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Products Catalogue

Alsahoo United co. Ltd.

Alsahoo
United co. Ltd.

Introduction

Al Sahoo United Company is the lead in the field of manufacturing plastic pipes, fittings & accessories, as the company was keen to cover all the internal markets through the company's warehouses spread in all regions of the kingdom in addition to A lineup of sales representatives and cars dedicated to serving our customers throughout the kingdom.

All these factors helped the company to launch international, in which we are proud of the **Saudi industry**, which quickly spread internationally in all Arab Gulf States, the Arab and African region, as well as in some Asian countries, & we seek to spread to Europe.

Our Vision

Continuing our pioneering role as one of the most important factories in the Arab region and the Middle East in the field of plastics.

Our Targets

Reaching our products to the highest classifications in terms of quality in production.

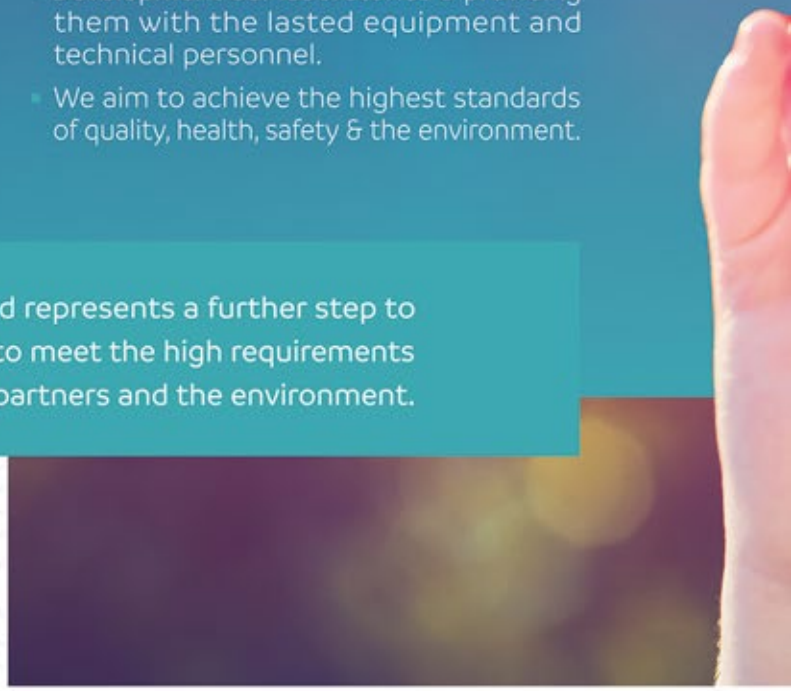
Our Values

- Permanent development.
- Sustainable development & social responsibility.
- Developing Saudi competencies.
- Professionalism at work.

Our Methodology

- Quality is our priority, so we take strict regulations in applying international quality systems and standards.
- Development our laboratories & providing them with the lasted equipment and technical personnel.
- We aim to achieve the highest standards of quality, health, safety & the environment.

This success is a great contribution and represents a further step to strengthen our competitive position & to meet the high requirements & the responsibility for our customers, partners and the environment.



Alsahoo
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BASIC MATERIAL

Plastics can be classified into two types.

- Thermo-plastics
- Thermosets

ALSAHOO THERM SYSTEM

WHAT IS THE MATERIAL

Polypropylene (PP): This type of thermoplastic has an increasing crystallinity which is stabilized to higher temperature than the polyolefines group.

It has higher melting Point. Polypropylene is in three different forms:

Type - 1 Polypropylene homo - polymer (PP-H).

Type - 2 Polypropylene block - polymer (PP-I3).

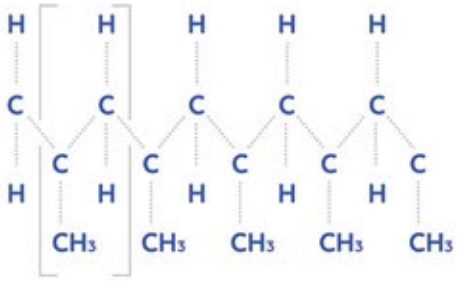
Type - 3 Polypropylene rendom co-polymer (PP-R).

