AL-AMAL for Plastic Pipes and Fittings Co.

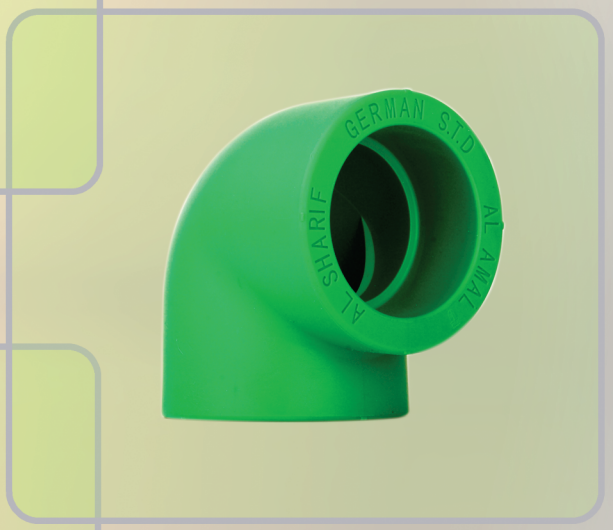
(AL-SHARIF)

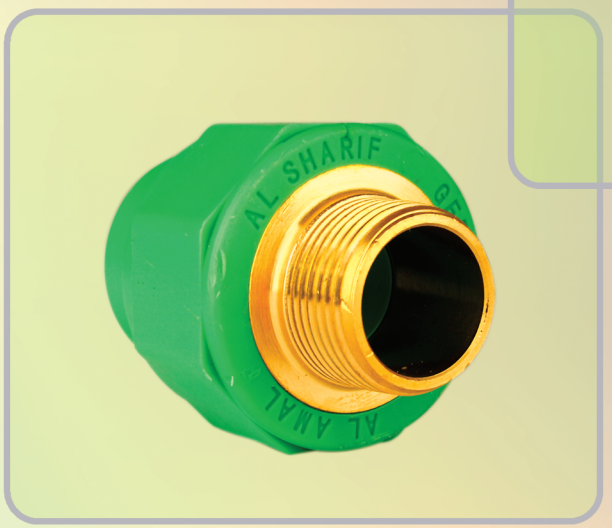
PP-R Pipes System

Hot and Cold Water Applications

Contents

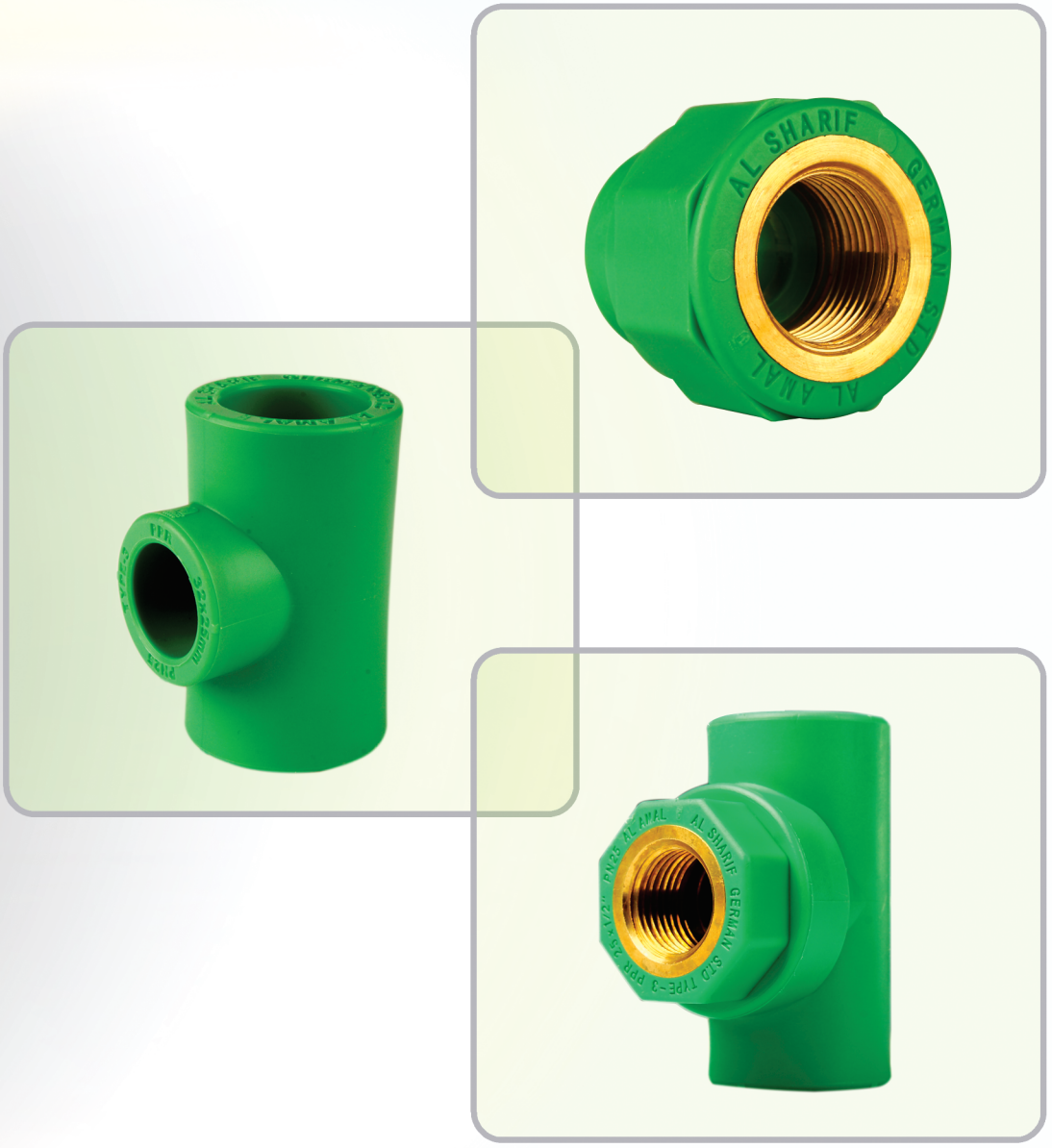
PP-R Pipes System





AL-AMAL for Plastic Pipes and Fittings

AL-SHARIF


AL SHARIF
GERMAN STD
AL AMAL

Introduction

AL-AMAL Company for Plastic Pipes and Fittings **(AL-SHARIF)** was formed in 1995 with the aim of developing a professional UPVC/CPVC/HDPE/PP-R/PP-H pipes and fittings industry.

Since the company has bought **AL-AMAL's** plastic pipes factories with their well known and trusted brand name and sign, **AL-AMAL** Co. is considered one of the largest leading companies in the plastic pipes and fittings field in the Middle East.

Since its foundation, **AL-AMAL** has a steady growth with high quality standards to fulfill the requirements of its customers specially for UPVC/ CPVC/HDPE/PP-R/PP-H pipes with more than 42000 Tons per year, Fittings with more than 8000 Tons per year, and it already started in 1st. September 2008 production of PP-R with capacity more than 3000 Tons pipes per year, and 1200 Tons of fittings per year, **AL-AMAL's** Pipes and Fittings are produced according to DIN, BS, ASTM, ISO and Egyptian standards demand.

There is also the facility of manufacturing products with special specifications according to customer requirements.

As **AL-AMAL's** target is to become the major producer in the field of plastic pipes and fittings, a strategic program has been carried out to improve the quality standards and increase the quality and variation of production by having its plant in the 10th of Ramadan City, equipped with new injection moulding machines and new moulds with advanced automated tooling and up-to date know how which permit high capacity of pipes and fittings with exceptionally high consistency in terms of dimensional accuracy, mechanical strength and surface finish.

AL-AMAL UPVC/CPVC/PP-R/HDPE/PP-H Pipes **(AL-SHARIF)** are well accepted and widely used in domestic water system, warming, cooling, all types of industrial process pipe works, water distribution and water treatment as well as irrigation systems.

A new range for the production of all systems required for **AL-AMAL's** customers has been taken into consideration in its near expanding plans.

The most highly advantage is the well equipped laboratory which is established according to the best international standards to control raw materials, final products and also for the research which is one of the important targets of **AL-AMAL** to update and develop its products.

Customers can depends completely on **AL-AMAL** and consider it their partner in the business.

Application standards

AL-SHARIF PPR Pipes and fittings are manufactured according to the German , International and Egyptian standards.

German standards

DIN 8077	Dimensions of pipes.
DIN 8078	General quality and testing for pipes.
DIN 16962	part 5 General quality and testing of fittings.
DIN 16962	parts 2,4,6,7,8,9,10,13 Dimension of fittings.
DIN 1988	Technical rules for drinking water installations.

International standards

ISO 15874 Plastic pipe system for hot and cold water installations.
Part 1 General
Part 2 Pipes
Part 3 Fittings

Egyptian Standards

ES 3703-1/2002 poly propylene pipes (dimensions and tests)

Marking

1- Pipes

-Color: green with two red line
-Trade mark **AL-AMAL** **AL-SHARIF**
-International standards ISO 9001/2000 German STD DIN 8077-8078
-Type of resin PP-R type 3
-Class of pipe acc. (SDR & S) & PN ( )
-Size
-Time and Date of production

2- Fittings

General Characteristics

Scope and field of application

The polymer type use for AL SHARIF pipes system is thermoplastic propylene random copolymers PP-R (type 3).

Hygienic suitability

According to DIN 1988 T2 and the law for food commodity the PP-R materials which directly in contact with potable water are commodity good.

The effect in the domestic water

The increasing use of PP-R in the field of food packing confirms the hygienic qualilies of the materials this makes AL SHARIF the optimal packing confirms for one of our most precious commodity goods our potable water. The domestic supply system should influence the water on its way up to the taps as little as possible. Choosing the right domestic water pipes system and its materials is of decisive importance **AL SHARIF** pipes system are suitable for all different qualities of potable water.

Easy to install

It's flexible, light, easy to cut and easy to fused for installation.

Smooth

The smooth internal surface of PP-R products reduces frictional losses and prevents fouling and scaling in long term, this maintains a greater capacity for a given diameter than with conventional products.

U.V Resistance

PP-R pipes and fittings should not be install (without protection) where subject to UV radiation.

AL SHARIF pipes and fittings have UV stabilizer to bridge transport and installation times.

Maximum storage time in the open air is 6 months.

Fire protection

AL SHARIF pipes system is normal inflammable that required to ensure that buildings are fire safet.

AL SHARIF pipes system do not produce any toxic gas and it is gave no risk of dioxin emission.

Environmental Effect

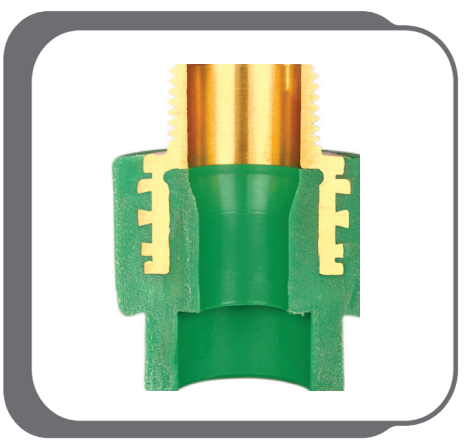
AL SHARIF pipes system is physiologically, environmentally and microbiologically harmless.

Service Time

AL SHARIF pipes system have extrapolated service life more than 50 years peak temperature of 100 arising from short disruptions are un problematic.

Brass

Non Toxic Brass.
Have the Highest fixation power in the PP-R Product cause it have the largest types of fixations (fixation teeth, slots & knurl).



PP-R Properties

General Properties

AL-SHARIF pipes system stops corrosion damages with no effect on to flow rate.
AL SHARIF pipes system have no danger of algae development installation.
AL-SHARIF pipes system offers an unique and unrivalled connection process: material by fusion.
AL-SHARIF pipes system connection can be hydraulic pressure tested or put in to operation directly after their fusion there are no waiting times. Flow rate is increased due to larger inner diameter.

Typical Value	Test Method	Main Value	Unit
Physical Properties			
Density 23 ° C	ISO 11 83	0.895	g/cm2
Vicat softening Temperature(0.98N)	ISO 306	130	° C
Rheology			
Melt Mass Flow Rate MFR (230 ° C/2.16 Kg)	ISO 1133	0.3	g/10 min
Mechanical Properties			
Tensile modules (1mm/min)	ISO 527-1.2	900	MPa
Tensile Stress yield (50mm/min)	ISO 527-1.2	27	MPa
Tensile Strain yield (50mm/min)	ISO 527-1.2	13	%
Charpy impact strength at 23 ° C	ISO 179/1eU	N.B	KJ/m2
Charpy impact strength at -20 ° C	ISO 179/1eU	30	KJ/m2
Charpy impact strength Notched at 23 ° C	ISO 179/1eU	38	KJ/m2
Charpy impact strength Notched at -20 ° C	ISO 179/1eU	2	KJ/m2
Thermal Properties			
Heat deflection (Temperature 0.45MPa (HTD/B))	ISO 75-1.2	88	° C
Mean coefficient of linear (Thermal Expansion 0:110 ° C)	DIN 53752	1.5×10^{-4}	K^{-1}
Thermal conductivity	DIN 52612-1	0.23	$K^{-1} M^{-1}$
Electrical Properties			
Surface resistance	DIN 53482	$>10^{13}$	Ohm.cm

Allowable working pressure

Table " Allowable working pressure" taking about the permanent temperature from 70 °c up to 95 °c and its affect into the service life and applications.

The following table shows the operating conditions related to pressure and temperature as a basis for pipe connection these figures refer to potable water installation based on a theoretical service life of 100 years.

