Braid / PP Braid / Rubber Cover
- Multitude of Fitting Options
  - Flare Thru Flanged
  - Threaded
  - JIC Swivel
  - Sanitary
  - CamLock
  - PFA Encapsulated
UltraFlex™

- Heavy Duty, Convoluted PTFE (virgin or conductive)
- SS or PPL Slip Braid or Bare Tubing
- Multiple Fitting Options
- Flare-Thru Liner Available

Temperature Range: -65°F (-54°C) to +450°F (232°C)

<table>
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<tr>
<th>I.D. NOMINAL</th>
<th>OPERATING PRESSURE (PSI)</th>
<th>MINIMUM BEND RADIUS (in)</th>
<th>VACUUM RATING (In-Hg)</th>
<th>WEIGHT PER FOOT</th>
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<td>Bare Hose</td>
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Operating pressure ratings are one fourth the minimum burst pressure at 70°F (21°C)
All ratings stated are @ 70°F (21°C)
FlexChem™

- FEP ½” - 6” sizes
- Conductive PTFE ½”-2”
- EPDM Cover with Wire Helix
- Multiple Fitting Styles (including Flare-Thru)
- Rugged, Heavy Duty

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Temperature Range: -40°F (-40°C) to 350°F (177°C)

Operating pressure ratings are one fourth the minimum burst pressure at 70°F (21°C)
All ratings stated are @ 70°F (21°C)
PureFlex CL2™ Hose

• Chlorine Transfer Hose
• $\frac{1}{2}$” – 2”
• 375 – 500 psig
• Heavy Duty, Convoluted PTFE
• Double Kynar® Braid
• Spiral HDPE, Kynar Braid, or CPE Rubber Cover
• Monel or Hastelloy Fittings
• Compliant w/ Chlorine Institute Pamplet 6
PureSite™ Sight Gage

- FEP Sight Tube Material Will Not Corrode, Shatter Or Degrade.
- ½” – 4” Sizes
- Pressures up to 150 psig
- Multiple Fitting Options
  - Flanges
  - Threaded
  - Sanitary
- Customized Scaling Available
- Ideal for Cell Level Gage
Task-Line® Gaskets

- Stainless Steel encapsulated in PTFE (other metals available)
- Resists creep ("cold flow")
- Reusable up to 20x
- ½” – 24” sizes, ANSI 150/300#
- Conductive PTFE Available for Static Electricity Grounding
- Line Blinds Available
- Orifice Flange Available
- Approved by the Chlorine Institute
Flexijoint® PTFE Expansion Joints

- ½” – 42” diameters
- 2 through 12 convolutions
- Cable and Limit Bolt Styles
- T-Band Technology
- Ductile Iron, SS, Alloy, & Durcor-62 Flanges / T-Bands
- Custom Designs Available
- Lower Spring Rate than Metal & Rubber Bellows
- Temperature to 450°F
- Full Vacuum Available
Flexijoint® - There is a difference!

Flexijoint®
• Isostatically Molded
• Mechanically Formed
• Consistent Thickness
• T-Bands

Competition
• Paste Extruded
• Blow Molded
• Inconsistent Thickness
• Root Rings
Flexijoint® w/ Durcor-62™ Flanges

- Same Flexijoint® PTFE expansion joint technology
- Lightweight, Durcor-62TM Composite Flanges
- 1 - 12” sizes w/ 150# flanges
- 2 though 12 convolutions
- -60°F to 250°F
- Cost competitive v. SS or alloy flanged joints
- Good for Chlorine header
FlexArmor® Expansion Joints

- Multi-Ply 321SS bellows
- PTFE Liner
- 1 ½” – 24” diameter
- 4 through 12 convolutions
- Other Alloys Available
  - Hastelloy C276 for VCM reactor
- Up to 200 psig @ 350°F

ETHYLENE, LLC
Flexible polymer accessories for corrosion management
Ethylarmor® Dip Pipes & Spargers

- PTFE Lined & Covered CS.
- ¾” – 8” sizes
- Single Flange, Double Flanged
- Options
  - Reinforced
  - Sparger Holes
  - Bent for Diverted Flow
  - Solid PTFE
T-Line Strainer®

- Cast Ductile Iron Body
- ETFE or PFA Liner
- Heavy Duty PTFE Basket
  - One Piece Construction
  - 1/8”, 1/4”, or 1/2” Holes
- 2” – 8” Sizes w/ 2” Drain
- Options
  - Custom Lids
  - Stand
  - Drain Elbows
  - Fluoropolymer Mesh
Large / Complex Lined Piping

Monoderm™ Rotolining
- ETFE, ECTFE, PVDF, PFA, Nylon
- Parts up to 42” diameter
- 100 – 250 mils
- Vacuum Resistant
- Ideal for Complex Shapes

Monoderm™ PTFE
- Heavy walled PTFE (up to .375”)
- 12” to 42” diameter
- Formed Nozzle Liners with no welds
- Ideal for Column Sections
Our Products in Chlorine/Caustic Area

- Chlorine
- Chlorine Packing, Filling, Vaporization
- Chlorine Storage
- Chlorine Compression
- Chlorine Drying
- Chlorine Liquefaction
- Chlorine Electrolysis
- Chlorine Concentration
- Caustic Storage
- Caustic Product
- Caustic Concentration
- Caustic Storage
- HCl Product
- HCl Storage
- HCl Production
- Hypo Production
- Hypo Storage
- Hypo Product
- Sulfuric Acid
- Sulfuric Acid
Our Products in Brine Treatment Area

- **Salt**
- **Demin. Water**
- **To Hypo**
- **NaOH**
- **Carbon Dioxide**
- **Sodium Sulfite**
- **HCl**
- **Spent Brine**
Some of our Customers.....