

OUR PRODUCT RANGE



VALVE SOLUTIONS for Corrosive Applications



AUTHORISED DISTRIBUTOR FOR
Australia/NZ/PNG/Philippines

RHINO FLEX™

RHINOFLEX VALVE SOLUTIONS PTY.LTD

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UNPPolyvalves

Manufacturer of PFA/FEP/PTFE Lined & Plastic Valves,
Pipes & Pipe Fittings



VALVE SOLUTIONS

for Corrosive Applications



ABOUT US

UNP Polyvalves is manufacturing and supplying valve solutions for corrosive applications since 1988.

Considering Indian market not having a good valve manufacturing plants for corrosive application valves in 80's and huge project requirements coming up during these years UNP promoters decided to install a corrosive application valve manufacturing plant in Vadodara, Gujarat.

UNP with its possession of highly knowledgeable and skilled work force along with technically qualified and experienced promoters having vision to grow and guide their team to be the world leading brand, market leaders and make products which are high in performance and having unmatched quality and reliability, has excelled in all these requirements of market.

Taking up the challenge UNP started its first manufacturing plant just admeasuring 1600 square feet, it started with manufacturing of solid plastic valves in very few options in terms of material of construction, type of valves and size range.

UNP started working very closely with the chemical process industries in India, Understanding their difficulties and requirements UNP always worked towards solutions to the problems in industries and earned very good name not only in domestic market but also in international market.

UNP understanding the changing market trends and requirements, entered in the business of Lined Valves and Piping systems in the year 1992 and has now become a leading brand in providing most reliable Lined Valves and Piping system to the chemical process industries.

Envisioned for quality and reliability, UNP Polyvalves aims for highest level of customer satisfaction through its solutions with commitment for excellence in all spheres of business.

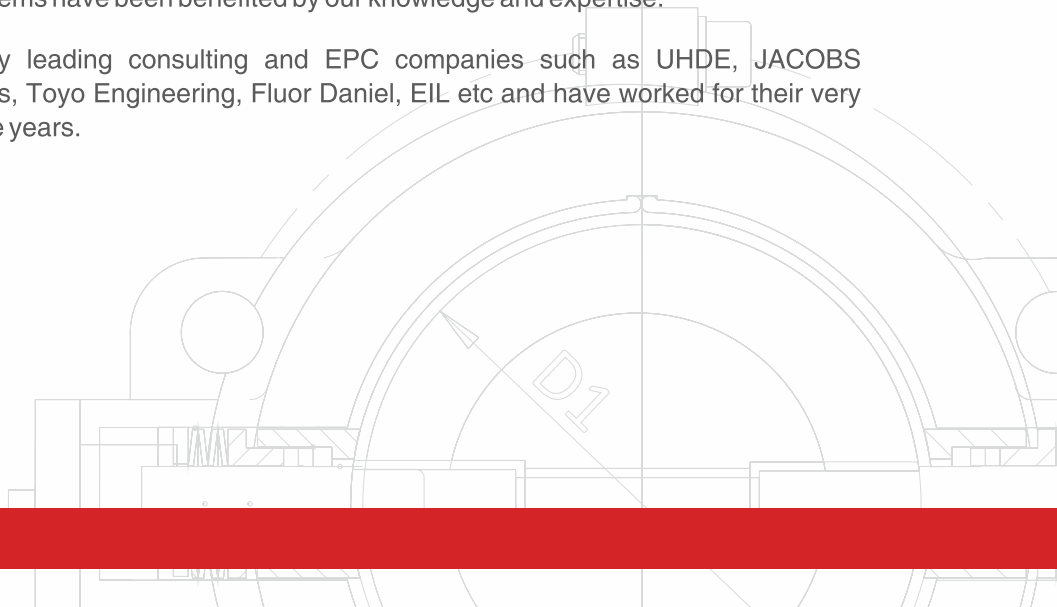
UNP today provides both Solid Plastic and Lined, Ball Valves, Plug Valves, Butterfly Valves, Diaphragm Valves, Ball Check Valves, Swing Check Valves, Sampling Valves, Double Window and Full View Sight Glasses, Y and T type strainers, Lined Pipes and Fittings with sizes ranging from ½" to 24".

UNP has marked its presence across the globe and are having establishments in countries like North America and exporting to 35+ countries through its distribution networks and to the direct end users.