Thermal cycling tester for hot water
And heating pipe systems

Allowable working pressure for pipes transporting water allowable able working pressure for pipes made from PP-R 80, with SF = 1.5 acc. to DIN 8077

Temperature In °C	Years of Service	Pressure rating							
		PN2.5	PN 3.2	PN 4	PN 6	PN 10	PN 16	PN 20	PN 25
		Pipe series (S)							
		20	16	12.5	8.3	5	3.2	2.5	2
		standard dimension ratio (SDR)							
		41	33	26	17.6	11	7.4	6	5
		Allowable working pressure, in bar							
10	1	4.4	5.6	7.0	10.6	17.6	27.8	35.0	44.2
	5	4.2	5.3	6.6	10.0	16.6	26.4	33.2	41.8
	10	4.0	5.1	6.4	9.7	16.1	25.5	32.1	40.4
	25	3.9	4.9	6.2	9.4	15.6	24.7	31.1	39.1
	50	3.8	4.8	6.0	9.1	15.2	24.0	30.3	38.1
	100	3.7	4.7	5.9	8.9	14.8	23.4	29.5	37.1
20	1	3.8	4.8	6.0	9.0	15.0	23.8	30.0	37.8
	5	3.5	4.5	5.6	8.5	14.1	22.3	28.1	35.4
	10	3.4	4.3	5.5	8.2	13.7	21.7	27.3	34.4
	25	3.3	4.2	5.3	8.0	13.3	21.1	26.5	33.4
	50	3.2	4.1	5.1	7.8	12.9	20.4	25.7	32.4
	100	3.1	4.0	5.0	7.5	12.5	19.8	24.9	31.4
30	1	3.2	4.0	5.1	7.7	12.8	20.2	25.5	32.1
	5	3.0	3.8	4.8	7.2	12.0	19.0	23.9	30.1
	10	2.9	3.7	4.6	7.0	11.6	18.3	23.1	29.1
	25	2.8	3.5	4.4	6.7	11.2	17.7	22.3	28.1
	50	2.7	3.4	4.3	6.6	10.9	17.3	21.8	27.4
	100	2.7	3.4	4.2	6.4	10.6	16.9	21.2	26.4
40	1	2.7	3.4	4.3	6.5	10.8	17.1	21.5	27.1
	5	2.5	3.2	4.0	6.1	10.1	16.0	20.2	25.4
	10	2.5	3.1	3.9	5.9	9.8	15.6	19.6	24.7
	25	2.4	3.0	3.8	5.7	9.4	15.0	18.8	23.7
	50	2.3	2.9	3.7	5.5	9.2	14.5	18.3	23.1
	100	2.2	2.8	3.5	5.4	8.9	14.1	17.8	22.4
50	1	2.3	2.9	3.7	5.5	9.2	14.5	18.8	23.1
	5	2.1	2.7	3.4	5.1	8.5	13.5	17.0	21.4
	10	2.1	2.6	3.3	5.0	8.2	13.1	16.5	20.7
	25	2.0	2.5	3.2	4.8	8.0	12.6	15.9	20.0
	50	1.9	2.4	3.1	4.6	7.7	12.2	15.4	19.4
	100	1.9	2.4	3.0	4.5	7.4	11.8	14.9	18.7
60	1	1.9	2.4	3.1	4.6	7.7	12.2	15.4	19.4
	5	1.8	2.3	2.9	4.3	7.2	11.4	14.3	18.0
	10	1.7	2.2	2.8	4.2	6.9	11.0	13.8	17.4
	25	1.7	2.1	2.6	4.0	6.7	10.5	13.3	16.7
	50	1.6	2.0	2.5	3.8	6.4	10.1	12.7	16.0
70	1	1.6	2.1	2.6	3.9	6.5	10.3	13.0	16.4
	5	1.5	1.9	2.4	3.6	6.0	9.5	11.9	15.0
	10	1.5	1.9	2.3	3.5	5.9	9.3	11.7	14.7
	25	1.3	1.6	2.0	3.0	5.1	8.0	10.1	12.7
	50	1.1	1.3	1.7	2.6	4.3	6.7	8.5	10.7
80	1	1.4	1.7	2.2	3.3	5.5	8.6	10.9	13.7
	5	1.2	1.5	1.9	2.9	4.8	7.6	9.6	12.0
	10	1.0	1.3	1.6	2.4	4.0	6.3	8.0	10.0
	25	--	1.0	1.3	1.9	3.2	5.1	6.4	8.0
95	1	1.0	1.2	1.5	2.3	3.9	6.1	7.7	9.7
	5	--	--	1.0	1.5	2.5	4.0	5.0	6.3
	(10)[1]	--	--	--	(1.3)[1]	(2.0)[1]	(3.4)[1]	(4.2)[1]	(5.3)[1]

1)The bracketed values apply where testing can be shown to have been carried Out for longer than one year at 110 °C

These Pipes do not apply for exposed to UV radiation.
The effect of such radiation can be considerably reduced for up to ten years of Service life by the inclusion of suitable additives in the molding materials.

Allowable working pressure for heating systems or closed systems allowable working pressure for pipes made from PP-R 80, with SF = 1.25 acc. to DIN 8077

Temperature In °C	Years of Service	Pipe series (S)							
		20	16	12.5	8.3	5	3.2	2.5	2
		standard dimension ratio (SDR)							
		41	33	26	17.6	11	7.4	6	5
		Allowable working pressure, in bar							
10	1	5.3	6.7	8.4	12.7	21.1	33.4	42.0	52.9
	5	5.0	6.3	7.9	12.0	20.0	31.6	39.8	50.1
	10	4.9	6.1	7.7	11.6	19.3	30.6	38.5	48.5
	25	4.7	5.9	7.4	11.2	18.7	29.6	37.3	46.9
	50	4.6	5.8	7.2	10.9	18.2	28.8	36.3	45.7
	100	4.5	5.6	7.1	10.7	17.7	28.1	35.4	44.5
20	1	4.5	5.7	7.2	10.8	18.0	28.6	36.0	45.3
	5	4.2	5.4	6.7	10.2	16.9	26.8	33.8	42.5
	10	4.1	5.2	6.5	9.9	16.4	26.1	32.8	41.3
	25	4.0	5.0	6.4	9.6	16.0	25.3	31.8	40.1
	50	3.9	4.9	6.2	9.3	15.5	24.5	30.9	38.9
	100	3.8	4.7	6.0	9.0	15.0	23.8	29.9	37.7
30	1	3.8	4.8	6.1	9.2	15.3	24.3	30.6	38.5
	5	3.6	4.5	5.7	8.6	14.4	22.8	28.7	36.1
	10	3.5	4.4	5.5	8.4	13.9	22.0	27.7	34.9
	25	3.4	4.2	5.3	8.1	13.4	21.3	26.8	33.7
	50	3.3	4.1	5.2	7.9	13.1	20.7	26.1	32.9
	100	3.2	4.0	5.1	7.7	12.8	20.2	25.5	32.1
40	1	3.2	4.1	5.1	7.8	12.9	20.5	25.8	32.5
	5	3.0	3.8	4.8	7.3	12.1	19.2	24.2	30.5
	10	3.0	3.7	4.7	7.1	11.8	18.7	23.6	29.7
	25	2.8	3.6	4.5	6.8	11.3	18.0	22.6	28.5
	50	2.8	3.5	4.4	6.6	11.0	17.5	22.0	27.7
	100	2.7	3.4	4.3	6.4	10.7	16.9	21.3	26.9
50	1	2.8	3.5	4.4	6.6	11.0	17.5	22.0	27.7
	5	2.6	3.2	4.1	6.1	10.2	16.2	20.4	25.7
	10	2.5	3.1	3.9	6.0	9.9	15.7	19.7	24.9
	25	2.4	3.0	3.8	5.8	9.6	15.2	19.1	24.1
	50	2.3	2.9	3.7	5.6	9.3	14.7	18.5	23.3
	100	2.2	2.8	3.6	5.4	8.9	14.2	17.8	22.5
60	1	2.3	2.9	3.7	5.6	9.3	14.7	18.5	23.3
	5	2.2	2.7	3.4	5.2	8.6	13.7	17.2	21.7
	10	2.1	2.6	3.3	5.0	8.3	13.2	16.6	20.8
	25	2.0	2.5	3.2	4.8	8.0	12.6	15.9	20.0
	50	1.9	2.4	3.1	4.6	7.7	12.1	15.3	19.2
70	1	2.0	2.5	3.1	4.7	7.8	12.4	15.6	19.6
	5	1.8	2.3	2.9	4.3	7.2	11.4	14.3	18.0
	10	1.8	2.2	2.8	4.2	7.0	11.1	14.0	17.6
	25	1.5	1.9	2.4	3.6	6.1	9.6	12.1	15.2
	50	1.3	1.6	2.0	3.1	5.1	8.1	10.2	12.8
80	1	1.6	2.1	2.6	3.9	6.5	10.4	13.1	16.4
	5	1.4	1.8	2.3	3.5	5.7	9.1	11.5	14.4
	10	1.2	1.5	1.9	2.9	4.8	7.6	9.6	12.0
	25	1.0	1.2	1.5	2.3	3.8	6.1	7.6	9.6
95	1	1.2	1.5	1.8	2.8	4.6	7.3	9.2	11.6
	5	--	1.0	1.2	1.8	3.0	4.8	6.1	7.6
	(10)[1]	--	--	(1.0)[1]	(1.5)[1]	(2.6)[1]	(4.0)[1]	(5.1)[1]	(6.4)[1]

1) The bracketed values apply where testing can be shown to have been carried Out for longer than one year at 110 °C

Types of installation

AL-SHARIF pipes and fittings is applicable to all common types of application:

- Distribution network for domestic water and heating in residential buildings.
- In front of the wall installation.
- Distribution network heating technique.
- Concealed installation.
- Surface installation.

Chemical Resistance OF PP-R

Due to their special materials properties **AL-SHARIF** pipes and fittings are generally chemical resistant.

However

AL-SHARIF transition elements with brass inserts are not suitable for all media. The signs + , O , -- which allow simple presentation and application. But for further consultation with **AL-AMAL (AL-SHARIF)** are recommended in any case .

Resistances

+ = resistant
(+) = practically resistant
0 = poorly resistant
- = not resistant

concentrantion

aq. = aqueous
sat. = saturated at room temperature
c = col oured

Chemical Resistance of PP-R

Chemicals	Conc. A %	Polypropelene °C 20	60	100
Acetic Acid	100	+	0	-
(glacial acetic acid)				
Acetic acid aq.	50	+	+	
See also vinegar	10	+	+	+
Acetic Anhydride	100	+		
Acetone	100	+	0	
(boiling point 56.3°C)				
Alcoholic iodine		+		
Alum	sat.	+	+	
Alums aq.	any	+	+	
Aluminim salts aq.	any	+	+	+
Ammonia,gaseous	100	+	+	
Ammonia aq.	conc.	+	+	
	10	+	+	
Ammonium acetate aq.	any	+	+	+
Ammonium carbonate aq.	any	+	+	+
Ammonium chloride aq.	any	+	+	+
Ammonium nitrate aq.	any	+	+	+
Ammonium phosphate aq.	any	+	+	+
Ammonium sulphate aq.	any	+	+	+
Amyl alcohol, pure		+	+	
(fermentation amyl alchohol)				
Aniline	100	+	(+)	
Antifreeze agent(cars)**Δ		+	+	
Apple juice		+	+	
Apple sauce		+	+	(+)
Aqua regia		+	-	
Asphalt**		+	0	
Aspirin		+		

Chemicals	Conc. B %	Polypropelene °C 20	60	100
Barium salts	any			
Beef suet				
Beer		+	+	+
Benzaldehyde	100	+	+	
Benzaldehyde aq.	sat.	+		
	0.30	+		
Benzene -	100	+		
Benzoic acid	100	(-)	-	
Benzoic acid aq.	sat.	+	+	
Bleaching solution		+	+	+
(12.5% active chlorine)		0	0	
Bone oil				
Borax aq.	sat.	+	(+)	
Boric acid	100	+	+	
Boric acid aq.	sat.	+	+	
	4.9	+	+	
Brake Fluid** Δ		+	+	
Brandy				
Bromine Liquid	100			
Bromina vapours	high	+		
	low	-	-	
Bromina water	sat.	0	-	
Butane, gaseous	100	-	-	
Butane liquid	100	+	+	
Butter		+	+	
Buttermilk	100	+		
Butly acetate Δ	100	+	0	
n-Butyl alcohol(n-butanol)Δ		+	+	

Chemical Resistance of PP-R

Chemicals	C	%	20	60	100
Cake			+	+	(+)
Calcium chloride aq.		sat.	+	+	+
Calcium nitrate aq.		sat.	+	+	+
Camphor			+		
Carbon bisulphide		100	0		
(Boling point 46.2℃)					
Carbon tetrachloride Δ		100	0	-	
Caustic potash solution		50	+	+	
		25	+	+	
		10	+	+	
Caustic soda solution Δ		50	+	+	
		25	+	+	
		10	+	+	
Cheese			+		
Chloride of lime			+	+	
(aqueous suspention)					
Chlorine , gas , dry		100	-	-	-
Chlorine , gas , humid		10	0	-	-
Chlorine liquid		100	-		
Chlorine water		sat.	0	-	
Chlorobenzene		100	(-)	-	
Chloroform Δ		100	-	-	
Chlorosulphonic acid		100	+	+	
Chromic acid		sat.			
		20			
Chromic/sulfuric acid			+	+	
Chromium plating solution**			+		
Chromium salts		sat.	+	0	
(bi-and trivalent)aq.					