Polypropylene random copolymer (PP-R): It is a modified copolymer with greater resistance to impact and the lower crystalline prevents the forming of hair cracks in internal surface of the pipe.

ALSAHOO THERM SYSTEM

WHY PP-R

- PP-R is not subjected to any restriction for use with food stuffs, and so it can be used for application involving edible substances, because of its outstanding chemical resistance, high residential applications.
- The basic material used for the production of **ALSAHOO** is polypropylene random copolymer (PPR).
- More over, PPR is characterized by its chemical resistance, high thermal resistance and good fatigue strength, PPR is of high molecular weight and is stabilized to high temperature, if corresponds to KTW-recommendation of the German Board of Health.



Density	0.895g/cm^3
Molecular weight	500000g/mole
MFI 0.5	5/190g/10min
Melting range	140°C - 150°C
E-module	800 N/mm^2
Coefficient of length expansion	1.5 X 4^{-10} K^{-1}

ALSAHOO THERM SYSTEM

- **ALSAHOO** Pipes and fittings are particularly suitable to carry out the distribution of hot & cold water for hydro-sanitary applications.
- Technical features of the material render it the best solution for the execution of installation for potable water, even with high percentage of limestone, alimentary liquids, & irrigation system for gardens, distribution installations of compressed air, aspiration systems or vacuum and naval uses.

THE MAIN ADVANTAGES OF DAYA THERM POLYPROPYLENE SYSTEM ARE:

- **Long duration** (due to its optimal resistance to aggressive elements).
- **Impossibility of perforation** caused by electric currents (due to its low conductivity).
- **Low loss of pressure** (Pipe and fittings have even surfaces and are manufactured with particular attention to the finish in order to avoid porosity or burrs producing turbulences when fluids are carried).
  If this is obvious for pipes it will be not the same for fittings because pay.
- Particular attention to **ALSAHOO** in order to avoid or reduce unnecessary friction. No toxicity (guaranteed by careful selection of raw material and modern technological productiveprocess).
- No incrustation (phenomenon of sections due to limestone, impurities and oxidation are completely absent).
  High acoustic and thermal insulation, features of the material and thickness make the system capable of absorbing sound with the thermal insulation reducing the loss of heat.

ALSAHOO THERM SYSTEM

- Forming of condensation typical in installations where copper pipe is used.

- The fittings with metallic inserts are highly reliable, Heating fields for 50 years enabling the produdion of hot forged inserts, machine tooled and then nickel plated to give high durability and perfect pressure sealing.

- Carefully package giving maximum protection to the components against the aggressive elements, easy stoking and transportation. when compared to metallic (specific weight 1/9 compared to steel specific weight) allows easy installation in factories or in buildings.

- **The use of a welding machine or electro fusion sockets** allows easy connection for all **ALSAHOO** therm components.

  Potable water **ALSAHOO** system is manufactured in accordance with International Specifications concerning drinkable water.

PHYSIOLOGICAL BEHAVIOR

- **ALSAHOO** products are in accordance with all the directives issued by D.M.76/03/21 (sect. 7 encl. III and IV) and with the no 102 circular of the Department of Health for color and material dated 78/12/02 , as dated in the laboratory reports issued by the USSL n.3 in Varese.
- **ALSAHOO** Products are in accordance with KTW Specifications.

WORKING PRESSURE

- Duration of continuous working conditions for **ALSAHOO** components is based on regression curves. Which strictly links duration in hours to pressure and temperature of the fluid.
- Thickness of **ALSAHOO** pipes and fittings is designed in ac cordance with certain security values. able to guarantee reliability and long life.
- Calculation of admitted working pressure for pipes depends on difference parameters such as temperature and working period.
- For example a **ALSAHOO** pipe of PN 20, after 50 years of continuous working to A temperature of 200 C is still able to withstand a pressure of 20 bars.