ACHIEVEMENTS

UNP through its knowledge about the exact process conditions and technical expertise has helped chemical industries in resolving their corrosion problems and operational problems related to Plastic valves, Lined Valves and Piping systems. Chlor Alkali Plants, Pickling Lines and Acid regeneration plants in steel industries, Chemical injection skid manufacturers in Oil and Gas industries and many other plants having corrosion problems have been benefited by our knowledge and expertise.

UNP is approved brand by leading consulting and EPC companies such as UHDE, JACOBS Engineering, Mott Mcdonalds, Toyo Engineering, Fluor Daniel, EIL etc and have worked for their very prestigious project over these years.



GENERAL PROPERTIES OF POLYMERS

TECHNICAL PROPERTIES	SPECIFIC GRAVITY	WATER ABSORPTION (%)	HARDNESS ROCKWELL YIELD PSI	TENSILE STRENGTH NOTCHED FT.LB/IN	IMPACT STRENGTH	ELONGATION AT BREAK TEMP. °C	HDT °C	INJECTION MOULDING	MAX WOREKING TEMP °C
NORMAL GRADE POLYPROPYLENE	0.90-0.91	0.01-0.03	50	4400	1.5-2.5	200	90	200-300	80-85
ISOTACTIC POLYPROPYLENE	0.90	0.01	70	4800	2.2-2.7	200	142	200-300	120
PVDF	1.77-1.78	0.03	76-80	7000	2.0-4.0	50-250	168	200-300	-40 TO +140
ETFE	1.70	0.007	75	6700	2.0	300	176	310-330	-100 TO +160
FEP	2.15	0.004	60	3400	2.9	325	260	350-370	205
PFA	2.15	<0.03	72	3600	1.2	300	305	350-370	260

ADVANTAGES OF ISOTACTIC POLYPROPYLENE V/S NORMAL GRADE PP

- Isotactic Polypropylene is a fractional MFI homopolymer therefore it has sufficiently better toughness than any other homopolymer.
- Due to the presence of atmospheric oxygen, Degradation and Oxidation of normal grade PP is inevitable, even when there is no direct sunlight, while ISOTACTIC POLYPROPYLENE is immune to such degradation and oxidation.
- Chemical resistance of ISOTACTIC PP is more than that of normal grade PP even at an elevated temperature.
- Isotactic polypropylene has excellent heat resistance upto 120°C as against 85-90°C of normal grade PP, w.r.t water.
- This grade is proven in pickling lines (CRM) as well as ARP in steel Industries for handling HCL containing ferrous and ferric chloride at an elevated temp, upto 110°C.
- This grade is also proven in Caustic Chloro Plant for application in brine for Anolyte and Catholyte service upto 100°C temp.
- This grade is also proven in application of HCL with solvent traces such as benzene, toluene etc. at an elevated temperature upto 110°C.

MINIMUM LIFE EXPECTED IN HOURS FOR THREE CONTINUOUS SERVICE & TEMPERATURE LEVELS

FORMULATION	AT 120 °C	AT 100 °C	AT 80 °C
ISOTACTIC POLYPROPYLENE	18,000 (2 YRS)	1,04,000 (12 YRS)	7,15,000 (80 YRS)

UNIQUE PROPERTIES OF LINING MATERIALS

PTFE (POLYTETRAFLUOROETHYLENE)

PTFE has excellent properties such as chemical inertness, heat resistance (both high and low), electrical insulation properties, low coefficient of friction (Static 0.08 and Dynamic 0.01), and nonstick property over a wide temperature range up to 260°C. It has a density in the range of 2.1 to 2.3 g/cm³ and melt viscosity in the range of 25 mPa.s (cP). Molecular weight of PTFE cannot be measured by standard methods. Instead, an indirect approach is used to judge molecular weight. Standard Specific Gravity (SSG) is the specific gravity of a chip prepared according to a standardized procedure. The underlying principle is that lower molecular weight PTFE crystallizes more extensively, thus yielding higher SSG values.

TFM™ PTFE

The new generation of chemically modified PTFE enhances the performance of classic PTFE by providing outstanding low deformation under load, compression stress relaxation (recovery), reduced permeation, fewer voids, increased surface smoothness and good welding characteristics

PFA (A POLYMER OF TETRAFLUOROETHYLENE AND PERFLUOROVINYLETHER)

PFA polymers are fully fluorinated and melt-processible. They have chemical resistance and thermal stability comparable to PTFE. Specific gravity of perfluoroalkoxy resins is in the range of 2.12 to 2.17. PFA has an upper continuous use temperature of 260°C crystallinity and specific gravity of PFA parts decrease when the cooling rate of the molten polymer is increased. The lowest crystallinity obtained by quenching molten PFA in ice was 48% (specific gravity 2.123).