Chemicals	C	%	20	60	100
Cinnamon(cane)			+		
Cinnamon(ground)			+		
Citric acid aq.		sat.	+	+	
Clove oil			+	0	+
Cloves					
Coca-cola			+		
Cocoa(powdered)			+		
Cocoa(ready to drink)			+	+	(+)
Coconut oil			+	(+)	
Cod-liver oil			+	+	
Coffee(beans and ground)			+		
Coffee(ready to drink)			+	+	
Common salt , dry			+	+	
Copper salts aq.			+	+	
Corn seed oil			+	0	
Cream , whipped cream			+		
Cresol solution			+		
Cresol			+	0	
Cresols aq.			+	0	
Curds			+		
Cyclohexane Δ		-	+		
cyclohexanol Δ			+	+	
cyclohexanone			+	-	

Chemical Resistance of PP-R

Chemicals		Conc.	%	Polypropelene °C 20	60	100
Decahydrunaphthalene			100	0	-	-
Detergents, synthetic**			high	+	+	
(With solvents, plasticizers and other additives)			ready for use			
Dibutylphthalate						
(see plasticizers)						
Diesel oil, see fuels						
Dimethylformamide			100	+		
1.4 - Dioxane			100	+	+	-
Dish - washing agents**						
liquid			+	+	+	
DIXAN			ready for use			
		E				
Eggs(uncooked and cooked)						
ether(Diethyl ether)**	Δ		100			
Ethyl acetate			100			
Ethyl alcohol	Δ		100			
not denatured						
Ethyl alcohol aq						
not denatured						
Ethyl benezene	Δ					
Ethyl chloride**	Δ					
Ethylene chloride	Δ					
2-Ethyl hexanol	Δ					

Chemicals		Conc.	%	Polypropelene °C 20	60	100
		F				
Fixing salt(see also sodium thiosulphate)			10	+	+	
Floor wax**					+	0
Flour				+		
Fluoric acid			40	+	+	
Formaldehyde aq. Ghc			40	+	+	
			30	+	+	
			10	+	+	
Formalin				+	+	
formic acid	Δ		98	+	0	
			90	+		
			50	+	+	
			10	+	+	+
Fruit juice				+	+	
Fruit salad				+		
Fuel	q					
Petrol, normal				+	0	
according to DIN 51635	q					
Petrol, regular				(+)	-	
Petrol, super	q			0	-	
Diesel oil**	q			+	0	
Fuel oil**	q			+	0	
Furniture polish**				+	0	-

Chemical Resistance of PP-R

Chemicals	Conc. %	Polypropelene °C 20	60	100
G				
Gin	40	+		
Glycerine	100	+	+	
Glycerine aq.	high	+	+	
	low	+	+	+
Glycol	100	+	+	
Glycol aq.	high	+	+	
	low	+	+	+
Graperfruit juice		+	+	
Gravy		+	+	+
H				
Hair shampoo**		+	+	
Heptane	100	+	0	(+)
Hexane	100	+	0	
Honey		+	+	
Horse-radish, ready-to-eat		+		
Hydrochloric acid	conc.	+	+	
Hydrogan chloride, gaseous	10	+	+	
(see also Hydochloric acid)	high	+	+	
Hydrogan peroxide aq.	low	+	+	
	90			
	30	+	0	
	10	+	+	
	3	+	+	+
Hydrogen sulphide	low	+	+	
(colouration with lead				
stabilizers)				
I				
Ink**		+	+	
Iron salts aq.	sat.	+	+	+
Isooctane	100	+	0	
Isoproply alcohol	100	+	+	

Chemicals	Conc. %	Polypropelene °C 20	60	100
J				
Jam		+	+	(+)
Jelly		+	+	(+)
L				
Lactic acid aq.	90	+	+	
	50	+	+	
	10.00	+	+	+
LANOLIN		+	0	
Lard		+	+	0
Lemonades		+		
Lemon aroma			+	
Lemon juice		+	+	
Lemon peel		+		
Lemon peel oil		+		
Linseed oil		+	+	
LITEX		+	+	
Liqueur	any	+		
LYSOL		+	0	

Chemical Resistance of PP-R

Chemicals	M	Conc. %	Polypropelene °C 20	60	100
Magnesium salts aq.		sat.	+	+	-
Margarine			+	+	
MARLIPAL MG	Δ	50	+	+	
MARLON	Δ		+	+	
(42%active detergent)		100	+		
MARLOPHEN 83		20	+		
MARLOPHEN 89		100	+		
		5	+		
MARLOPHEN 810	Δ	100	+		
		20	+		
		5	+		
MARLOPHEN 820	Δ	100	+		
		20	+	+	
		5	+	+	
Mashed potatoes			+	+	(+)
Mayonnaise			+		
Menthole			+		
Mercuric salts aq.		sat.	+	+	
Mercury		100	+	+	
Methyl alcohol		100	+	+	
Methyl alcohol aq.		50	+	+	
Methylene chloride	Δ	100	0		
(Boiling point 40.7 °C)					
Methyl ethyl ketone	Δ	100	+	0	
Milk			+	+	(+)
Milk food			+	+	(+)
Mineral oil**			+	0	-
(without aromatic					
hydrocarbons)					
			+		
Moth balls**					
			+	0	-
Motor oil (cars)**					
(see also Two-stoke oil and oil					

Chemicals	M	Conc. %	Polypropelene °C 20	60	100
			+		
Mustard					-
	N				
Nail polish			+	0	
(Boiling point 40.7 C)					
Nail polish remover			+	0	
Boiling point 40.7 C					
Naphtalene		100	+		
Nickel salts aq.		sat.	+	+	
Nitric acid		50	0	-	
		25	+	+	
		10	+	+	
Nitrobenzene		100	+	0	
	N				
Octance (see isooctane)					
Oil no.3 acc. to ASTM		100	+	0	-
380-59					
Oil of bitter almonds			+		
Olecic acid		100	+		
Oleum		any	-	-	+
Ollve Oil			+	+	
Orange juice			+	+	
Orange peel			+		
Orange peel oil			+		
Oxalic acid aq.		sat.	+	+	+
Ozone(<0.5 ppm)			(+)	(-)	

Chemical Resistance of PP-R

Chemicals	P	Conc. %	Polypropelene °C 20	60	100
Palm oil			+	0	
Paprika			+	+	
Parafin		100	+	+	-
Parafin oil		100	+	0	-
Peanut oil			+	(+)	
Pectin		sat.	+	+	
Pepper			+	+	
Peppermint oil			+		
Perchlorethylene					
(see Tetrachlorethylene)					
Perfume					
(The permeability for scents					
should be considered)					
Petrol(see fuels)					
Petroleum		100	+	0	
Petroleum ether		100	+	0	
Phenol (aqueous phase)		sat.(appr .9	+	+	
(Phenolic phase)		sat.(appr .70	+		
Phosphoric acid		sat.(85)	+	0	
		50	+	+	
		10	+	+	+
Phosphorus pentoxide		100	+		
Photographic developers**		comm.	+	+	
		ready for use	+	+	
Pickled cabbage, ready-to-eat			+	+	(+)
Picked fish			+	+	(+)
Picked hering					
Pineapple juice			+	+	
Pine needle oil		100	+	(+)	
Plasticizers					
Dibutyphthalate			+	0	
(VESTINOL C)	Δ				
Dibutylsebecate			+		
Dihexylphthalate			+		

Chemicals	P	Conc. %	Polypropelene °C 20	60	100
Dinonyladipate			+		
Diisononylphthalate			+		
(VESTINOL N)	Δ				
Dioctyladipate					
(VESTINOL OA)	Δ				
Dioctylphthalate			+		
(VESTINOL AH)	Δ				
Tricesylphosphate			+		
Trictylphosphate			+		
Porridge			+	+	(+)
Potassium carbonate aq. (potash)		sat.	+	+	
Potassium chlorate aq.		sat.	+	+	
		(7.30)			
Potassium chloride aq.		sat.	+	+	+
Potassium dichromate aq.		sat.	+	+	+
		(12)			
Potassium iodide aq.		sat.	+	+	
Potassium nitrate aq.		sat.	+	+	
Potassium permanganate aq.		sat.	+	(+)	
		(6.4)			
Potassium persulphate aq.		sat.	+		
		(0.5)			
Potassium sulphate aq.		sat.	+	+	+
Potato salad			+		
Propane , gaseous		100	+	+	
Propane , liquid		100	+	+	
Pudding			+	+	
Pyridine		100	+	0	

Chemical Resistance of PP-R

Chemicals	Conc. %	Polypropelene °C 20	60	100
Q				
Qinine				
R				
Rum	40	+	+	
Rum aroma		+		
S				
SAGROTAN		+	0	
Salad oil, animal		0		
Salad oil, vegetable		0		
Salted water	any	+	+	+
Sausage		+	+	
Sea water		+	+	+
Shoe polish**		+	0	
Silicone oil**		+	(+)	
Silver salts aq.	sat.	+	+	
Soap, cake soap		+	+	
Soap solution	sat.	+	+	
	10	+	+	+
Soda(see sodium carbonate)				
Soda water		+		
Sodium bocarbonate aq.	sat.	+	+	+
Sodium bisuiphite aq.	sat.	+	+	
Sodium carbonate aq.	sat.	+	+	
	10	+	+	
Sodium chlorate aq.	25	+	+	
Sodium chloride aq.	sat.	+	+	+
(Common salt)				
Sodium chlorite aq.	5	+	+	
Sodium hydroxide				
see (Caustic soda)				

Chemicals	Conc. %	Polypropelene °C 20	60	100
S				
Sodium hypochlorite aq.	5	+	+	
Sodium nitrate aq.	sat.	+	+	
Sodium nitrite aq.	sat.	+		
Sodium perborate aq.	sat.	+	+	+
	(1.4)			
Sodium phospates aq.	sat.	+	+	+
Sodium sulphate aq.	sat.	+	+	+
(Glauber's salt)				
Sodium sulphide aq.	sat.	+	+	
Colouration with lead stabilizers				
Sodium sulphide aq.	sat.	+	+	
Sodium thiosulphate aq.	sat.	+	+	+
(photographic fixer)				
Soft soap		+	+	
Soybean oil		+	0	
Stannous chloride	sat.	+	+	
Starch, starch solution aq.	any	+	+	
Stearic acid	100	+		
Storage-battery acid		+		
Succinic acid aq.	sat.	+	+	
Sugar (dry)		+	+	
Sugar beet sirup		+	+	
Sugar solution aq.	any	+	+	+
Sulphur	100	+	+	(+)
Sulphur dioxide	low	+	+	(+)
(sulphurous anhydride)				
Sulphuric acid	96	+	0	
	50	+	+	
	25	+	+	
	10	+	+	+

Chemical Resistance of PP-R

Chemicals	Conc. %	Polypropelene °C 20	60	100
T				
Tar	sat.	+	0	
Chemical resistance depends				
upon the composition)				
Tartaric acids aq.	100	+	+	
Tea (leaves)	100	+	+	
Tea(ready-to-drink)		+	+	
Tetrachlorethane	100	(-)	-	
Tetrachlorethylene	100	0	-	
(perchlorethylene)				
Tetrahydrofuran	100	0	-	
Tetrahydronapthalene	100	0	-	
Thick(semolina) gruel		+	+	(+)
Thiophene		0	-	
Toluene		0	-	
Tomato juice		+	+	
Tomato ketchup		+	+	
Toothpastes		+	+	
Transformer oil**	100	0		
Trichlorethylene		0	(-)	
Turpentine oil		0	-	
Two-stroke oil		0	0	
Typewriter oil		+	(+)	
U				
Urea aq.	sat.	+	+	
V				
Vanilla		+	+	
Vaseline		+	0	
Vegetables(ready-to-eat)		+	+	(+)
Vinegar	comm.	+	+	
Vinegar essence	comm.	+	+	

Chemicals	Conc. %	Polypropelene °C 20	60	100
V				
W				
Water	100	+	+	+
Water glass		+	+	
Whisky	40	+		
White spirit		+	0	
Wine, mulled claret		+	+	
X				
Xylene	100	0	-	
Z				
Zinc salts aq.	sat.	+	+	

How to connect PP-R

How to connect PP-R

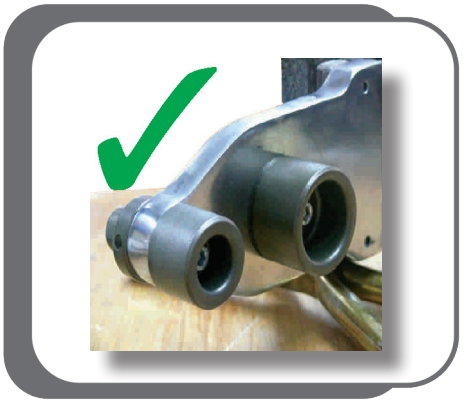
The connection of **AL-SHARIF** pipes system is very easy method that done by fusion of the end of the two ends to connect product by using AL-SHARIF connection tools.

Mounting tools

Preferable to use **AL-SHARIF** welding devices and welding tools notes must be taken in consideration.

-Assemble and tighten the cold welding tools manually.

-Before fusing distributions blocks where two connections are welded at the same time.Place the welding tool into the corresponding holes of the heating surface.



-All welding tools must be free from impurities. Check if they are clean before assembling
-If necessary clean the welding tools with a non fibrous coarse tissue.

- Place the welding tools on the device that there is full surface contact between the welding tools and heating surface. Welding tools over 40mm must always be fitted to rear bore of the heating surface.

- Plug in the welding device. Depending on the ambient temperature it takes 10-30 minutes to heat up the heating surface.

The heating up process is finished

- When the temperature pilot light goes off.
- The temperature pilot light is blinking.

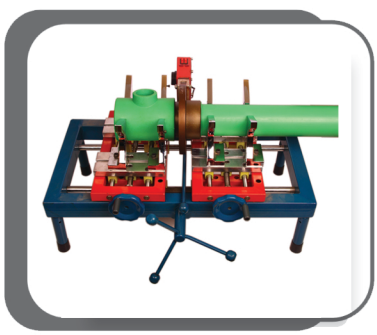
Process of the fusion

- Cut the pipe at right angles to the pipe only use AL-SHARIF pipe cutters or other suitable cutting pliers takecare that the pipe axis is free from burrs of cutting debris and remove where necessary.

- Mark the welding depth at the end of the pipe.

- Push the end of the pipe. Without turning up to the marked welding depth into the welding tool.

For Diameter from 20 to 50

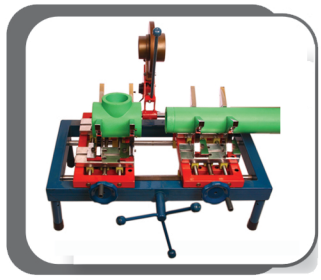


For Diameter from 63 to 110

Setting and Alignment

- After the heating time quickly remove pipe and fitting from the welding tools. Join them immediately and without turning until the marked welding depth is covered by the bead of PP-R from the fitting.

For Diameter from 20 to 50

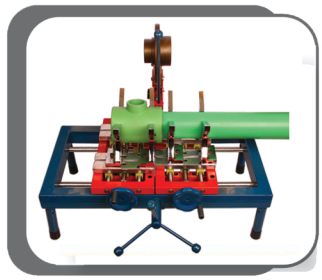


For Diameter from 63 to 110

Attention:

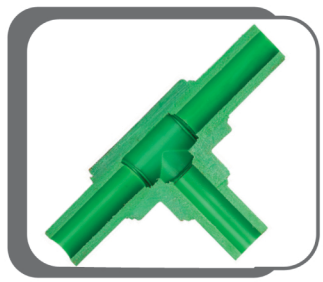
- Do not push the pipe too far into the fitting as this would reduce the bore and in an extreme case close the pipe.