EVALUATION OF ADMITTED WORKING PRESSURES CAN BE CARRIED OUT BY THE FOLLOWING FORMULA

WHERE:

$$P = \frac{20 - sp - o}{DN - sp} \qquad Pmax = \frac{P}{SF}$$

P	Pressure in bar	DN	outside diameter of the pipe in mm
SP	thickness of pipe	σ	hydrostatic stress by the MPa diagram (MPa =10 bar)
Pmax	max. Working pressure in bar	sf	security coefficient

PHYSICAL PROPERTIES OF PPR ALSAHOO TYPE 3T

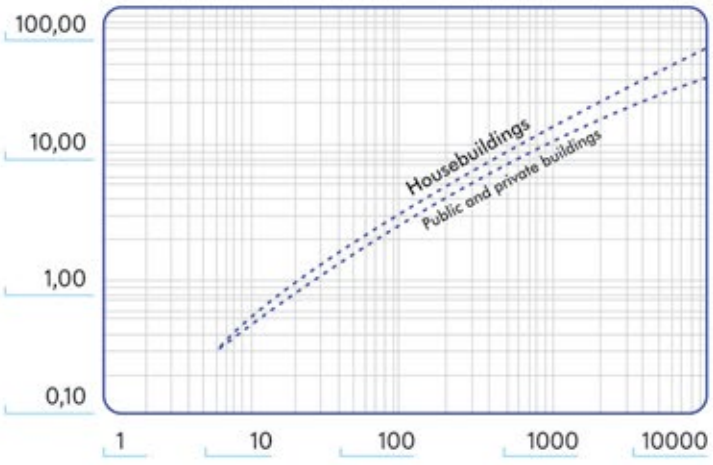
Properties	Test Methos	Units	Value
Viscosity J Average molecular weight	ISO1191 Solution viscosity c=0.001 g/cm³	cm³/g	420 500.00
Melt folow index MFI 190/5 MFI 230/5	ISO/R 1133 Condition 18 Condition 20 Condition 12	g/10min g/10min g/10min	0.5 1.5 0.25
Density	ISO/R 1183	g/cm³	0.895
Melting zone	Polarizing microscope	C	140 - 150
Ultimate strenghth Resistance to tensile stress Ultimate elongation	ISO / R 527 Forward speed D Test specimen fig.2	N mm2 N mm2 %	21 40 800
Resistance under aspheric pressure	ISO 2039 (H358 / 30)	N/mm2	40
Bending stress at 3.5% elongation of edge fibers	ISO 178 specimen 5.1	N/mm2	20
Modulus of elasticity	ISO 178	N/mm2	800
Shear modulus 10 °C 0 °C 10 °C 20 °C 30 °C 40 °C 50 °C 60 °C 80 °C	ISO / R 573 Method A	ISO / R 573 N/mm2 N/mm2 N/mm2 N/mm2 N/mm2 N/mm2 N/mm2 N/mm2 N/mm2	1100 770 500 370 300 240 180 140 100
Mechanical resistance after the Impact bending test	I DIN 8078		No Failure
CHAPPY impact resistance RT 10 °C 0 °C	ISO / R 179 Test Specimen Fig.2	KJ/mm2 KJ/mm2 KJ/mm2	No Failure No Failure No Failure
CHAPPY impact strength RT 0 °C 20 °C	ISO / R 179 Test Specimen	KJ/mm2 KJ/mm2 KJ/mm2	25 7 3
Linear expansion	VDE 0304 part 1 & 4	K $^{-1}$	1.5x10 $^{-4}$
Thermal conductivity at 20 °C	DIN 52612	W/mk	0.24
Specific heat at 20 °C	Adiabatic calorimeter	KJ/KgK	2.0

PHYSIOLOGICAL BEHAVIOR

PLANNING

EXAMPLE OF WATER DISTRIBUTION SYSTEM IN A TYPICAL FLAT

- In order to define the diameter to make the connection to the Aqueduct, the combination of drawing points, corresponding to the installation to be done, shall be determined by the tables reported before.
- The total (hot and cold water) can be evaluated for each kitchen Or bathroom accessory.
- Example: typical flat with a kitchen (wash-basin and dish-washer) and a bathroom (wash-basin, bathtub, bidet WC, washing-machine).
- When the corresponding UDC has been determined, it will be possible to graphically determine the corresponding flow.