FEP (A POLYMER OF TETRAFLUOROETHYLENE AND HEXAFLUOROPROPYLENE)

Fluorinated ethylene-propylene copolymers are fully fluorinated and melt-processible. They have excellent chemical resistance and thermal stability. Specific gravity of FEP resins is in the range of 2.13 to 2.15. FEP has an upper continuous use temperature of 200°C.

ETFE (A POLYMER OF TETRAFLUOROETHYLENE AND ETHYLENE)

PVDF and equimolar ETFE are isomers but the latter has a higher melting point and a lower dielectric loss than the former. ETFE crystallizes into unit cells believed to be orthorhombic or monoclinic. The molecular conformation of ETFE is an extended zigzag. This polymer is dissolved in some boiling esters at above 230°C, thus allowing determination of molecular weight (weight-average) by light scattering. ETFE has several transitions, alpha relaxation at 110°C (shifts to 135°C at higher crystallinity), beta at 25°C, and gamma relaxation at 120°C. ETFE terpolymers have good mechanical properties including tensile and cut-through resistance and lower creep than perfluoropolymers. ETFE is more resistant to radiation than perfluoropolymers (modestly affected up to 20 Mrad) and can be crosslinked by radiation such as electron beam. Crosslinking is used to strengthen cut-through resistance of ETFE wire insulation.

ECTFE

Halar[®] ECTFE is a partially fluorinated semi-crystalline polymer offering a unique combination of properties for highly demanding industries.

- Outstanding chemical, permeation and fire resistance
- Low permeability
- Excellent weatherability
- Excellent release properties
- Good abrasion resistance

It is widely used in anti-corrosion applications as a lining or in self-supporting constructions (piping). Its excellent fire resistance properties and chemical resistance make Halar[®] ECTFE a product of first choice in wire and cable applications, in communication cable or speciality cable.

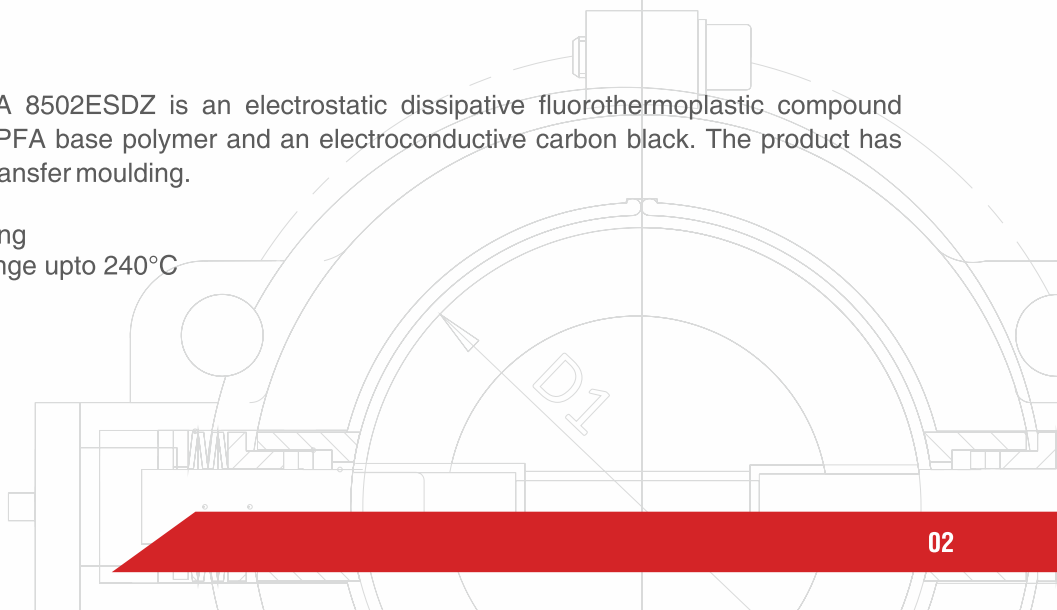
PPH

Polypropylene is available in two basic types as either homo polymer or copolymer material. Although similar in many respects each type exhibits distinct differences in both appearance and performance. Polypropylene Homopolymer (PPH) is the most widely utilized. PPH offers a high strength to weight ratio and is stiffer and stronger than copolymer, this combined with good chemical resistance and weldability allows this material to be used in many corrosion resistant structures.