For Diameter from 20 to 50



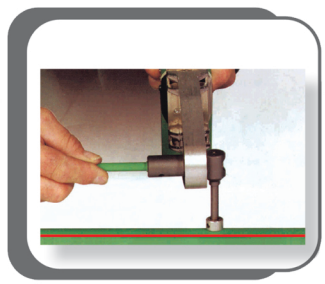
For Diameter from 63 to 110

- The joint elements have to be fixed during the specified assembly time. Use this time to correct the connection the correction is only restricted to the alignment of pipe and fittings. Never turn the elements or align the connection after the processing time.
- After the cooling period the fused joint is ready for use.

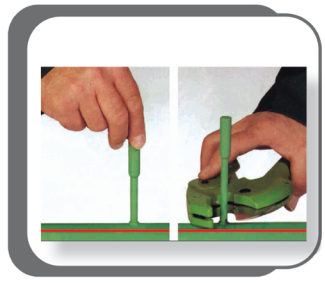


Repair

Damaged pipes may be repaired as already mentioned - by means of:
-Fusion
-Electro socket fusion.



In addition to this the **AL-SHARIF** program offers the possibility of the repair pin. The necessary welding tool and repair pin are described as shown the installation. information is enclosed with the welding tool but may also be ordered separately.



Operation manual for plastic pipe welding machine

1. a. Before the mounting sockets and assembly parts are to be wiped with a clean piece of cloth and the end of pipes are to be cut straight.
   b. Take out the welding machine from the bag and set it on the floor base.
   c. Adjust the temperature indicator of the machine to 260 degrees C.
2. Try the first use of the newly purchased machine at outdoors. The reason is that a special material is used that provides insulation between the iron part of the machine and the trunk.
3. Do not let children and animals {pets} to come near the machine.
4. When the machine starts to operate. Machine iron is heated. Therefore do not touch the machine iron in any way with your hands or arms, etc…….
5. Connect the machine to a grounded socket of 220 Volts.
6. The machine is equipped with an on/off button and RED SIGNAL lamps are lighted at the first start when the set temperature is reached, these lamps go off.
7. The machine is equipped with double resistance. You can put on and use both keys for fast heating after the machine is heated you may put of one of the keys.
8. When the machine reaches the set temperature, hold the plastic pipe for heating slowly without losing the angle and not turning the plastic pipe to female socket more the connection part to male socket.
9. Do not let the heaters contact with the electric cable and plug.
10. The machine is not to be subjected to strokes in any way.
11. Cooling of the machine is to be by itself using air. Avoid using water cooling at all.
12. Do not let the machine contact with water.
13. Use battery connection scale (balance) and fitting element in connecting the battery.
14. After you welding work is finished, carry out the sealing test by applying compressed water into the welded piped.
15. Do not use the welding machine and fork for any other purpose than plastic pipes.
16. After you are finished with the machine, wait for the machine and its iron to cool and then pack it into the bag.
17. The machine is not be disassemble for repair in any way.
18. When the machine is used not in accordance with operating instructions, responsibility fully belongs to the customer.
19. Socket with worn Teflon are not be used in welding operation.
20. Socket are to be cleaned using a clean piece of cloth with water-alcohol mixture.

Materials Available in the set :

20mm	25mm	32mm
1/2”	3/4”	1”

1. Carrying bag
2. Welding machine
3. Floor base
4. Welding sockets
5. Battery fitting element and battery balance scale
6. Plastic pipe shear
7. Steel tape measure
8. Socket opener and alliance key

Note: **It is essential to observe the below mentioned heating times.**

Pipe external	Welding depth	Heating time		Welding time	Cooling time
mm	mm	sec. indoor	Sec. outdoor	Sec.	min.
20	14.0	5	8	4	2
25	15.0	7	11	4	2
32	16.5	8	12	6	4
40	18.0	12	18	6	4
50	20.0	18	27	6	4
63	24.0	24	36	8	6
75	26.0	30	45	8	8
90	29.0	40	60	8	8
110	32.5	50	75	10	8

Installation Principles

There are some precautions must be taken into consideration in the installation of **AL-SHARIF** pipes system.

- Must the pipelines are divided into individual sections to avoid uncontrolled movements of the pipes.

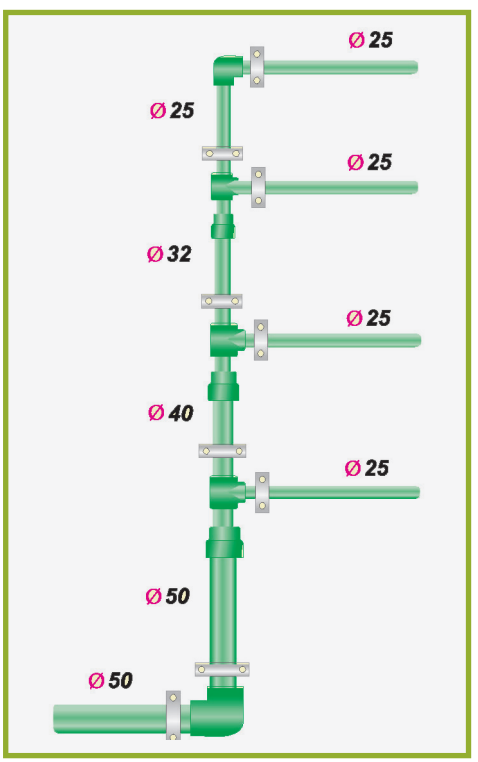
- The fixed points have to be measured and installed in away that the force of expansion of **AL-SHARIF** pipes as well as probable additional are accommodated.

- It is always possible to install vertical distributions rigidly.

- Risers do not require expansion loops provided that fixed points are located immediately before and after a branch.

- To compensate linear expansion force of pipes must use sufficient and stable clamps and mounting.

- Sliding clamps have to allow axial movements of the pipe without damaging the pipe Clamp it has to be ensured that movements of the pipelines are not hindered by fittings or armatures installed next to the clamps.



Linear Expansion

The linear expansion of pipes depends on the difference of operating temperature to installation temperature

$\triangle T = T_{operating} - T_{installation\ temperature}$

Therefor cold water pipes gave practically linear expansion because of the heat dependent expansion of the material the linear expansion must be specially considered in case of warm water and heating installations this requires a distinction of the types of installation i.e.

- **Concealed installation**
- **Installation ducts**
- **Open installation**

Installation in Ducts

On positioning of a fixed point pipe clamp directly before each branch off point the linear expansion of **AL-SHARIF** pipes can be ignored all pipe clamps in ducts have to be installed as fixed points.
Additionally a maximum distance of 3.0 meters between two fixed points must be observed.

Open installation

In case of installed pipes (i.e. in the cellar), as presentation is important there should be no deformation of the pipe work.

Calculation of the linear expansion

The linear expansion ΔL is calculated according to the following formula

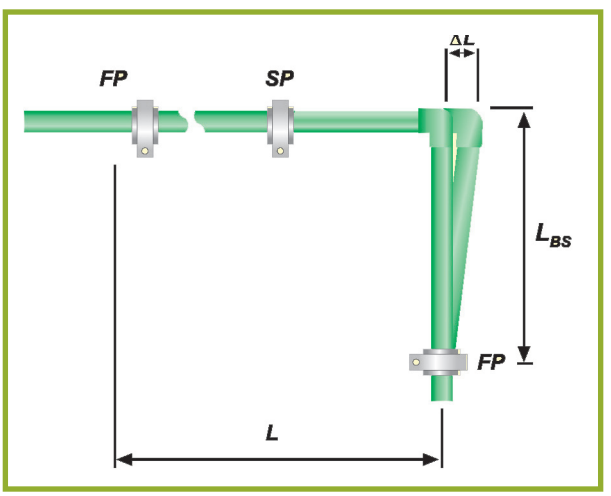
$\triangle L = \alpha \times L \times \triangle T$

Where

ΔL Linear expansion
α Coefficient of linear expansion=0.15 mm/mk
L Pipe length
ΔT Temperature difference between working and installation temperature
($\triangle T = T_w - T_m$)
T_w Working temperature
T_m Installation temperature

Bending side
the bend side length (L_{BS})
calculated acc. to the following formula

$$L_{BS} = K \times \sqrt{d \times \triangle L}$$



Expansion Loop

If the linear expansion cannot be compensated through a change in direction it becomes necessary to install an expansion loop with long and straight pipelines.

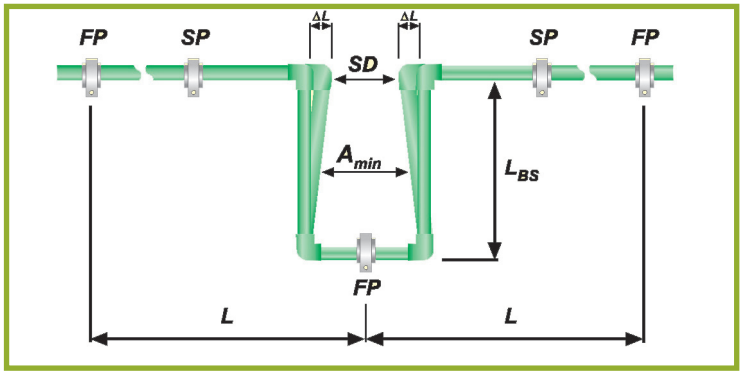
Consider the length of the bending side L_{BS} as well as the breadth of the pipe bend A_{min} on constructing an expansion loop.

The pipe bend A_{min} is calculated acc. To the following formula

$$A_{min} = 2 \times \Delta L + SD$$

The width of the expansion loop A_{min} should be at least 210 mm.

Symbol	Meaning
A_{min}	**Width of the expansion loop (mm)**
SD	**Safety distance 150 mm**



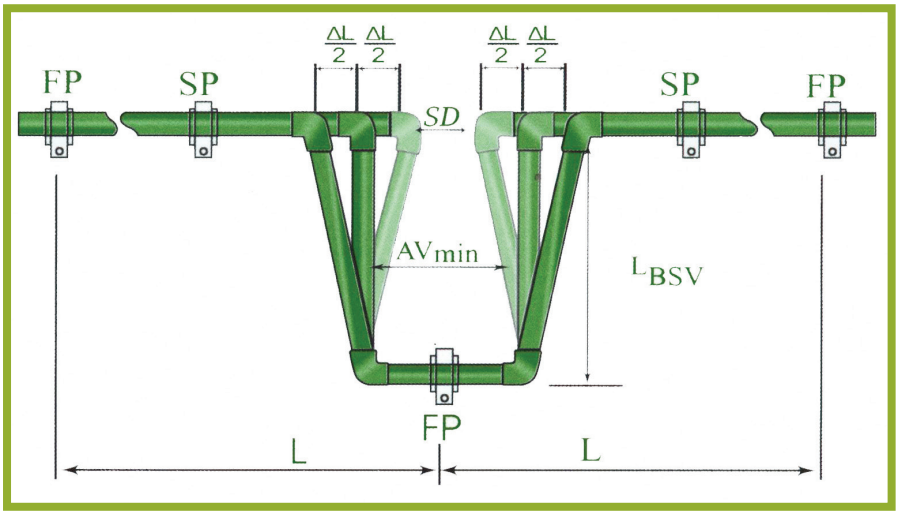
Pre-stress

When space is limited, it is possible to shorten the total width A_{min} as well as the length of the bending side L_{Bsv} by its pre stressing.
The side length of expansion loops with pre-stress is calculated by this equation

$$L_{BSV} = K \times \sqrt{d \times \Delta L/2}$$

Where

L_{BSV} Length of the bending side
K Material specification constant = 15.5
D Outside diameter (mm)

