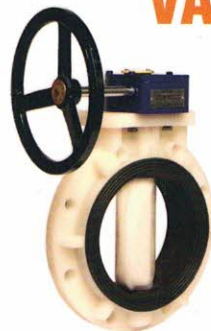


OUR PRODUCT RANGE



VALVE SOLUTIONS for Corrosive Applications



UNPP Polyvalves

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



VALVE SOLUTIONS for Corrosive Applications



ABOUT US

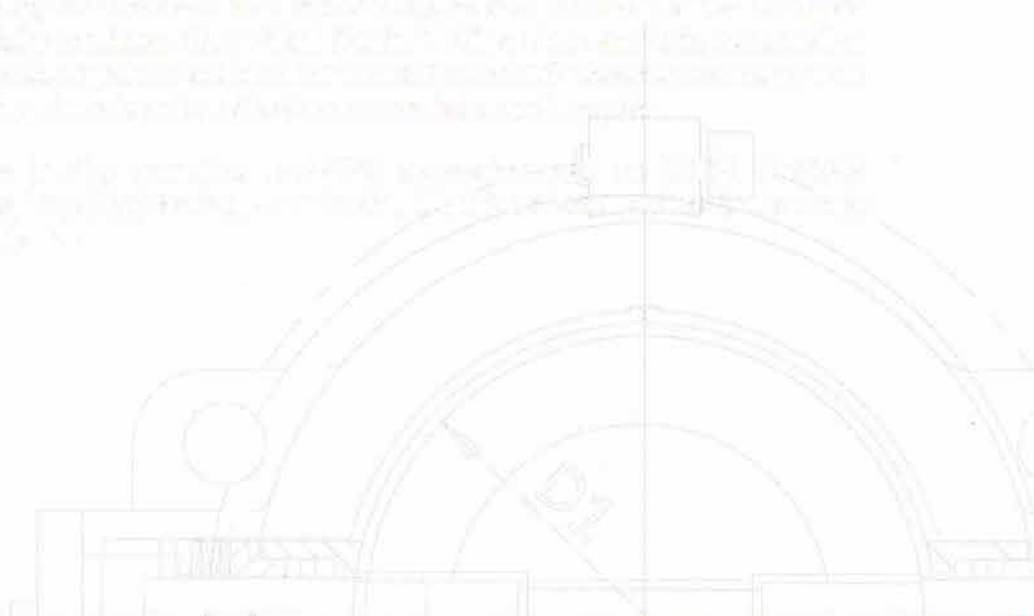
UNP Polyvalves has manufactured and supplied valves for corrosive applications since 1988.

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

UNPPolyvalves products have been installed in 35+ countries through its global distribution network. Typical Customers include Chlor-Alkali Plants; the Steel Industry; the Oil and Gas Industry; Bio-Pharma and other chemical manufacturing segments.

INTERSECTION

UNP Polyvalves is a leading manufacturer of plastic lined valves and fittings. The company has a rich history of manufacturing and supplying valves for corrosive applications since 1988. UNP Polyvalves provides a wide range of products, including Solid Plastic and Plastic Lined Ball Valves, Plug Valves, Butterfly Valves, Diaphragm Valves, Control Valves, Globe Valves, Ball Check Valves, Swing Check Valves, Sampling Valves, Double Window and Full View Sight Glasses, Y and T type strainers, Lined Pipe and Fittings ranging from ½" to 24". UNP Polyvalves products have been installed in 35+ countries through its global distribution network. Typical Customers include Chlor-Alkali Plants; the Steel Industry; the Oil and Gas Industry; Bio-Pharma and other chemical manufacturing segments.



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 WORKING 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 PERFLUOROVINYLETHYER)

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)



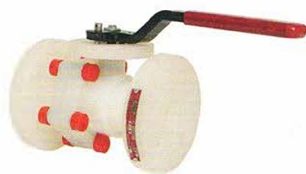
DIAPHRAGM VALVE



DIAPHRAGM VALVE



BALL VALVE
Side Split, Full Port
PVDF



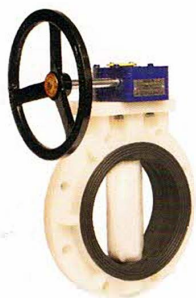
BALL VALVE
Side Split, Full Port
PPH



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"



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°



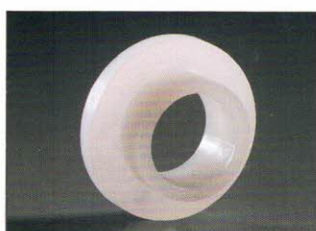
ELBOW 90°
PVDF
BUTT WELD ENDS



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"