PFA (CONDUCTIVE)

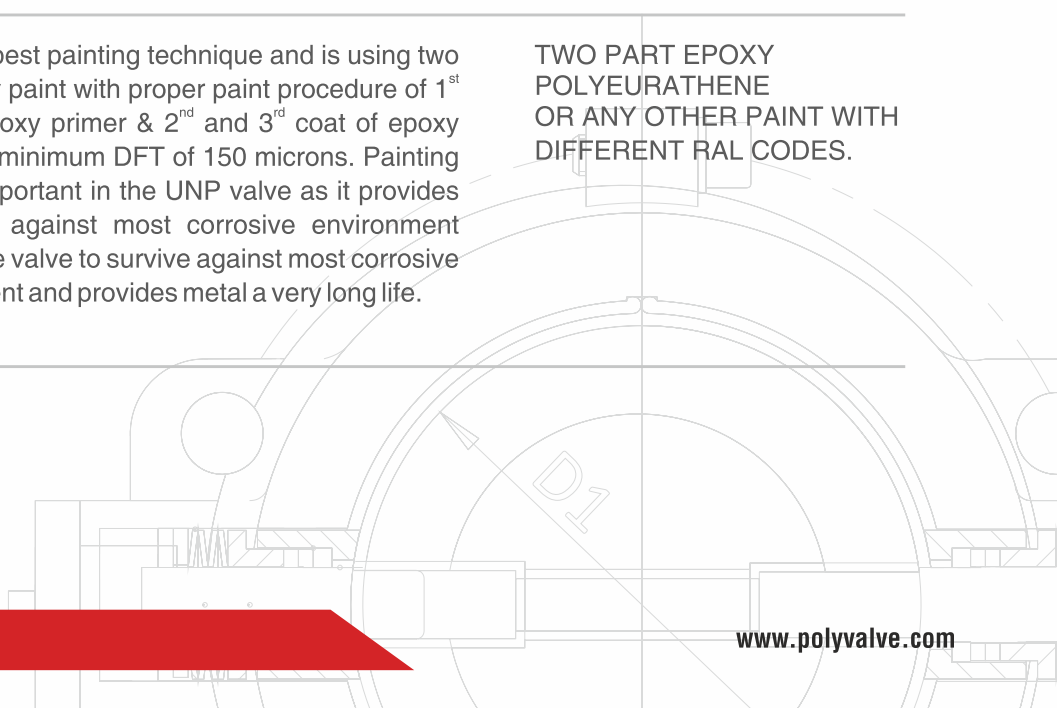
3M Dyneon[™] Fluoroplastic PFA 8502ESDZ is an electrostatic dissipative fluorothermoplastic compound consisting of a fully fluorinated PFA base polymer and an electroconductive carbon black. The product has specifically been developed for transfer moulding.

- Electrostatic dissipative
- Processing : Transfer moulding
- Wide service temperature range upto 240°C