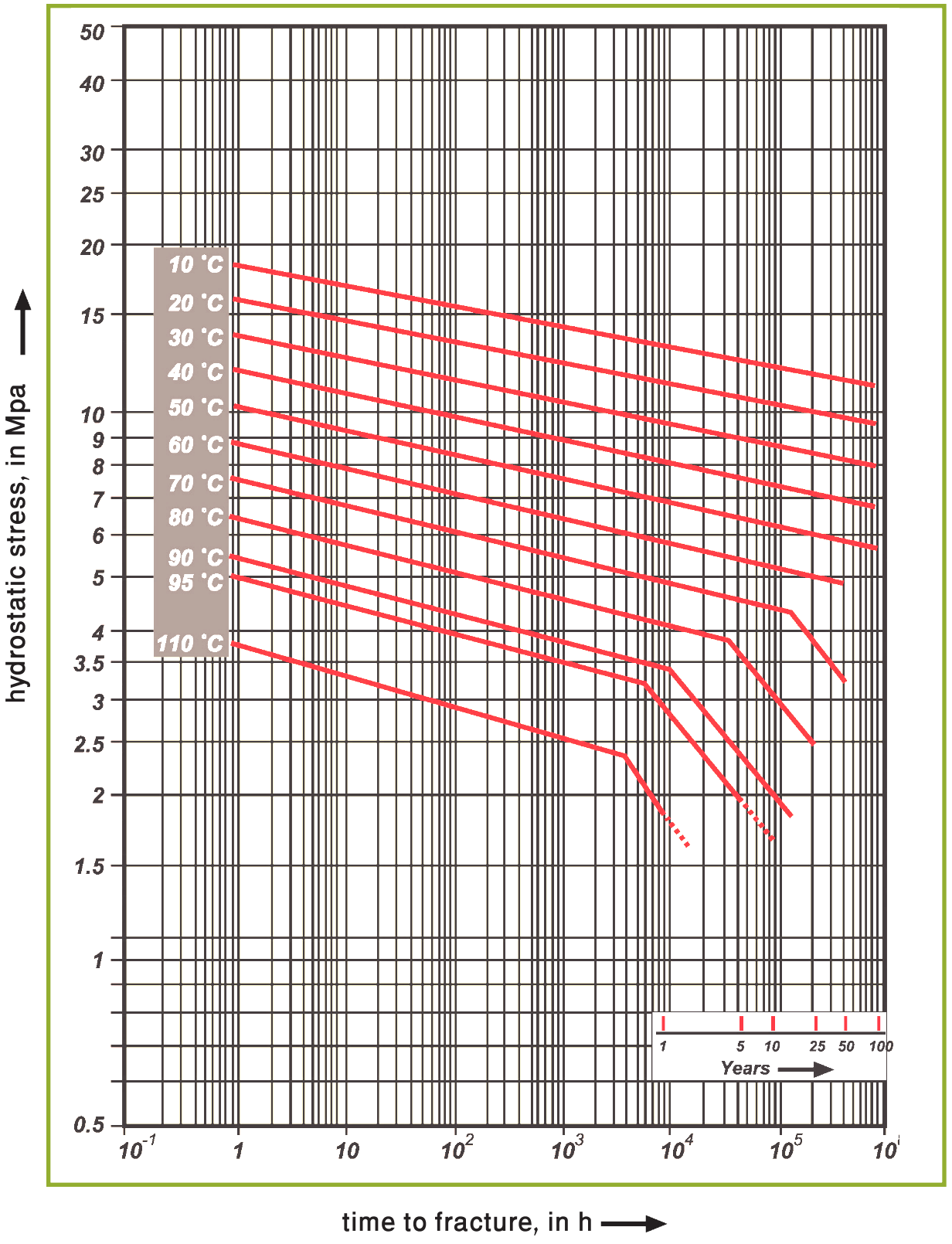


Creep Strength

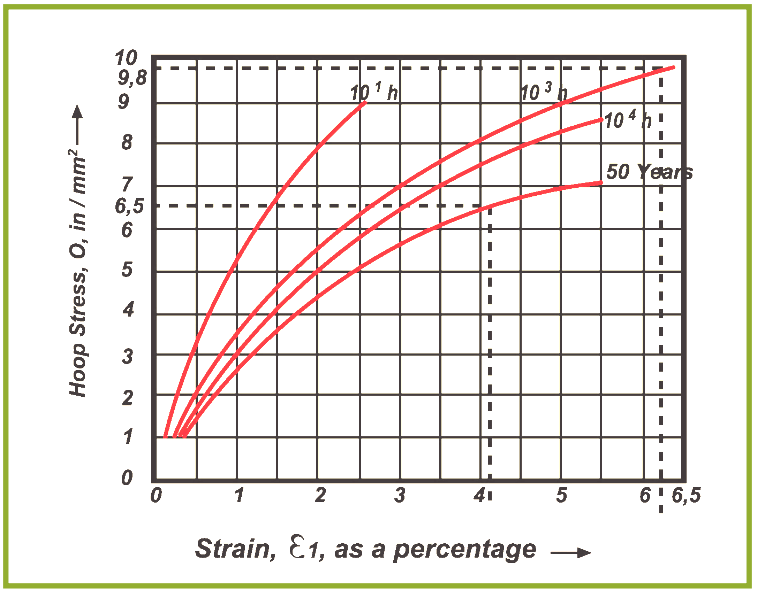
AL-SHARIF pipes are tested in the condition gives in the below table that pipes shall neither burst nor leak during the prescribed period of stressing the diagram which after the table is based on tests carried out in accordance with DIN 16887

Explored sections of the curves (with pipe tested at 110 °C)

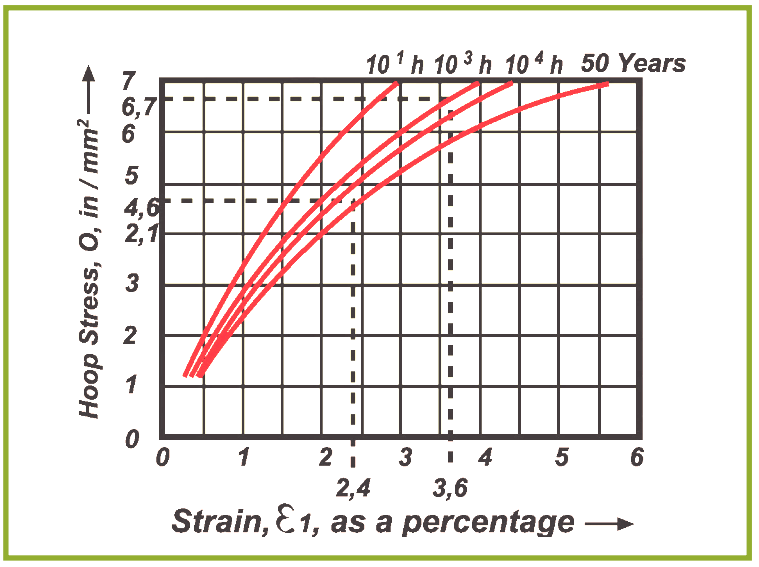
Test Temperature In °C	Exposure medium	Proof stress O N/mm^2	Period of stressing Minimum time of Failure in hours
20 95 110	Air or Water Air or water Air	16 3.5 1.9	1 1000 8760



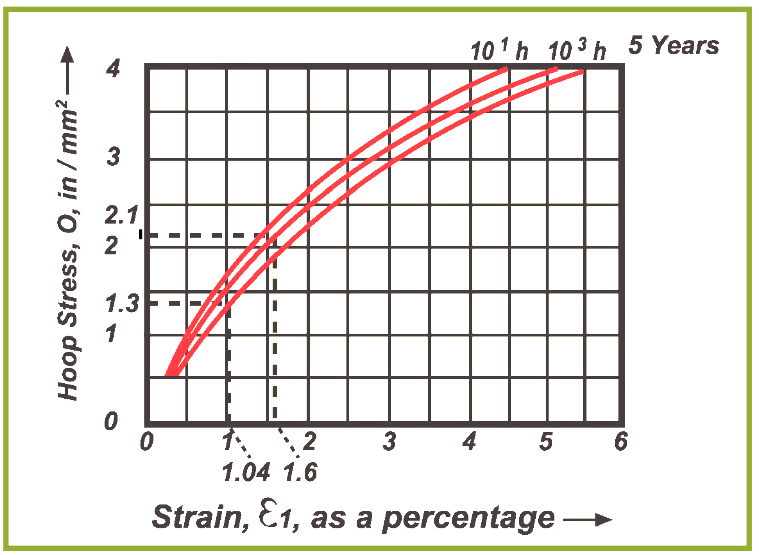
Long-term behaviour of PP-R pipes



Stress-strain diagram for PP-R 80 fittings at 20 °C

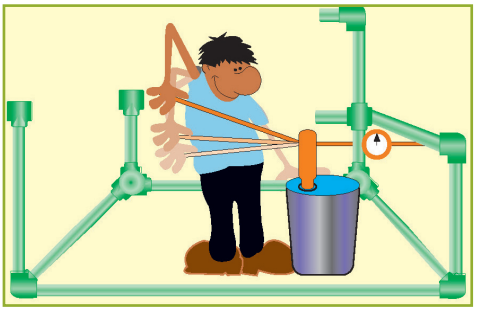


Stress-strain diagram for PP-R 80 fittings at 40 °C



Stress-strain diagram for PP-R 80 fittings at 95 °C

Pressure test



Technical rules for potable water installation DIN 1988
All pipelines have to be (while still visible) hydraulically pressure tested.
The test pressure has to be 1.5 times of the operating pressure.
For the preliminary test a test pressure of 1.5 times of the highest possible operating pressure has to be produced. This test pressure has to be reestablished twice within 30 minutes within an interval of 10 minutes.
After a test time of a further 30 minutes the test pressure must not drop more than 0.6 bar and no leakage should have appeared.

Transport and Storage

AL-SHARIF pipes system may be stored outside at any temperature. A solid base for the pipe is very important, to be treated with caution at low temperatures.

Although **AL-SHARIF** pipes are extremely robust it is recommended to treat the material with care.

UV-radiation has effects on all high polymer plastic do not store in the open air for long period at maximum storage 6 month.

Pipes Package:

Pipe cover in Green plastic package closed from two side.
In the package printed all of the information of the product.

Fittings Package:

Groups of the fittings in a sachet package found in it all information of product and putted in a cartoon box contain all needs information that cartoon marked by quality control pass.

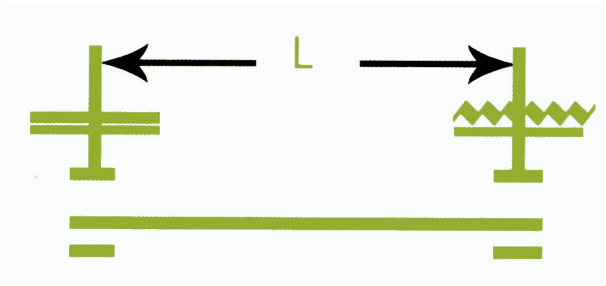
Pipe Bracket Spacing and Supporting PP-R Pipelines

General

Plastic pipelines need to be supported at certain intervals depending on several factors:The materials, the average pipe wall temperature, the density of the medium transported and the size and wall thickness of the pipe. The determination of spacing between pipe brackets has been based on the permissible deflection of the pipe between consecutive brackets. The calculations for below table are based on a maximum permissible deflection of 0.25 cm between consecutive brackets

Pipe Bracket Spacing For Liquids with a Density of <1g/cm^3 and for Gases

Material	D mm	Pipe bracket intervals in cm at:						
		20 °C	30 °C	40 °C	50 °C	60 °C	80 °C	100°C
PP-R	16	75	70	70	65	65	55	40
	20	80	75	70	70	65	65	45
	25	85	85	85	80	75	70	50
	32	100	95	95	90	85	75	55
	40	110	110	105	100	95	85	60
	50	125	120	115	110	105	90	70
	63	140	135	130	125	120	105	80
	75	155	150	145	135	130	115	85
	90	165	165	155	150	145	125	95
	110	185	180	175	165	160	140	105
	125	200	190	185	180	170	150	110
	140	210	205	195	190	180	155	115
	160	225	225	210	200	190	165	125



The pipe bracket spacing given in the table may be increased by 30% in the case of vertical pipe runs.

Pipe Bracket Spacing for Fluids of a Density > 1 g/cm^3

If the liquid to be transported has a density exceeding 1 g/cm^3, then the bracket spacing in the last table should be multiplied by the factor in the below table, resulting in shorter distances between brackets.

Density of the fluid In g/cm^3	Bracket spacing factor for densities > 1g/cm^3
1.25	0.90
1.50	0.83
1.75	0.77
2.00	0.70

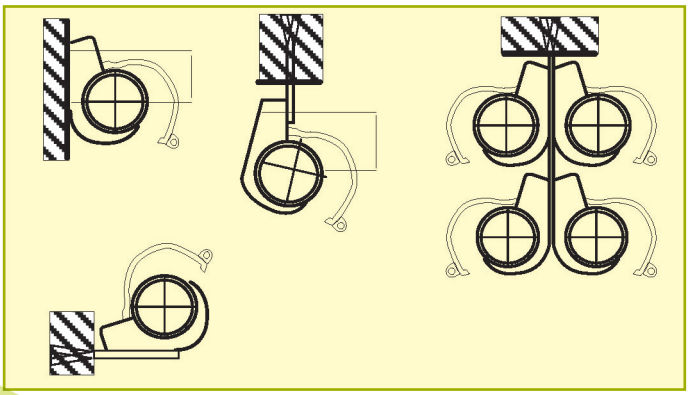
Installing closely Spaced Pipe Brackets

Continuous support may be more economical and practicable than pipe brackets for horizontal pipe work, especially for small diameter pipes and in regions of high temperature. Installation in a UV or V section metal or heat resistant plastic pipe channel has proved to be quite suitable.

Pipe bracket requirments

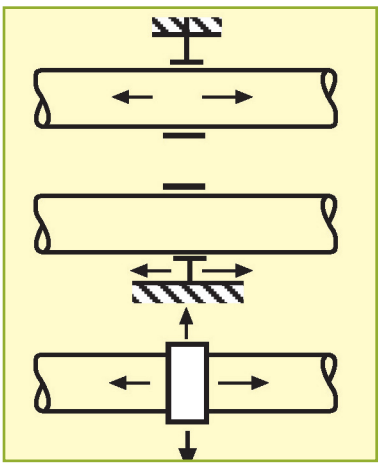
The inner diameter of the pipe bracket must exceed the outside diameter of the pipe in order not to interfere with the free movement of the pipe as a result of expansion or contraction the inside edges of the pipe brackets must be such that the pipe surface can't be damaged. fischer pipe brackets and clamps satisfy these requirements. these robust plastic pipe brackets can be used not only under rigorous operating conditions, but also where the pipework is subject to aggressive media or atmospheric conditions.

Examples of pipe bracketing



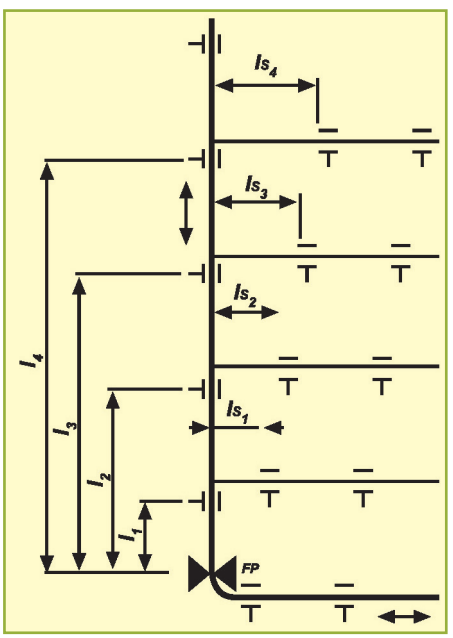
Arranging Loose Brackets

Axial movement of the pipeline must not be prevented by fittings placed next to pipe brackets or by any other component affecting the diameter of the pipe.



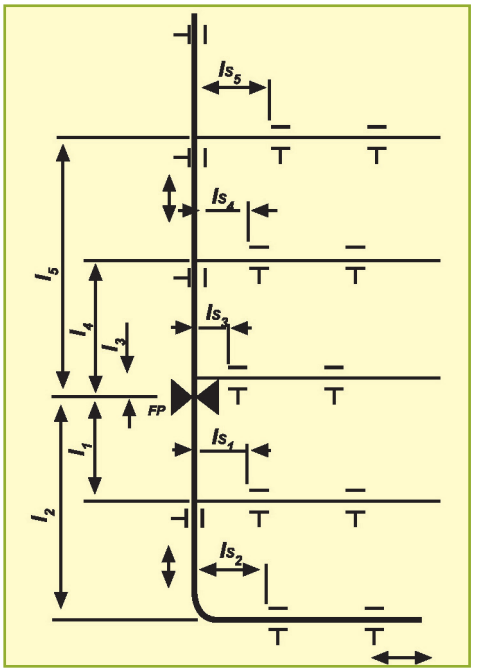
Principle of loose and sliding Brackets

Sliding brackets and hanging brackets permit the pipe to move in different directions.
Attaching a sliding block to the base of the pipe bracket permits free movement of the pipe along a flat supporting surface. Sliding and hanging brackets are needed in situations where the pipeline changes direction and free movement of the pipe must be allowed.