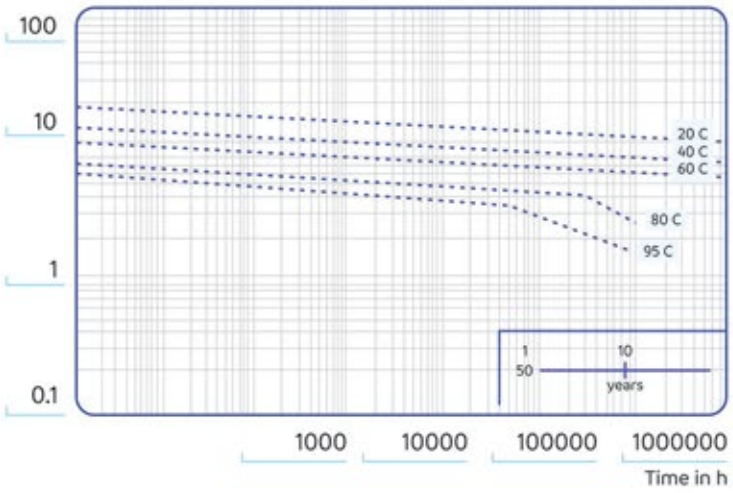
FLOWS IN ACCORDANCE WITH THE UNIT OF PROBABILITY

UDC Bathroom		UDC Kitchen	
WC	3		
Bidet	1		
Bathtub	2	Sink	2
Washing - machine	2	Dish-washer	2
Wash - basin	1		
Bathroom total	9	Total Kitchen	4

- The addition of the single necessities allows to determine, a UDC equal to 13.
- Graphically a corresponding flow equal to 0.64 can be determined.
- This flow allows a speed of 2.4 m/s.
- The main pipe in the flat will be done using a pipe of 25mm.
- The following distribution, both for hot & cold water will be done using a pipes 20mm, enough for the involved contemporary flows.

REGRESSION CURVES

- If working conditions such as time and temperature are determined by the diagram of regression curves, it is possible to determine the max.
- Working pressure and the safety factor.
- Time taken into consideration is a continuous working time to the system, which will be lower than the effective duration of the system (except for systems for hot water recycle).



Years	Temperature	Max Pressure	Safety
50	10	30.6	1.5
50	20	26.0	1.5
50	30	21.7	1.5
50	40	18.5	1.5
50	50	15.6	1.5
50	60	13.1	1.5
50	70	10.1	1.5

DIAGRAM, METHOD AND TABLE AR E REFERRED TO DIN 8078

THERMAL EXPANSION

During the phase of planning and outside installation of **ALSAHO UNITED Co.** pipes, The phenomenon of thermal expansion should not be neglected.

If the working temperature of the system undergoes variations up to 10-15 °C (typical in systems for sanitary hot water flow), the planner shall evaluate pipe behavior that is possible by using the following table and diagram.

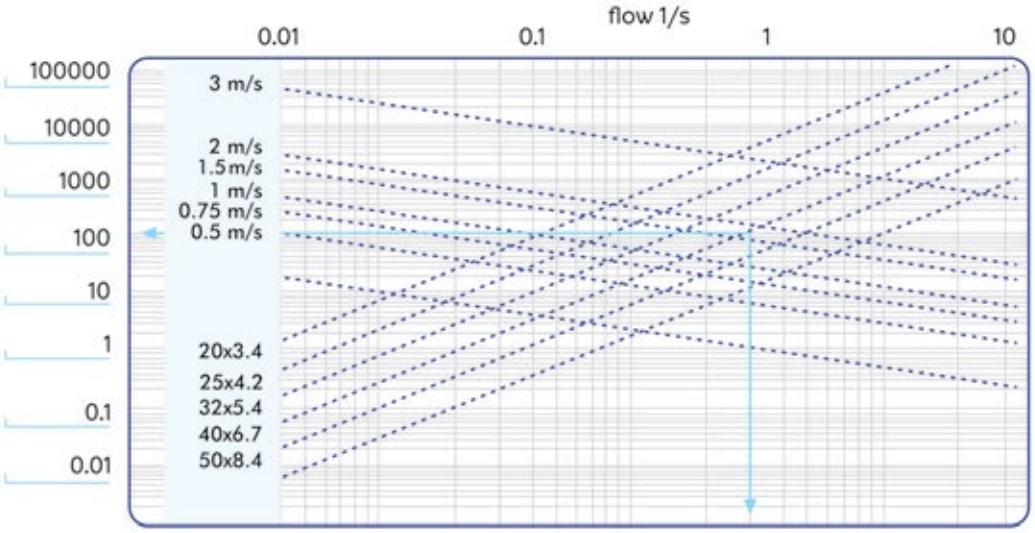
Linear Thermal Expansion (mm)