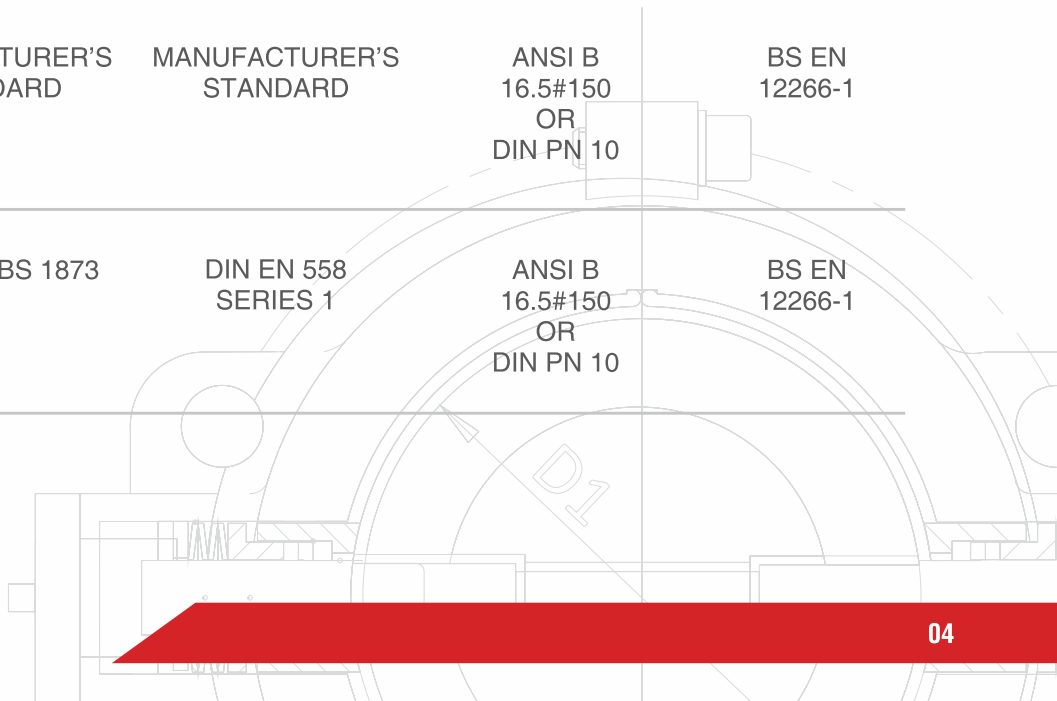
SPECIAL FEATURES OF UNP LINED VALVES

	FEATURES	OPTIONS AVAILABLE
CASTINGS	All castings used are investment castings and only for large size UNP uses sand castings. Investment castings are used to obtain homogeneous and intact lining quality with uniform lining thickness which provides UNP valve a reliable lining quality and long lasting performance.	ASTM A216 GR. WCB ASTM A351 GR. CF8 ASTM A351 GR. CF8M ASTM A352 GR. LCB OR LCC ASTM A890 GR. 4A (CD3MN) ASTM A494 HESTALLOY C276 / C 22
TRIM INSERTS	UNP through its stringent design considerations has taken both the aspects of corrosion resistance and mechanical strength. Considering high torqus in case of butterfly and plug valves UNP decided to use ASTM A890 GR. 4A(CD3MN) duplex material to obtain high "MAST" (Maximum Allowable Shear Torque) values ensuring intactness of plug and disc shafts even at higher operational torques. For other valves UNP uses trim inserts at higher grade of metal as ASTM A351 GR. CF8.	ASTM A351 GR. CF8 ASTM A351 GR. CF8M ASTM A890 GR. 4A (CD3MN) ASTM A494 HESTALLOY C276 / C22
BODY BOLTS	UNP uses allen bolts or stud & nut combination and high tensile body bolts are used considering its mechanical as well as corrosion aspects.	SS 304 SS 316 ALLOY 20 ASTM A193 GR. B7 & A194 GR. 2H HESTALLOY C276 OR C22 MONEL
LINING MATERIALS	UNP uses 100% virgin lining materials and is buying directly from the sources such as dyneon, chemours, solvay, llyondell basell etc. ensuring that the best and uniform quality of lining is done for UNP valves ensuring high reliability in terms of life and performance.	PFA FEP ETFE PVDF ECTFE PPH
PAINTING OF VALVES	UNP has best painting technique and is using two part epoxy paint with proper paint procedure of 1 st coat of epoxy primer & 2 nd and 3 rd coat of epoxy paint with minimum DFT of 150 microns. Painting is most important in the UNP valve as it provides protection against most corrosive environment making the valve to survive against most corrosive environment and provides metal a very long life.	TWO PART EPOXY POLYEURATHENE OR ANY OTHER PAINT WITH DIFFERENT RAL CODES.



MANUFACTURING & TEST STANDARDS AND FLANGE DIMENSIONS OFFERED

LINED VALVE TYPE	MANUFACTURING STANDARD	END TO END DIMENSIONS	FLANGE RATINGS OFFERED	TESTING STANDARDS
BALL VALVE	BS EN 17292	ANSI B 16.1 OR DIN EN 558-1	ANSI B 16.5 #150 OR #300 JIS 10K, DIN PN10	BS EN 12266-1 API 598
PLUG VALVE	API 599	ANSI B 16.1	ANSI B 16.5 #150 OR #300 JIS 10K, DIN PN10	BS EN 12266-1
BUTTERFLY VALVE	API 609 CATEGORY A	API 609 CATEGORY A	ANSI B 16.5 #150 OR DIN PN 10	BS EN 12266-1
DIAPHRAGM VALVE	BS EN 13397	DIN EN 558-1 SERIES 7	ANSI B 16.5 #150 OR DIN PN 10	BS EN 12266-1
BALL CHECK VALVE	MANUFACTURER'S STANDARD	ANSI B16.1 UPTO 4", 6"AND ABOVE MANUFACTURES STANDARD	ANSI B 16.5 #150 OR DIN PN 10	BS EN 12266-1
SWING CHECK VALVE	MANUFACTURER'S STANDARD	MANUFACTURER'S STANDARD	ANSI B 16.5#150 OR DIN PN 10	BS EN 12266-1
GLOBE VALVE	API 608 / BS 1873	DIN EN 558 SERIES 1	ANSI B 16.5#150 OR DIN PN 10	BS EN 12266-1