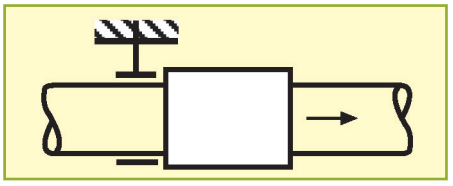
Fixation point in base of vertical column

Fixation point in middle of region of vertical column

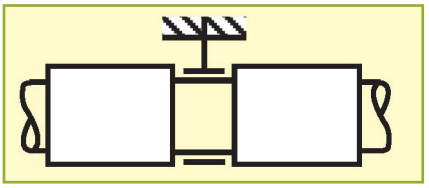


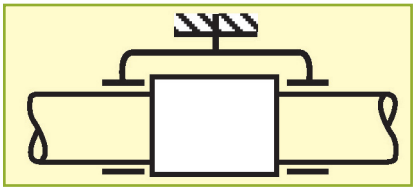
Arranging fixed Brackets

Placing a pipe Bracket immediately adjacent to a fitting restricts movement due to changes in length to one direction (one-side fixed point).



If, as is usually the case, it is necessary to allow changes in both directions, then the pipe bracket must be located between two fittings or a double bracket must be used.





Pipe brackets must be robust and mounted firmly to be able to take up the forces arising from changes in length in the pipeline.
Hanging brackets are unsuitable for use as fixed points.

Flow Rate

The basis for determining the maximum flow rate should be calculated on the desired flow rate of each water point. The simultaneous use respectively.
The peak pressure of flow of an installation part gas to be determined by taking the calculation values from DIN 1988 as a basic.

Maximum flow Rate

A further criterion for the selection of the pipe diameter is the maximum permissible flow rate. Because of sonic reasons and for the limitation of water hammer, the calculated flow rate may not exceed the values of the table below.

Section of the installation	Max. calculate flow rate at run	
	15 min. m/s	> 15 min. m/s
Connecting pipes	2	2
Service pipes Parts with poor drag reducing Passage armature (2.5<) *	5	2
Parts with passage armatures With a higher correction value Loss **	2.5	2
* i.e. piston valve acc. To DIN 3502 ** i.e. screw down stop globe valves acc. To DIN 3512		

Principle of calculation

To determine the pipe diameter in potable water networks of buildings numerous principles calculation are necessary. The revised version of DIN 1988 provides a simplified and differentiated method of calculation.
The simplified method is suitable for clearly arranged pipes i.e. in residential buildings. The differentiated method includes all pipes and local resistances and offers the highest accuracy as well as the most accurate approximation of real operating conditions. The determining of the pipe diameter requires the following data :

* Minimum gauge pressure of supply or pressure in flow direction behind pressure reducing or boosting valve.
* Head variations.
* Loss of pressure due to apparatus i.e. water meter, filter, softening installations ect…
* Minimum pressure of flow of the water point applied.
* Incline of pipe friction pressure of the used pipe material.
* Coefficients of less for fittings and pipe connections.

But for further consultation with **AL-AMAL (AL-SHARIF)** are recommended in any case .

PPR dimensions

PP-R Pipes Dimensions acc. To Din 8077

DImension in millimeters

d	Pipe series (S)															
	20		16		12.5		8.3		5		3.2		2.5		2	
	Pressure Rating															
	PN 2.5		PN 3.2		PN 4		PN 6		PN 10		PN 16		PN 20		PN 25	
	Standard dimension ratio (SDR)															
	41		33		26		17.6		11		7.4		6		5	
	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m	S	mass in kg/m
10	-	-	-	-	-	-	-	-	-	-	-	-	1.8	0.046	2.0	0.050
12	-	-	-	-	-	-	-	-	-	-	1.8	0.057	2.0	0.062	2.4	0.071
16	-	-	-	-	-	-	-	-	-	-	2.2	0.095	2.7	0.110	3.3	0.128
20	-	-	-	-	-	-	-	-	1.9	0.107	2.8	0.148	3.4	0.172	4.1	0.198
25	-	-	-	-	-	-	-	-	2.3	0.164	3.5	0.230	4.2	0.266	5.1	0.307
32	-	-	-	-	-	-	1.8	0.172	2.9	0.261	4.4	0.370	5.4	0.434	6.5	0.498
40	-	-	-	-	1.8	0.217	2.3	0.273	3.7	0.412	5.5	0.575	6.7	0.671	8.1	0.775
50	-	-	1.8	0.274	2.0	0.301	2.9	0.422	4.6	0.638	6.9	0.896	8.3	1.04	10.1	1.21
63	1.8	0.349	2.0	0.382	2.5	0.474	3.6	0.659	5.8	1.01	8.6	1.41	10.5	1.65	12.7	1.91
75	1.9	0.438	2.3	0.528	2.9	0.647	4.3	0.935	6.8	1.41	10.3	2.01	12.5	2.34	15.1	2.70
90	2.2	0.616	2.8	0.758	3.5	0.936	5.1	1.33	8.2	2.03	12.3	2.87	15.0	3.36	18.1	3.88
110	2.7	0.903	3.4	1.12	4.2	1.37	6.3	1.99	10.0	3.01	15.1	4.30	18.3	5.01	22.1	5.78
125	3.1	1.18	3.9	1.45	4.8	1.76	7.1	2.55	11.4	3.91	17.1	5.53	20.8	6.47	25.1	7.46
140	3.5	1.48	4.3	1.80	5.4	2.23	8.0	3.20	12.7	4.87	19.2	6.95	23.3	8.12	28.1	9.35
160	4.0	1.91	4.9	2.32	6.2	2.92	9.1	4.17	14.6	6.38	21.9	9.04	26.6	10.6	32.1	12.2

PP-R Pipes Dimension acc. to ISO 15874-2-2003

(sizes confirm to ISO 4065 : 1996(2) and are applicable for all classes of service conditions)

Dimension in millimeters

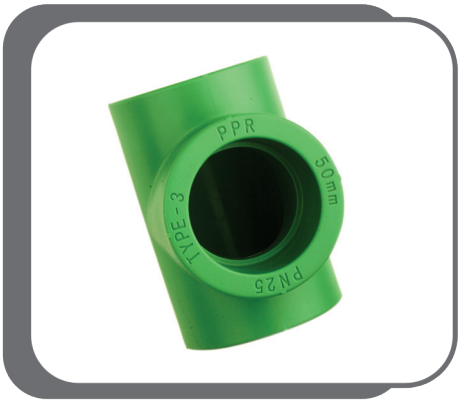
Nominal Size DN/OD	Nominal Outside Diameter d_n	Mean outside diameter		Pipe Series			
				S 5	S 3.2	S 2.5	S 2
		$d_{em,min}$	$d_{em,max}$	Wall thicknesses e_{min} and e_n			
12	12	12.0	12.3	1.8@	1.8	2.0	2.4
16	16	16.0	16.3	1.8	2.2	2.7	3.3
20	20	20.0	20.3	1.9	2.8	3.4	4.1
25	25	25.0	25.3	2.3	3.5	4.2	5.1
32	32	32.0	32.3	2.9	4.4	5.4	6.5
40	40	40.0	40.4	3.7	5.5	6.7	8.1
50	50	50.0	50.5	4.6	6.9	8.3	10.1
63	63	63.0	63.6	5.8	8.6	10.5	12.7
75	75	75.0	75.7	6.8	10.3	12.5	15.1
90	90	90.0	90.9	8.2	12.3	15.0	18.1
110	110	110.0	111.0	10.0	15.1	18.3	22.1
125	125	125.0	126.2	11.4	17.1	20.8	25.1
140	140	140.0	141.3	12.7	19.2	23.3	28.1
160	160	160.0	161.5	14.6	21.9	26.6	32.1

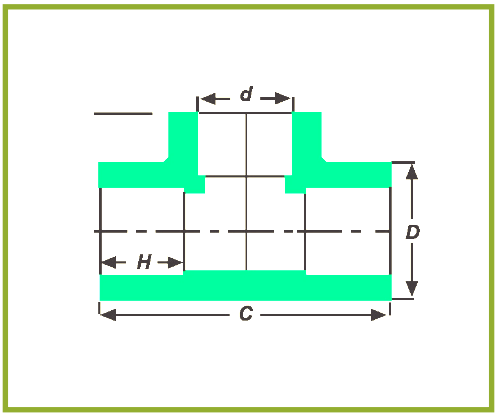
@ A non – preferred wall thickness of 1.1mm is permitted for d_n = 12

PP-R Pipe Fittings Dimension

TEE 90°

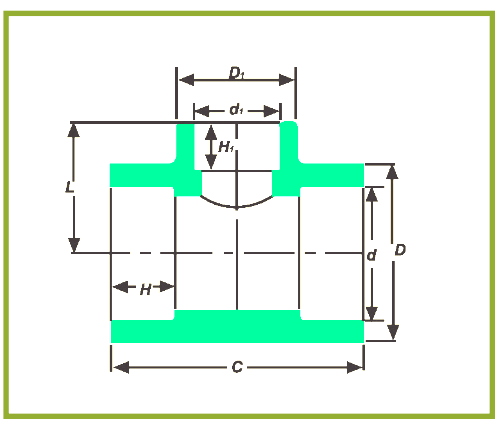
No. size	D	d	H	L	C
20	30.5	19.5	14.5	28	56
25	36.1	24.5	16	32	64
32	45.5	31.5	22	38	76
40	53.4	39.4	21.5	42.5	88
50	67.5	49.5	29	52	104
63	84.5	62.5	21.5	65	130
75	100.5	74.5	31	69.5	139
90	121.4	89.4	34	81	163
110	146.9	109.4	40	97.0	196

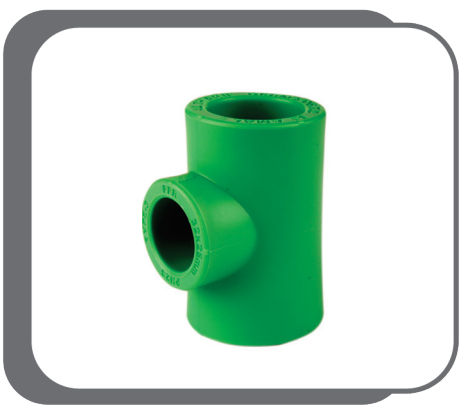




TEE 90° REDUCER

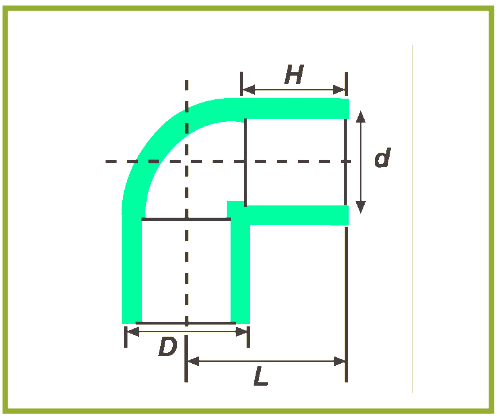
No. size	D	d	H	D_1	d_1	H_1	L	C
25/20	36.1	24.5	16	30.5	19.5	14.5	30	64
32/20	45.5	31.5	20	30.5	19.5	14.5	38	76
32/25	45.5	31.5	20	36.1	24.5	16	34	76
40/20	53.4	39.4	21.5	34.5	34.5	15	38.7	88
40/25	53.4	39.4	21.5	34.5	34.5	17	38.7	88
40/32	53.4	39.4	21.5	44.4	44.4	20	40.7	88
50/25	67.5	49.4	24.5	36.1	24.5	16	48	92
50/32	67.5	49.4	24.5	45.5	31.5	20	48	92
63/20	84.4	62.4	29	34.4	34.4	15	57.2	130
63/25	84.4	62.4	29	34.4	34.4	17	57.2	130
63/32	84.4	62.4	29	53.4	53.4	20	60.2	130
63/40	84.4	62.4	29	53.4	53.4	21.5	60.2	130
63/50	84.4	62.4	29	67.4	67.4	23.5	63.7	130
75/20	100.15	74.5	31	34.5	34.5	15	66.27	140
75/25	100.15	74.5	31	34.5	34.5	17	66.27	140
75/32	100.15	74.5	31	53.4	53.4	20	67.27	140
75/40	100.15	74.5	31	53.4	53.4	21.5	67.27	140
75/50	100.15	74.5	31	67.4	67.4	23.5	69.27	140
75/63	100.15	74.5	31	84.4	84.4	29	69.27	140
90/32	121.45	89.5	34	53.4	53.4	20	78.22	163
90/40	121.45	89.5	34	53.4	53.4	21.5	78.22	163
90/50	121.45	89.5	34	67.4	67.4	23.5	80.22	163
90/63	121.45	89.5	34	84.4	84.4	29	80.22	163
90/75	121.45	89.5	34	100.15	100.15	31	81	163
110/63	146.9	109.6	40	67.4	67.4	29	96.9	196
110/75	146.9	109.6	40	84.4	84.4	31	96.9	196
110/90	146.9	109.6	40	100.15	100.15	34	96.9	196





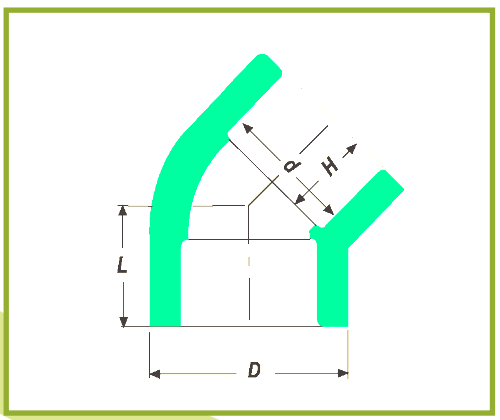
ELBOW 90°

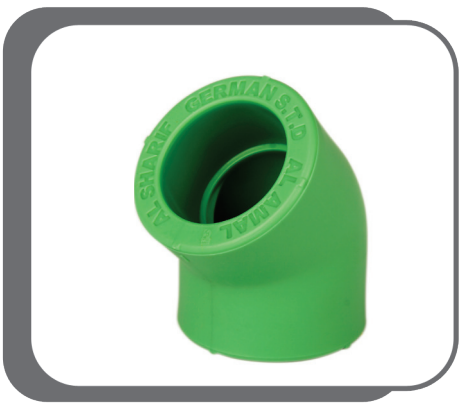
No. size	D	d	H	L
20	30.5	30.5	14.5	28
25	36.1	36.1	16	32
32	45.5	45.5	20	38
40	53.4	39.4	21.5	44
50	67.5	67.5	24.5	52
63	84.5	84.5	29	65
75	100.15	100.15	31	69.6
90	121.45	121.45	34	80.75
110	146.90	146.90	40	98.16