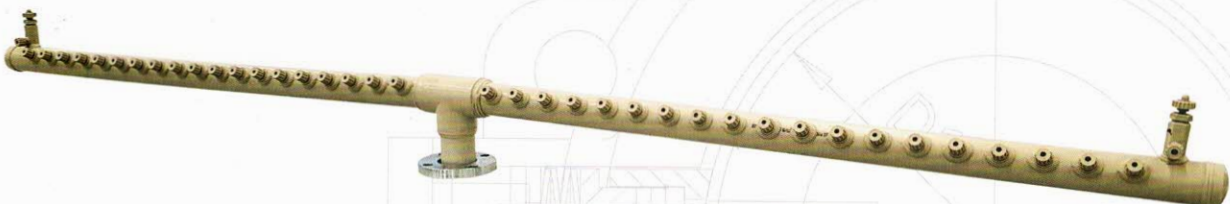
CHECK VALVE

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

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Simplify. Create


AkerSolutions


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CEPL


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KVERNER

FLUOR

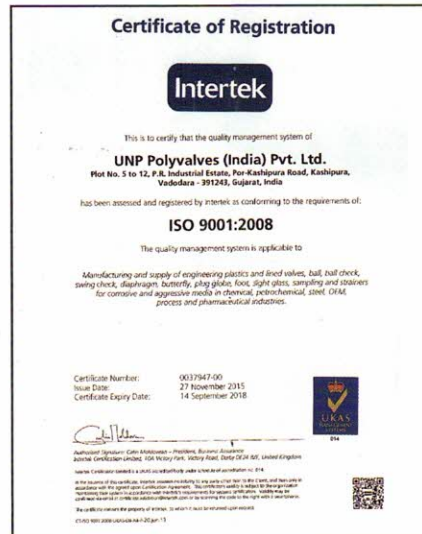

TUV INDIA
TUV NORD GROUP


Tecnimont ICB

simon
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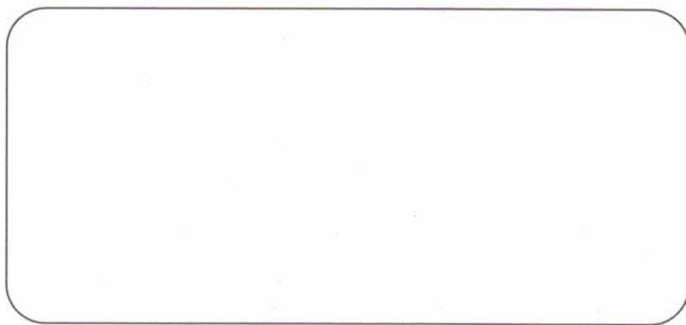

THERMAX


WABAG





Distributor



VADODARA



UNPPolyvalves

CORPORATE OFFICE

946, GIDC, Makarpura,
Vadodara - 390 010. INDIA
Phone : +91 - 265 - 2649248, 2632628
Fax : +91 - 265 - 2637379
Email : sales.baroda@polyvalve.com | mktg@polyvalve.com

FACTORY

5 to 12 PR Industrial Estate,
Por GIDC - Kashipura Road,
Moje : Kashipura - 391 243,
Dist. Vadodara. INDIA
Phone : +91 70434 30467/77, 70430 20707

MUMBAI

THANE

207, Orion Business Park, Next to Cine Max, Kapurbawdi,
Ghodbunder Road, Thane (W) - 400 607. INDIA.
Phone : +91 - 22 - 25896422, 25896524 / 25
Fax : + 91 - 22 - 2589 - 4221
Email : sales.thane@polyvalve.com | mktg@polyvalve.com

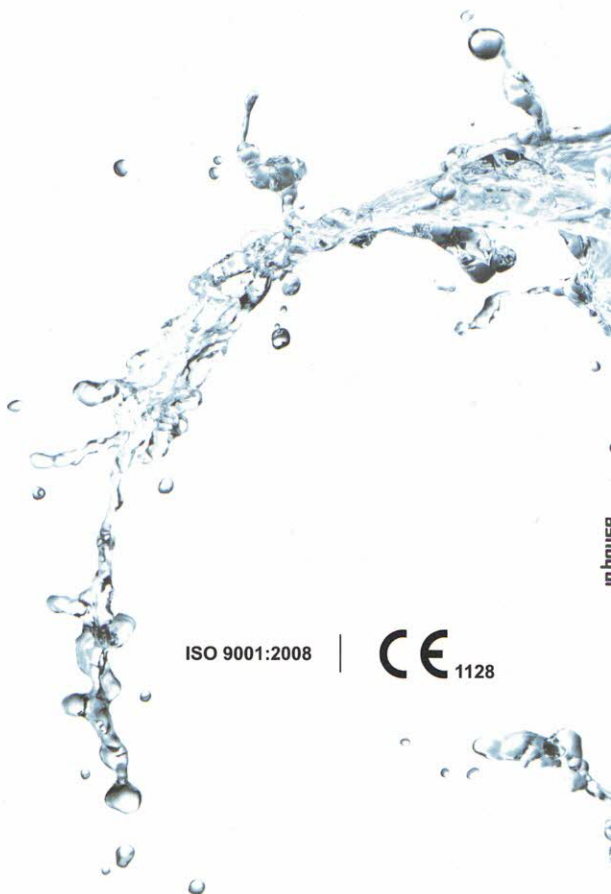
USA

BRANCH OFFICE

UNPPolyvalve USA
9704 North Holmes Street
Kansas City, MO 64155-2098
Mobile: (816) 812-3600
Brad@unp-valves.com

www.polyvalve.com | www.polyvalve.in

- UNP Polyvalves reserves the right, without notice to alter improve the designs, specifications, dimensions of the products described herein.
- 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.



ISO 9001:2008

CE 1128