



**Kalister**

**HOT & COLD WATER DISTRIBUTION SYSTEMS**



**VESTOLEN P9421**

**MADE IN GERMANY PPRC**

**➔ PPRC TYPE 3 PIPES & FITTINGS SYSTEMS**



KALISTER, a renowned name in the European, Middle Eastern and African Construction industry, manufactures & markets a comprehensive and cost effective range of plastic products, which caters to Cable Management solution, Water and waste water Management and Infrastructure sector utilizing an innovative approach combined with the use of cutting edge technology.

KALISTER's wide range of piping products meets the various requirements of Cable Management, Portable Water Supply, Plumbing and Drainage, Sewage, Rain Water Harvesting and Water Management.

Thanks to its state of the art production technology, aesthetic appearance and uncompromising technical specifications, Kalister products have set a benchmark in the industry.

KALISTER-MEGATHERM HOT and Cold water Distribution system is designed and produced at Ulkmen Group using revolutionary technologies with strict adherence to international standards. The pipe and fittings made out of Type-3, Polypropylene Random Copolymer are resistant to chemical materials as well as high pressure. The raw material used in our product is of Food Grade, which is a contemporary replacement to conventional piping system and recognized as the best carrier of portable water for both Hot & Cold water distribution.

#### System Characteristics

- Suitable for Hot and Cold Water Distribution Systems in Building and Heating Systems
- Hygienic and Low Bacterial Growth
- High Durable with minimum 50 Years life span
- Smooth Interior surface results less friction loss
- Taste and Odor neutral
- Resistant to High Temperature
- No Blockages, No Crystallization for Lime deposits to cling
- No Corrosion and Encrustation
- Less weight
- Quick, Easy and Clean Installation
- Resistance in aggressive environments

#### Field of Application

- Hot and Cold Water Supply in Residential , Industrial and Commercial Projects
- Solar Heater Application
- Drinking Water and Liquid Foods
- Transportation of Aggressive fluids
- Water purifying plants
- Chilled Water and Air Conditioning
- Various Industrial water transportation and heating systems



## Material properties of Polypropylene Random Copolymer

Property	Test method	Unit	Value
<b>Melt flow rate</b>	ISO 1133	g/10 min	0.5
MFR 1.90/5		g/10 min	0.3
mfr 230/2 16		g/10 min	1.5
mfr 230/5			
<b>Density</b>	ISO 1183	kg/cm <sup>3</sup>	898
<b>Crystallite melting temperature</b>	DIN 53762 B2	°C	150-154
<b>Tensile properties</b>	ISO 527		
Modulus of elasticity		MPa	850
Tensile stress at yield		MPa	25
Elongation at yield		%	12
<b>Impact strength (Charpy)</b>	ISO 179/1eU		
23 °C		kJ/m <sup>2</sup>	No failure
0 °C		kJ/m <sup>2</sup>	No failure
-10 °C	kJ/m <sup>2</sup>	No failure	
<b>Notched Impact strenght (Charpy)</b>	ISO 179/1eA		
23 °C		kJ/m <sup>2</sup>	30
0 °C		kJ/m <sup>2</sup>	4
-10 °C	kJ/m <sup>2</sup>	2.5	
<b>Ball indentation hardness</b>	ISO 2039 T1 (132N)	MPa	43
<b>Coefficient of linear thermal expansion</b>	VDE 0304 Part 1 §4	K-1	1.5x 10 <sup>-4</sup>
<b>Thermal conductivity</b>	DIN 52612	W/m K	0.24
<b>Specific heat</b>	Adiabatic calorimeter	kJ/kg K	2.0





## Chemical resistance

**MEGA-THERM** PPR pipes offers good chemical resistance characteristics, and its performance with construction materials is demonstrated in supplement 1 to DIN 8078 and ISO/TR 10358. As with all PP pipes, in addition, contact with detergents should also be avoided. The detailed chemical resistance properties of Polypropylene Random Copolymer can be seen on the chemical resistance table.

+ = resistant  
 ⊕ = practically resistant  
 O = of limited chemical resistance  
 ⊖ = poorly resistant  
 - = not resistant

Concentrations aq. = aqueous  
 sat = saturated at room temperature  
 c = coloured

	Conc. %	Polypropylene Random Copolymer °C				Conc. %	Polypropylene Random Copolymer °C		
		20	60	100			20	60	100
<b>A</b>									
Acetic acid (Glacial acetic acid)	100	+ O	-		Boric acid aq.	sat. (4.9)	+	+	
Acetic acid aq. (see also vinegar)	50	+	+		Brake fluid*		+	+	
Acetic anhydride	100	+	+	+	Brendy		+		
Acetone*	100	+	O		Bromine, liquid	100	-		
Alcoholic iodine		+	O		Bromine, vapours	high low	O	+	
Alum	sat.	+	+		Bromine water	sat.	-	-	
Alums aq.	any	+	+		Butane, gaseous	100	+	+	
Aluminium salts aq.	any	+	+	+	Butane, liquid	100	+		
Ammonia gaseous	100	+	+	+	Butter		+	+	
Ammonia aq.	conc.	+	+		Buttermilk		+		
	10	+	+		Butylacetate	100	+	O	
Ammonium acetate aq.	any	+	+	+	n-Butyl alcohol (n-butanol)	100	+	+	
Ammonium carbonate aq.	any	+	+	+					
Ammonium chloride aq.	any	+	+	+	<b>C</b>				
Ammonium nitrate aq.	any	+	+	+	Cake		+	+	⊕
Ammonium phosphate aq.	any	+	+	+	Calcium chloride aq.	sat.	+	+	+
Ammonium sulphate aq.	any	+	+	+	Calcium nitrate aq.	sat.	+	+	
Amyl alcohol, pure (fermentation amyl alcohol)		+	+		Camphor		+		
Aniline	100	+	⊕		Carbon bisulphide**	100	O		
Antifreeze agent(cars)**		+	+		Carbon tetrachloride	100	O	-	
Apple juice		+	+		Caustic potash colution	50	+	+	
Apple seauce		+	+	⊕		25	+	+	
Aqua regia		+	-			10	+	+	
Asphall**		+	O		Coustic soda solution	50	+	+	
ASPIRIN*		+				25	+	+	
						10	+	+	+
<b>B</b>					Cheese		+		
Barium salts	any	+	+	+	Chloride of lite (aqueous suspension)		+	+	
Beer suet		+	+		Chlorine, gas, dry	100	-	-	-
Beer		+			Chlorine, gas, humid	10	O	-	-
Benzaldehyde	100	+			Chlorine, liquid	100	-		
Benzaldehyde aq.	sat. (0.3)	+			Chlorine, vwater	sat.	O	-	
					Chlorobenzene	100	-		
Benzene	100	⊖	-		Chloroform	100	⊕	-	
Benzoic acid	100	+	+		Chlorosponic acid	100	-	-	
Benzoic acid aq.	sat.	+	+	+	Chromic acid	sat.	+	-	
Bleaching solution (12,5% active chlorine)		O	O			20	+	O	
Bone oil		+	⊕		Chromic/sulphuric acid		-	-	
Borax aq.		+	+		Chromium plating solution*		+	+	
Boric acid.	100	+	+		Chromium salts (bi-and trivalent) aq.	sat.	+	+	
					Cinnamon (cane)				

\*Boiling point 56.3 °C

\*\*Chemical assistance depend upon the composition

\*Chemical resistance depend upon the composition

\*\*Boiling point 46.2 °C





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