THERMOPLASTIC VALVES
MANUALLY OPERATED



DIAPHRAGM VALVE
(Advanced Version)



DIAPHRAGM VALVE
(Advanced Version)



DIAPHRAGM VALVE



DIAPHRAGM VALVE



BALL VALVE
Side Split, Full Port
PVDF



BALL VALVE
Side Split, Full Port
PPH



BALL VALVE
Socket Weld / Threaded End



BUTTERFLY VALVE
Lever Operated



BUTTERFLY VALVE
Gear Operated



BALL CHECK VALVE
Flanged End



SWING CHECK VALVE
Wafer Type



SAMPLING VALVE
Flanged Type



SAMPLING VALVE
Sandwich Type



FOOT VALVE
Flanged End



SIGHT GLASS
Flanged End



STRAINER
'T' / Basket Type

THERMOPLASTIC VALVES & PIPING SYSTEM MADE OUT OF
POLYPROPYLENE / HHS ISOTACTIC PP / PPH / PVDF / ETFE (TEFZEL) / UPVC / CPVC
SIZE RANGE : 1/2" To 24"

PFA / FEP / PVDF & ETFE LINED VALVES
MANUALLY OPERATED

LINED DIAPHRAGM VALVE
 Rising Hand Wheel

LINED DIAPHRAGM VALVE
 Rising Hand Wheel

LINED PLUG VALVE
 Lever Operated

LINED PLUG VALVE
 Gear Operated

LINED BUTTERFLY VALVE (WAFER)
 Lever & Gear Operated

LINED BUTTERFLY VALVE (FULL LUG)
 Lever & Gear Operated

LINED BALL VALVE
 Side Split Design, Full Port

ANTISTATIC PFA LINED BALL VALVE
 Lever Operated

LINED BALL VALVE
 Gear Operated

LINED 'Y' TYPE STRAINER

LINED BALL CHECK VALVE
 Vertical Installation

LINED GLOBE VALVE
 Straight Type

LINED SWING CHECK VALVE
 Wafer Type

LINED SAMPLING VALVE
 Flanged Type

LINED SAMPLING VALVE
 Sandwich Type with Shot Glass Bottle

 LINING MATERIAL : PFA / FEP / PVDF / ETFE & PPH
 SIZE RANGE : 1/2" To 24"

THERMOPLASTIC ACTUATED VALVES

PNEUMATIC & ELECTRIC ACTUATION

MOCs : PP / PPH / PVDF & ETFE



**PNEUMATICALLY
ACTUATED**
Diaphragm Valve



**ELECTRICALLY
ACTUATED**
Diaphragm Valve



**PNEUMATICALLY
ACTUATED**
Ball Valve



**ELECTRICALLY
ACTUATED**
Ball Valve



**PNEUMATICALLY
ACTUATED**
CPVC Butterfly Valve



**PNEUMATICALLY
ACTUATED**
CPVC Ball Valve



**PNEUMATICALLY
ACTUATED**
PPH Butterfly Valve



**ELECTRICALLY
ACTUATED**
PPH Butterfly Valve

LINED ACTUATED VALVES

PNEUMATIC & ELECTRIC ACTUATION

LINING OFFERED : PFA / FEP / ETFE / PVDF & PPH



**PNEUMATICALLY
ACTUATED**
Lined Ball Valve



**PNEUMATICALLY
ACTUATED**
Lined Globe Control Valve



**PNEUMATICALLY
ACTUATED**
Lined Ball Valve



**PNEUMATICALLY
ACTUATED**
Lined Diaphragm Valve



**PNEUMATICALLY
ACTUATED**
Lined Globe Control Valve



**PNEUMATICALLY
ACTUATED**
Lined Butterfly Valve



**PNEUMATICALLY
ACTUATED**
Lined Plug Valve



**PNEUMATICALLY
ACTUATED**
Metal Disc Butterfly Valves

SIZE RANGE : 1/2" To 24"