Temperature Variation (k)

Pipe Length (M)	5	10	20	30	40	50	60	70	80
0.1	0.08	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20
0.2	0.15	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40
0.3	0.23	0.45	0.90	1.35	1.80	2.25	2.70	3.15	3.60
0.4	0.30	0.60	1.20	1.80	2.40	3.00	3.60	4.20	4.80
0.5	0.38	0.75	1.50	2.25	3.00	3.75	4.50	5.25	6.00
0.6	0.45	0.90	1.80	2.70	3.60	4.50	5.40	6.30	7.20
0.7	0.53	1.05	2.10	3.15	4.20	5.25	6.30	7.35	8.40
0.8	0.60	1.20	2.40	3.60	4.80	6.00	7.20	8.40	9.60
0.9	0.68	1.35	2.70	4.05	5.40	6.75	8.10	9.45	10.80
1.0	0.75	1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00
2.0	1.50	3.00	6.00	9.00	12.00	15.00	18.00	21.00	24.00
3.0	2.25	4.50	9.00	13.50	18.00	22.50	27.00	31.50	36.00
4.0	3.00	6.00	12.00	18.00	24.00	30.00	36.00	42.00	48.00
5.0	3.75	7.50	15.00	22.50	30.00	37.50	45.00	52.50	60.00
6.0	4.50	9.00	18.00	27.00	36.00	45.00	54.00	63.00	72.00
7.0	5.25	10.50	21.00	31.50	42.00	52.50	63.00	73.50	84.00
8.0	6.00	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00
9.0	6.75	13.50	27.00	40.50	54.00	67.50	81.00	94.50	108.00
10.0	7.50	15.00	30.00	45.00	60.00	75.00	90.00	105.00	120.00

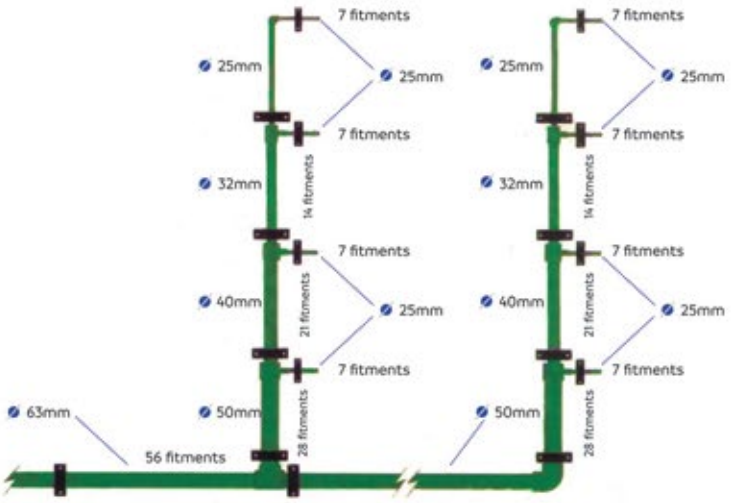
DISTRIBUTED PRESSURE LOSSES

- Pressure losses distributed **ALSAHOO** systems can be determined using the following diagram:



FOR DAYA THERM PRODUCTS, THE SITUATION CAN BE SUMMED UP AS FOLLOWS:

1 water closet with tank	0.10 l/S
1 water basin	0.10 l/S
1 Bidet	0.10 l/S
1 Bath - tub	0.10 l/S
1 washing machine	0.10 l/S
1 Kitchen sink	0.10 l/S
1 Dish washer	0.10 l/S
7 Total	**0.9 l/S**