ELBOW 45°

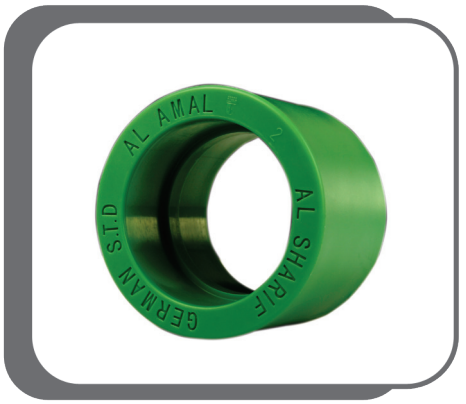
No. size	D	d	H	L
20	30.5	19.5	14.5	20.1
25	36.1	24.5	16	22.6
32	45.5	31.5	20	26.3

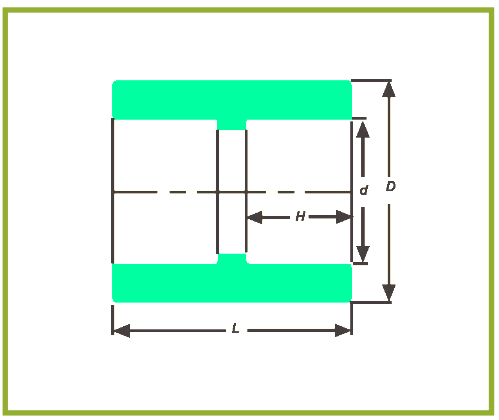




SOCKET

No. size	D	d	H	L
20	30.5	19.5	14.5	34
25	36.1	24.5	16	37
32	45.5	31.5	20	44
40	53.38	39.4	21.5	48
50	67.5	49.45	24.5	55
63	84.5	62.5	29	66
75	100.14	74.5	31	68
90	121.44	89.4	34	75
110	146.92	109.4	40	89

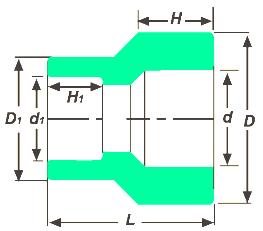




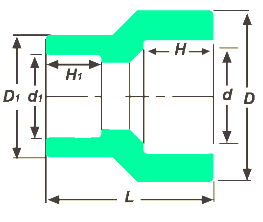
REDUCER

No. size	D	d	H	D_1	d_1	H_1	L	Form
25\20	25	15.4	16	30.5	19.5	14.5	36	A
32\20	32	19.3	19.5	30.5	19.5	14.5	37.5	A
32\25	32	19.3	19.5	36.1	24.5	16	38.5	A
40\20	53.4	39.4	21.5	29.5	19.3	15	48	B
40\25	53.4	39.4	21.5	34.6	24.3	17	48	B
40\32	53.4	39.4	21.5	44.4	31.4	20	48	B
50\25	50	28	22	36.1	24.5	16	48.5	A
50\32	50	28	27	45.5	31.5	20	52.5	A
63\25	63	37	28	36.1	24.5	16	55.5	A
63\32	63	37	29.5	45.5	31.5	20	59.5	A
75\20	100.15	74.5	31	29.5	19.3	15	68	B
75\25	100.15	74.5	31	34.5	24.3	17	68	B
75\32	100.15	74.5	31	44.4	31.4	20	68	B
75\40	100.15	74.5	31	53.4	39.4	21.5	68	B
75\50	100.15	74.5	31	67.4	49.4	23.5	68	B
75\63	100.15	74.5	31	84.4	62.4	29	68	B
90\50	121.45	89.5	34	67.4	49.4	23.5	75	B
90\63	121.45	89.5	34	84.4	62.4	29	75	B
90\75	121.45	89.5	34	100.15	74.5	31	75	B
110\63	146.9	109.6	40	84.4	62.4	29	89	B
110\75	146.9	109.6	40	100.15	74.5	31	89	B
110\90	146.9	109.6	40	121.45	89.4	34	89	B

A

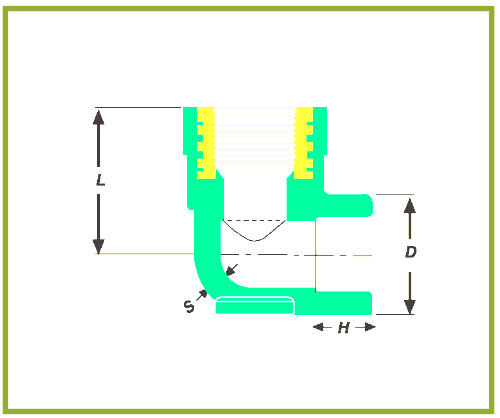


B



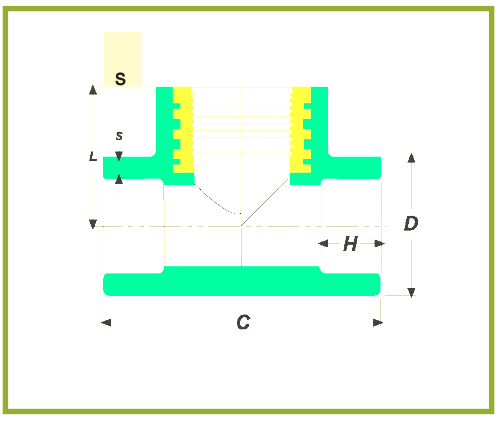
ELBOW WITH BRASS INSERT

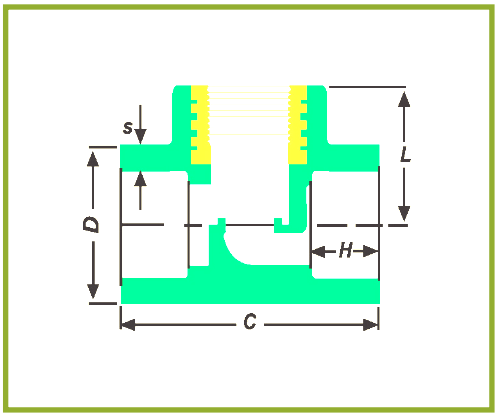
No. size	D	H	L	S
20mm/1/2”	30.4	14.3	37.8	7
25mm/1/2”	33.8	16	38.2	7
25mm/3/4”	36.1	16	47	7.3
32mm/3/4”	45.5	20	52	8.75
32mm/1”	45.5	20	55	8.75

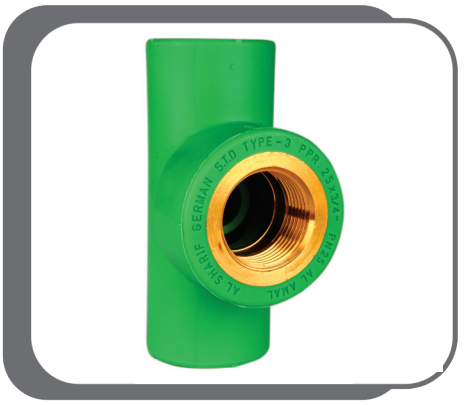


TEE 90° WITH BRASS INSERT

No. size	D	H	S	L	C
20mm/1/2”	30.5	14.5	5.6	34	56
25mm/1/2”	36.1	16	5.8	37.5	72
25mm/3/4”	36.1	16	5.8	37.5	72
32mm/3/4”	45.5	20	7	43.5	80
32mm/1”	45.5	20	7	43.5	80





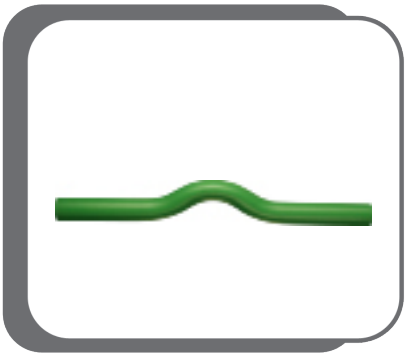


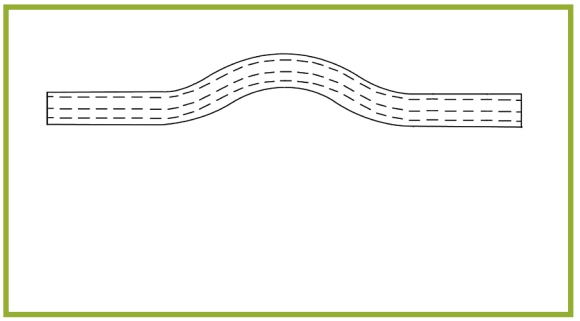
TEE VALVE

No. size	D	H	L	S	C
20mm/3/4”	30.5	14.5	36	5.5	80
25mm/3/4”	36.1	16	36	5.8	90
32mm/3/4”	45.5	20	40	7	92

CROSS OVER

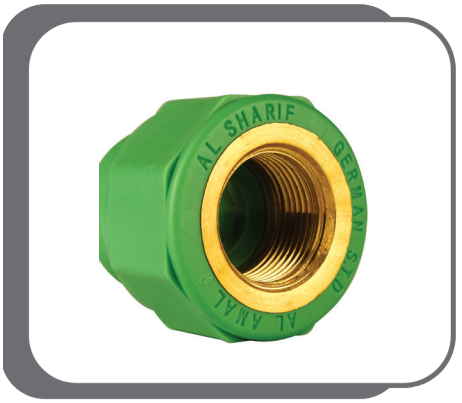
size (mm)	20	25	32	50	63

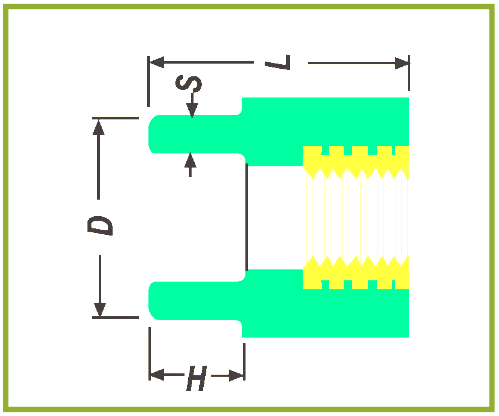




FEMALE ADAPTOR WITH BRASS INSERT

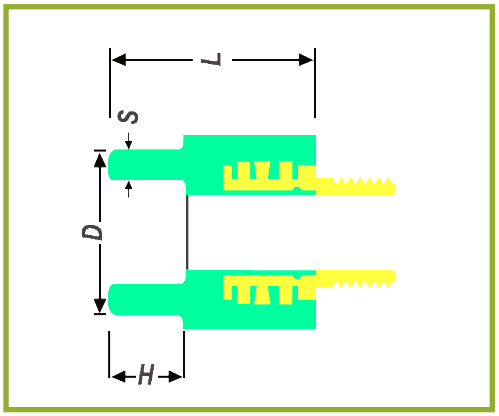
No. size	D	H	L	S
20mm/1/2”	30.5	14.5	39	5.6
25mm/1/2”	36.1	16	40.5	5.8
20mm/3/4”	30.5	14.5	42.5	5.5
25mm/3/4”	36.1	16	44.0	5.8
25mm/1”	36.1	16	47.5	5.8
32mm/3/4”	45.5	20	49.5	7
32mm/1”	45.5	20	53.5	7
50mm/11/2”	67.5	24.5	60	9
63mm/2”	84.5	29	70	11





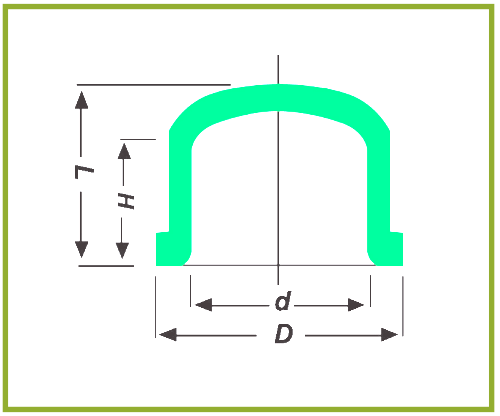
MALE ADAPTOR WITH BRASS INSERT

No. size	D	H	L	S
20mm/1/2”	30.5	14.5	39	5.6
25mm/1/2”	36.1	16	40.5	5.8
20mm/3/4”	30.5	14.5	42.5	5.5
25mm/3/4”	36.1	16	44.0	5.8
25mm/1”	36.1	16	47.5	5.8
32mm/3/4”	45.5	20	49.5	7
32mm/1”	45.5	20	53.5	7
50mm/11/2”	67.5	24.5	60	9
63mm/2”	84.5	29	70	11



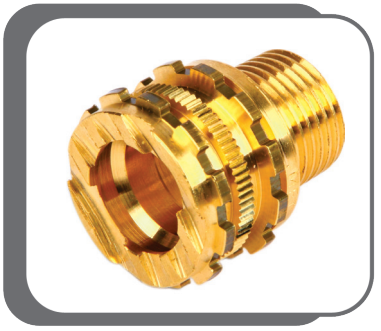
Caps

No. size	D	d	H	L
20	29.5	19.5	16	23.5
25	35.5	24.5	19	28
32	44	31.5	22	32
40	54	39.4	26	38
50	66	49.4	31	45
63	82	62.5	38	55.5
75	96	74.5	44	64
90	115	89.4	51	77
110	132	109.4	65	92



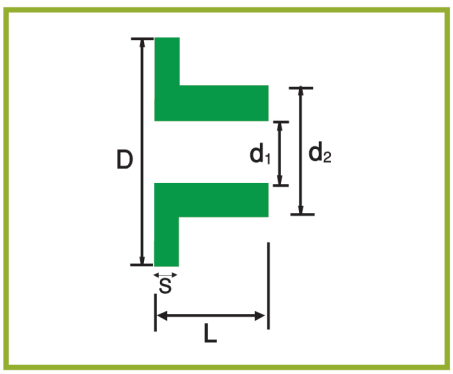
Brass Spec.