PLASTIC PIPES & FITTINGS



PIPES
PVDF
PLAIN ENDS



PIPES
PP / ISO.PP / PPH
PLAIN ENDS



CONCENTRIC REDUCERS
PP / ISO.PP / PPH / PVDF
BUTT WELD ENDS



COUPLINGS
PP / ISO.PP / PPH / PVDF
SOCKET WELD ENDS



ELBOWS
PP / ISO.PP / PPH / PVDF
SOCKET WELD ENDS



BENDS 90°



ELBOW 90°
PVDF
BUTT WELD ENDS



ELBOW 45°
PVDF / PP / ISO.PP / PPH
SOCKET WELD ENDS



STUB
PVDF
BUTT WELD ENDS
- LONG NECK



STUB
PP / ISO.PP / PPH / PVDF
BUTT WELD ENDS
- SHORT NECK



SOCKET WELD
PP / ISO.PP / PPH / PVDF
STUB ENDS



FLANGES
PP / ISO.PP / PPH / PVDF
SLIP ON & PIPE BORE

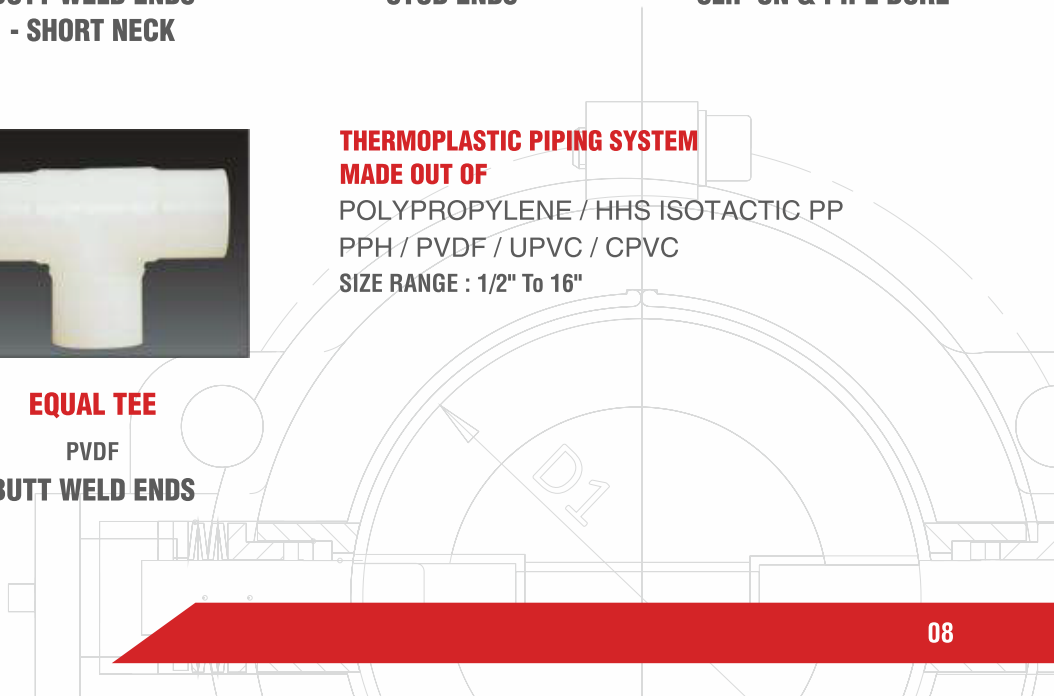


EQUAL TEES
PP / ISO.PP / PPH / PVDF
SOCKET WELD ENDS



EQUAL TEE
PVDF
BUTT WELD ENDS

THERMOPLASTIC PIPING SYSTEM
MADE OUT OF
POLYPROPYLENE / HHS ISOTACTIC PP
PPH / PVDF / UPVC / CPVC
SIZE RANGE : 1/2" To 16"



LINED PIPES & FITTINGS

LINING MATERIALS : PTFE / PFA / FEP / PVDF/ PPH & HDPE



PIPES



ELBOWS 90° / 45°



EQUAL TEES



UNEQUAL TEES



EQUAL CROSS



CONCENTRIC REDUCERS



INSTRUMENT TEES



REDUCING FLANGES



LINED SIGHT GLASS
Double Window

SIZE RANGE : 1/2" To 24"