Ways of life are

PLASTICS CAN BE

LOCALIZED PRESSURE LOSSES

In order to evaluated pressure losses localized in ALSAHOO fittings, Refer to the following formula:

- $H = \Sigma\zeta \cdot V \cdot 2\gamma / 2g$
- H = pressure losses concentrated in mm W.G.C.
- ζ = resistance coefficient reported in the table
- V = fluid speed m/s
- γ = Water specific weight in kg/m3
- g = Acceleration due to gravity 9,81 m/s2

When the fluid to be transported is Water at room temperature (the most frequent case), the formula will be the following:

- $H = \Sigma\zeta \cdot V \cdot 2\gamma / 2\ g = -50\Sigma\zeta \cdot V2$

JOINING OF PIPES AND FITTINGS

- Reliability of **ALSAHOO** pipe installations depends on pipe or fitting joints as well as the material used in their production. In the polypropylene random co-polymer sanitary systems, pipe and fittings are manufactured from the same material and results in homogeneous joints.
- Threaded fittings and pipe connections are similar to the conventional galvanized steel pipe system.
- Fusion welded joints.
- Butt welding and socket welding made by heating the sockets and pipe ends by electrical heating elements.
- Electro fusion welding realized by the use of electro fusion of fittings.

ELECTRO FUSION TECHNIQUE

- Is more expensive and socket welding being the most practical and economical method has been widely accepted and applied. With the above mentioned welding techniques very releasable joints are obtained. The welded joints are strong as the pipe itself. In the tensile test of a joint, the pipe may break before the socket welded joint.

MAKING SOCKET WELDED JOINTS

PREPARING FOR WELDING

- Pipes are measured and cut to the required length cutting should be perpendicular to the pipes axis (90). Outer corner of pipes are rounded off by a file and inner edges are rounded-off by using a knife. The surfaces to be welded should be cleaned by alcohol. The socket depth of the welding distance should be marked to the end of the pipe.
- **WELDING MACHINE** is connected to power and temperature is set to 260 ℃. The red light is on during warming up and when the light is off, the welding machine is ready for welding. The socket heater and pipe heater also must be clean and free of dirt and oil.

JOINING OF PIPES AND FITTINGS

WELDING

- The pipe end and the socket of fitting are pushed to heaters is axial direction. Pipe and fitting should be heated simultaneously. At the end of heating period fitting and pipe end are separated from the heating elements and quickly joined together in axial direction.

Diameter, mm	Melting Depth, mm	Heating Time, Sec	Welding Time, Sec	Cooling Time, Min
16	13	5	4	3
20	14	5	4	3
25	155	7	4	3
32	175	8	4	4
40	20	12	6	4
50	23	18	6	5
63	26	24	6	6
75	285	30	8	8
90	33	40	8	8
110	39	50	10	10

NOTE

- On the the welding process the headting elements (mandrel and bush) must correspond to DVS 2208 (excluding mechanical working of pipe). (Fig A, B) schematically show the 3 welding process stages.

- The pipe end and the socket of fitting are pushed heaters in axial direction. Pipe and fitting should be heated simultaneously.

- At the end of the heating period fitting and pipe end are separated from the heating elements.

- Fitting and pipe are quickly joind together in the axial direction. during joining, the pipe end should not be turned around it's axis in the socket.

NOTE

- Standard vlaues for socket fusion welding at a room temperature of 20c with a room temperature below +5c, the heating phases should be increased up to 100%.

JOINING OF PIPES AND FITTINGS

INSTALLATION TEST

- Each network to be used must be tested in accordance with the existing standards before being installed finally.
- **ALSAHOO** The Pipe system must correspond to the standard DIN 1988 which specifies the pressure test up to 20 bars. After the final test, the liquid may be carried through after a minimum of 60 minutes.

PRELIMINARY TEST

DURATION 30- MINUTES

- Includes filling and air release in the high point of the network, the pressure of 20 bars is to be rest every 15 minutes during the whole preliminary test.
- The control of the eventual losses (Especially for the threaded joints) the final pressure which is acceptable with the decrease of 0.3 bar.

FINAL TEST

DURATION

- 2 HOURS Includes refilling the network with hydrostatic of 20 bar which is not to change during the whole period of the test by more than 0.3 bar.