The alloy of the brass insert is produced according to the EN12449 standard which has the most safty component for the potable water and for the users healthy.
The brass insert is designed to confirm the most powerful fixation between brass & PP-R material also designed to prevent any leakage.



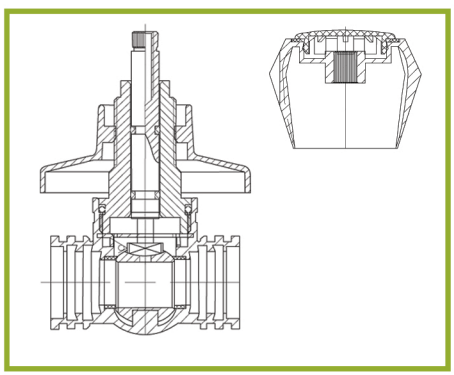
Ball valve

No. size	d_1	d_2	D	L	S
20	19.5	28.1	33.9	19.7	6.9
25	24.5	34.9	43.1	20.7	6.5
32	31.5	44.6	25.1	25.7	7.0
50	49.5	69.9	77.4	32.8	9.4
63	62.5	89.1	100.1	40.6	11.6



Bullet valve

size	20	25



Certificates

NATIONAL RESEARCH CENTER
TAHRIR St. DOKKI, CAIRO, EGYPT
Central Unit for Analysis And
Scientifical Services (CUASS)
Material Test Lab.
Ceramics, Polymers and
Solid Matter Department.

المركز القومى للبحوث
الدقى - القاهرة - جمهورية مصر العربية
وحدة التحاليل والخدمات العلمية المركزية
معمل اختبار المواد
م السيراميك والبلاستيك والمواد الصلبة

نتيجة اختبار التأثير على عينة

وصلات بولى بروبلين مقاس *(PP-R3/4 / 25)* بسن نحاس

من أنتاج شركة الأمل للمواسير البلاستيك ولوازمها (الشوبك)

==========

تأثير المادة على pH الاس الهيدروجينى

أظهرت النتائج عدم وجود تغير فى الأس الهيدروجينى للمياه التى تعرضت لهذه العينة .

اختبار السمية :-

تم إجراء اختبار السمية على العينة الواردة من الشركة باستخدام حيوان الدافنيا وقد دل اختبار السمية بأن المياه التى تعرضت لهذه العينة من العينة ليس لها تأثير سمى .

ت : ٣٣٧١٦١٥ – ٣٣٧١٤٤٩ – ٣٣٧١٣٦٢ داخلى ١٣٢١ مباشر
٣٣٧١٧٢٨ – ٣٣٧١٩٣٣ – ٣٣٧١٦٣٥ ١٠٨٤ وفاكس
٣٣٨٧٨٠٣ شارع التحرير – الدقى

NATIONAL RESEARCH CENTER
TAHRIR St. DOKKI, CAIRO, EGYPT
Central Unit for Analysis And
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المركز القومي للبحوث
الدقى - القاهرة - جمهورية مصر العربية
وحدة التحاليل والخدمات العلمية المركزية
معمل اختبار المواد
قسم السيراميك والبلاستيك والمواد الصلبة

الصفات الطبيعية والكيماوية للمياه التى تعرضت

على عينة وصلات بولى بروبلين مقاس (PP-R3/4 / 25) بسن نحاس

من أنتاج شركة الأمل للمواسير البلاستيك ولوازمها (الشريف)

الصفات التحليلية	الوحدة	قبل التعرض للمادة	بعد التعرض للمادة
الاس الهيدروجينى		٨,٢	٨,٢
العكارة (NTU)	وحدة عكارة	٠,٣	٠,٣
التوصيل الكهربائى	ميكروموه/سم	٤٢٢	٤٢٢
القلوية الكلية (كاك أ/ ٣) (as $Ca\ CO_3$)	ملجم/لتر	١١٦	١١٦
العسر الكلى (كاك أ/ ٣) (as $Ca\ CO_3$)	ملجم/لتر	١٤٣	١٤٣
عسر الكالسيوم (كاك أ/ ٣)(as $Ca\ CO_3$)	ملجم/لتر	٩١	٩١
عسر الماغنسيوم (كاك أ/ ٣) (as $Ca\ CO_3$)	ملجم/لتر	٤٤	٤٤
الكلوريدات	ملجم/لتر	٤٢	٤٢
الكبريتات	ملجم/لتر	٣٣	٣٣
السليكا (as SiO_3)	ملجم/لتر	٢,٦	٢,٦
النيتريت (as N)	ملجم/لتر	معدوم	معدوم
النترات (as P)	ملجم/لتر	٠,٠٣	٠,٠٣
الفوسفات (as P)	ملجم/لتر	٠,٠٢	٠,٠٢
الحديد	ملجم/لتر	٠,٣	٠,٣
المنجنيز	ملجم/لتر	معدوم	معدوم

ت : ٣٣٧١٦١٥ - ٣٣٧١٤٤٩ - ٣٣٧١٣٦٢ داخلى ١٣٢١ مباشر
٣٣٧١٧٢٨ - ٣٣٧١٩٣٣ - ٣٣٧١٦٣٥ ١٠٨٤ وفاكس : ٣٣٨٧٨٠٣ شارع التحرير - الدقى

NATIONAL RESEARCH CENTER
TAHRIR St. DOKKI, CAIRO, EGYPT
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المركز القومى للبحوث
الدقى - القاهرة - جمهورية مصر العربية
وحدة التحاليل والخدمات العلمية المركزية
معمل اختبار المواد
قسم السيراميك والبلاستيك والمواد الصلبة

الفحص البكتيرولوجى

على عينة وصلات بولى بروبلين مقاس (25 PP-R3 4) بسن نحاس

من أنتاج شركة الأمل للمواسير البلاستيك ولوازمها (الشرقية)

= = = = = =

١- الميكروب المستخدم *Pseudomonas aeruginosa ATCC No. 10145*

٢- البيئة المستخدمة

- بيئة آجار ملحى مغذى خالي من مصادر الكربون كما هو موصى به فى طريقة القاسية *ASTM* ٠
- بيئة ملح سائلة مغذية خالية من مصادر الكربون ٠

٣- درجة الحرارة ومدة التحضين

- تم التحضين على درجة حرارة ٣٥° - ٣٧°م لمدة ٢١ يوم ٠

٤- التقرير البكتريولوجى

- العينة موضع الدارسة لا تساعد على نمو الميكروب ٠

ت : ٣٣٧١٦١٥ - ٣٣٧١٤٤٩ - ٣٣٧١٣٦٢ داخلى ١٣٢١ مباشر
٣٣٧١٧٢٨ - ٣٣٧١٩٣٣ - ٣٣٧١٦٣٥ ١٠٨٤ وفاكس : ٣٣٨٧٨٠٣ شارع التحرير - الدقى

National Research Centre
Environmental Consultation
&
Water Quality Unit

المركز القومى للبحوث
الوحدة الاستشارية للبيئة المائية

وبناء على ذلـــــــك

يتضح من الدراسات المعملية إن جلب النحاس الاتى 0.5 بوصه محل الدراسه ليس لها تـــأثير علـــى نوعية مياه الشرب من ناحية الخواص الطبيعية والكيميائية والبيولوجية وليس لها تاثير ســـام علـــى المياه.

لذلك فانه ليس هناك مايمنع أستخدام هذه المواد فى خطوط المواسير وشبكات مياه الشرب وغيرهـــا، علماً بأن جلب النحاس المذكورة موضوع الدراسة قد تم توريدها للوحدة الاستشارية للبيئة المائية من شركة الامل للمواسير البلاستيك ولوازمها وعلى مسئوليتها.

تحريراً فى 2009/1/29

رئيس الوحدة الاستشارية للبيئة المائية

أ.د/ أسامة أحمد على

Tahrir Street – Dokki – Giza
Phone & Fax: 3371479

شارع التحرير – الدقى – الجيزة
تليفون وفاكس: 33371479

National Research Centre
Environmental Consultation
&
Water Quality Unit

المركز القومى للبحوث
الوحدة الاستشارية للبيئة المائية

وبناء على ذلـــــــك

يتضح من الدراسات المعملية إن قطع النحاس لعينة النحاس لعينة محبس الدفن محل الدراسه ليس لها تأثير على نوعية مياه الشرب من ناحية الخواص الطبيعية والكيميائية والبيولوجية وليس لها تاثير سام على المياه.

لذلك فانه ليس هناك مايمنع أستخدام هذه المواد فى خطوط المواسير وشبكات مياه الشرب وغيرهـــا، علماً بأن محابس الدفن المذكورة موضوع الدراسة قد تم توريدها للوحدة الاستشارية للبيئة المائية من شركة الامل للمواسير البلاستيك ولوازمها وعلى مسئوليتها.

تحريراً فى 2009/2/24

رئيس الوحدة الاستشارية للبيئة المائية

أ.د/ أسامة أحمد على

المركز القومى للبحوث
إدارة
الوحدات ذات الطابع الخاص

Tahrir Street – Dokki – Giza
Phone & Fax: 3371479

شارع التحرير – الدقى – الجيزة
تليفون وفاكس: 33371479

National Research Centre
Environmental Consultation
&
Water Quality Unit

المركز القومى للبحوث
الوحدة الاستشارية للبيئة المائية

وبناء على ذلـــــــك

يتضح من الدراسات المعملية إن جلب النحاس الاثنى 0.75 بوصه محل الدراسه ليس لها تأثير علـــى نوعية مياه الشرب من ناحية الخواص الطبيعية والكيميائية والبيولوجية وليس لها تاثير ســـام علـــى المياه.

لذلك فانه ليس هناك مايمنع أستخدام هذه المواد فى خطوط المواسير وشبكات مياه الشرب وغيرهـــا، علماً بأن جلب النحاس المذكورة موضوع الدراسة قد تم توريدها للوحدة الاستشارية للبيئة المائية من شركة الامل للمواسير البلاستيك ولوازمها وعلى مسئوليتها.

تحريراً فى 2009/2/24

رئيس الوحدة الاستشارية للبيئة المائية

أ.د/ أسامة أحمد على

Tahrir Street – Dokki – Giza
Phone & Fax: 3371479

شارع التحرير – الدقى – الجيزة
تليفون وفاكس: 33371479

جمهورية مصر العربيه
الهيئة العامه للأبنية التعليمية
الادارة العامة لأبحاث التربة وضبط الجودة

القيد : ٤٠٠٠/
التاريخ : ٦ / ٩ / ٢٠٠٨

خطـــاب اعتمـــاد شـــركـــة

السـادة / شـركـة الامل (الشـريف)
للمواسير البلاستيك ولوازمها
تحيه طيبه وبعد ...

بالإشارة الى طلب سيادتكم لاعتماد منتجكم من مواسير وقطع اتصال مصنعه من خامة البولي بروبلين لمشاريع الهيئة (صيانة – إنشاء)
وطبقا لتأشيرة السيد اللواء مهندس / مدير الهيئة بتـاريخ ٢٠٠٨/٧/٧ علـى الاعتمـاد لتوريـد المواسير وقطع الاتصال المصنعة من خامة البولي بروبلين بجانب المواسير وقطـع الاتصـال المصنعة من U. P.V.c U. V السابق اعتمادها
يرجى الاحاطه انه تم الاعتماد لشركتكم لتوريد البند السـابق ذكـره لمشـروعات الهيئـة طبقـا للمواصفات القياسية المصرية .
برجاء التكرم بالتوجيه لاتخاذ اللازم ،،،
وتفضلوا بقبول فائق الاحترام ،،،

الشئون الفنية
أ/ محمد شحاته

مدير عام
أبحاث التربة وضبط الجودة
مهندس / عبد البديع محمد عطوة

Registration Certificate

This is to certify that
the Quality Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered against the requirements of

BS EN ISO 9001:2008

Certificate No. :	**AJA01/3823**	Date of Original Registration :	**01/10/2001**
Date of Expiry :	**03/01/2013**	Date of Re-Registration :	**23/02/2010**

UKAS QUALITY MANAGEMENT
Reg. No. 059

Joint Chief Executives, AJA Registrars

ANGLO JAPANESE AMERICAN AJA REGISTRARS

This Certificate has been issued by AJA Registrars Limited, Court Lodge, 105 High Street, Portishead, Bristol UK BS20 6PT

This certificate is issued in respect of the locations & scope of registration detailed in the Associated Registration Schedule.
This certificate is the property of AJA Registrars and must be returned on request.

Registration Certificate

This is to certify that
the Environmental Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered against the requirements of

BS EN ISO 14001:2004

Certificate No. :	**AJA10/AN/1453**	Date of Original Registration :	**05/07/2010**
Date of Expiry :	**04/07/2013**	Date of Re-Registration :	**N/A**

ANAB ACCREDITED

Joint Chief Executives, AJA Registrars

ANGLO JAPANESE AMERICAN AJA REGISTRARS

This Certificate has been issued by AJA Registrars Limited, Unit 6, Gordano Court, Gordano Gate Business Park, Serbert Close, Portishead, Bristol UK BS20 7FS

This certificate is issued in respect of the locations & scope of registration detailed in the Associated Registration Schedule.
This certificate is the property of AJA Registrars and must be returned on request.

Registration Certificate

This is to certify that
The Occupational Health & Safety Management Systems of

AL-AMAL COMPANY FOR PLASTIC PIPES AND FITTINGS (AL-SHARIF)

have been assessed by AJA Registrars and registered against the requirements of

OHSAS 18001:2007

Certificate No: AP/EG/10/HS/472

Date of Original Registration: 23:06:10

Date of Expiry: 22:06:13

Date of Re-Registration: N/A

Chief Executive Officer

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www.alamalplasticpipes.com

Head Office
8 Mohamed Taimor St.,Saint Fatima,Heliopolis, Cairo, Egypt
Tel. (+202) 224 062 57 - 5 Lines Fax. (+202) 263 717 13 - (+202) 263 747 13
E-Mail : Headoffice@alamalplasticpipes.com

Factories
10th of Ramadan - Ind. Zone A3
Tel & Fax (+2015) 411501-2-3-4-6
E-Mail : Factories@alamalplasticpipes.com
Hot Line (+202) 264 314 10

Exclusive agent in Iraq
Anwar El Fars Company (Nafeq El Gaboury) - Baghdad - traders
The company's sales. (+202) 770 427 7450 - 790 134 7489
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