SPECIALITY PRODUCTS

MOCs : PP+FRP / PPH+FRP / PVDF+FRVE



DAMPER

Gear, Pneumatically & Electrically Actuated
SIZE RANGE : 2" To 60"



STRAINER

'T'/ Basket Type Large Size
SIZE RANGE : 6" To 16"



CHECK VALVE

Float Type Vertical Installation - Large Size
SIZE RANGE : 6" To 16"

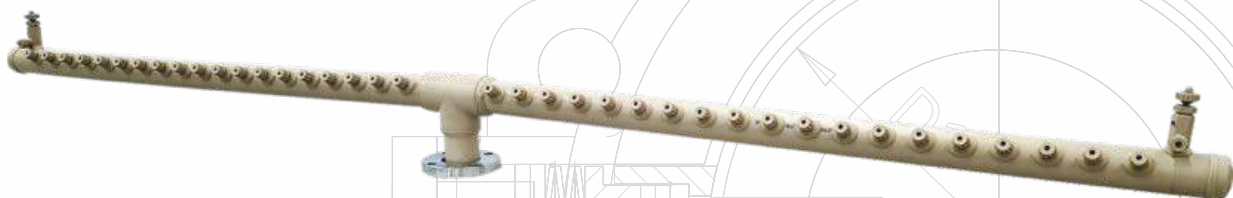


CHECK VALVE

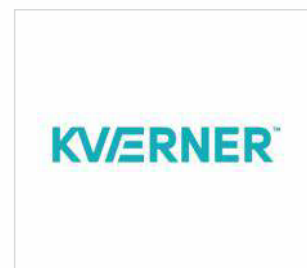
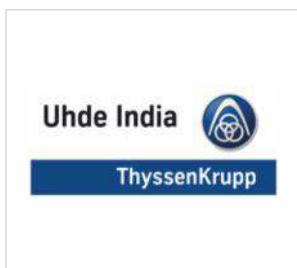
Float Type Horizontal Installation - Large Size
SIZE RANGE : 6" To 16"

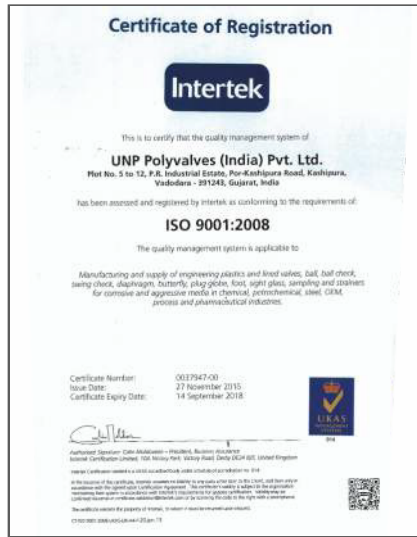
CAUSTIC & BRINE INLET DISTRIBUTION HEADERS

- Caustic & Brine distribution headers are a vital component of chlor-alkali plant, manufacturing caustic soda with membrane cell technology.
- These headers are installed in combination of left and right or Tee type on electrolyser of chlor-alkali plant. Different electrolyzers have requirements of various numbers of nozzles on header pipes depending on the capacity of electrolyzers.
- Entire ranges of 14 nos., 17 nos., 21 nos., 34 nos., 46 nos. & 58 nos. are manufactured by us.
- These pipes are subjected to elevated temperatures upto 110°C, and are manufactured from special grade Isotactic PP, the most suitable material of construction for such application.
- The distribution headers are in operation in the leading chlor-alkali plants in India & abroad for past 20 years.



LIST OF CONSULTANT





APPROVED
ISO 15848-1
 FUGITIVE EMISSION CERTIFICATION
PFA LINED SIDE SPLIT
FULL PORT BALL VALVES
 Size Range : 1/2" to 6"

APPROVED
ISO 15848-1
 FUGITIVE EMISSION CERTIFICATION
PFA LINED PLUG VALVES
 Size Range : 1/2" to 8"

APPROVED
DIN EN 14432:2014
PFA LINED BUTTERFLY VALVES
 Size Range : 2" to 8"

APPROVED
DIN EN 14432:2014
PFA LINED SIDE SPLIT
DESIGN BALL VALVES
 Size Range : 1" to 4"



VADODARA



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ISO 9001:2008



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- UNP Polyvalves does not assume any responsibility for the data given in this brochure. It is necessary for the customers to carry out necessary tests before selecting the MOC for their applications.