TEST APPROVAL

- It is advisable that each tested network is to be certified and approved that the network has passed the hydrostatic test.

TEST APPROVAL

- The variation of the external temperature may cause a decrease or increase of the pressure during the test: the variation of the 10 °C can coincide to the variation of the pressure of 1/0.5bar.
- The pump of the test must be placed in lowest point of the network, the manometer of measurement of the pressure must allow the variation control of 0.1 bar.
- It is possible to carry out the network supervision also with the pressed air.

QUALITY CONTROL

- The high quality standards guaranteed by the **AL SAHOO** mark ensure rigid controls of production processes.
- Concerning **AL SAHOO** products built a modern and efficient laboratory in order to test raw materials and finished products.
- In order to accept raw materials, it is very important to carry out density and fluidity (MFI) test on polypropylene deliveries.

CONTROLS CARRIED OUT ON FINISHED PRODUCTS ARE AS FOLLOWS

- Melting flow index
- Density control
- Shock test
- Heat resistance
- Product dimensional test of dimensional variation test after heat exposure
- Microscope check about the homogeneity of the modified material
- Temperature and pressure resistance tests as follows
- Tensile strengths tests

Heating (h)	Jointing (oc)	Cooling (mpa)
1000	95	
1000	120	
1	95	
1	20	

- Test result are carried out per hour, daily or weekly in accordance with the specifications and recorded on the relative production sheets.
- The Audit quality manager checks all the test results and gives the approval to proceed with the production.


PPR
Alsahoo
United co. Ltd.

PPR PRODUCTS

POLY PROPYLENE PPR

- Plastic pipes made of PPR are the most used in potable water networks for both residential and commercial buildings due to their favourable physical and mechanical properties.
- PPR Copolymer is an inert material that can with stand high temperature and high pressure.
- PPR does not rust nor change chemical properties.

SPECIFICATIONS

- German standards: Din 78 / 8077
- Egyptian standards ES 1,2) 3703)

APPLICATIONS

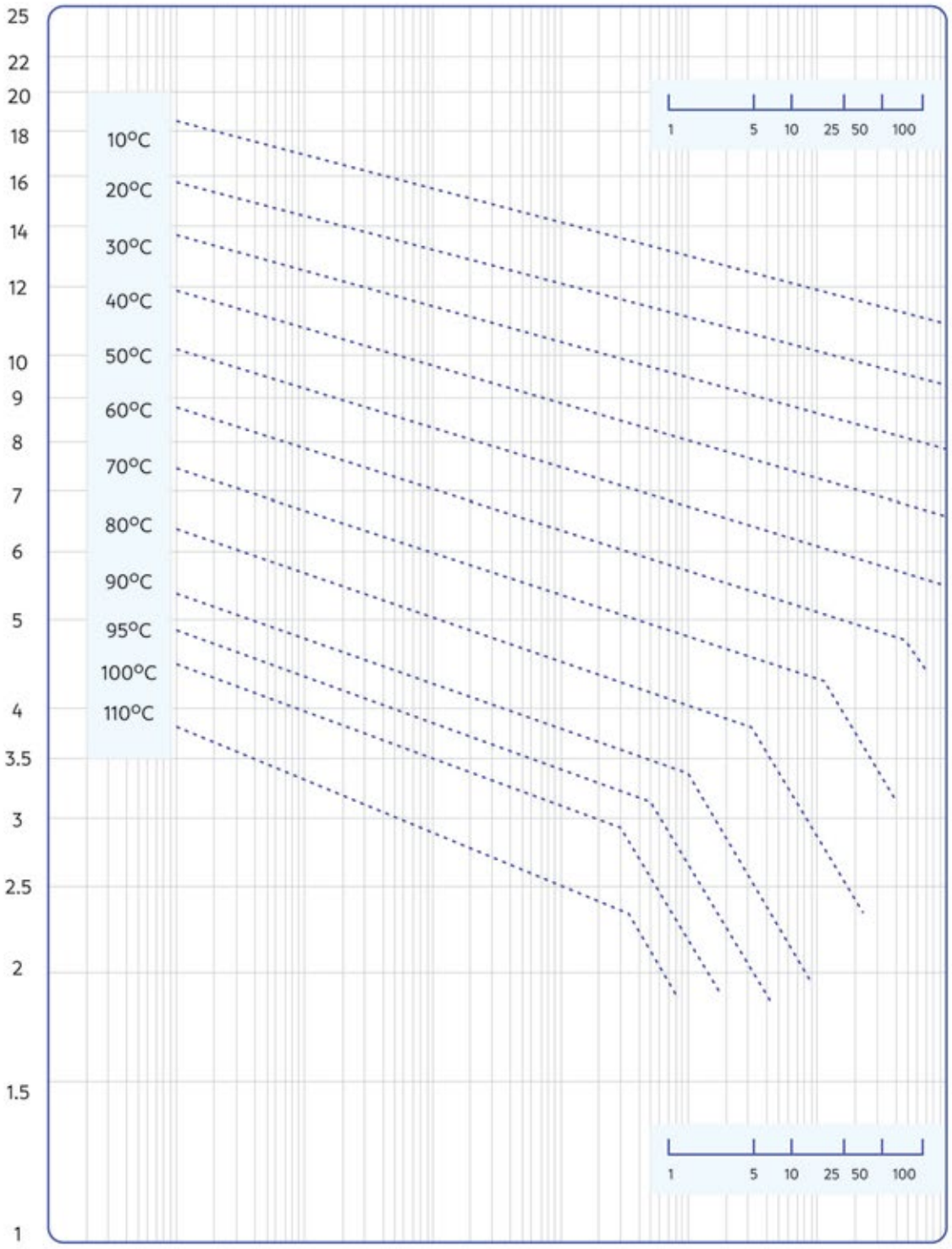
- Main water supply networks
- Residential and commercial
- Buildings cold and hot water networks
- Compressed air networks
- Irrigation networks
- Water treatment plants

BENEFITS OF FLOW PPR SYSTEMS

- The safest for potable water applications
- Ease of connecting and assembly
- Smooth inner surface, so nothing gets attached causing blockage
- Long life time, nearly 50 years
- Good thermal insulation prevent heat loss
- Electrically insulated
- Resist corrosion

PIPE LIFE TIME

SERVICES LI+FE IN GOURS



WORKING PRESSURE

Temperature	Service Life	Safety - Factor 1.5			Safety - Factor 1.25
		Nominal Pressure			
		PN 10	PN 16	PN 20	
		Permissible Working Pressure			
20°c	1	15.0	23.8	30.0	28.6
	5	14.1	22.3	28.1	26.9
	10	13.7	21.7	27.3	26.2
	25	13.3	21.1	26.5	25.3
	50	12.9	20.4	25.7	24.6
30°c	1	12.8	20.2	25.5	24.4
	5	12.0	19.0	23.9	22.8
	10	11.6	18.3	23.1	22.2
	25	11.2	17.7	22.3	21.4
	50	10.9	17.3	21.8	20.8
40°c	1	10.8	17.1	21.5	20.7
	5	10.1	16.0	20.2	19.3
	10	9.8	15.6	19.6	18.8
	25	9.4	15.0	18.8	18.1
	50	9.2	14.5	18.3	17.6
50°c	1	9.2	14.5	18.3	17.5
	5	8.5	13.5	17.0	16.3
	10	8.2	13.1	16.5	15.8
	25	8.0	12.6	15.9	15.2
	50	7.7	12.2	15.4	14.7
60°c	1	7.7	12.2	15.4	14.7
	5	7.2	11.4	14.3	13.7
	10	6.9	11.0	13.8	13.3
	25	6.7	10.5	13.3	12.8
	50	6.4	10.1	12.7	12.3
70°c	1	6.5	10.3	13.0	12.4
	5	6.0	9.5	11.9	11.5
	10	5.8	9.3	11.7	11.1
	25	5.0	8.0	10.1	9.6
	30		7.0	8.8	9.3
	50	4.2	6.7	8.5	8.2
80°c	1	5.4	8.6	10.8	
	5	4.8	7.6	9.6	
	10	4.0	6.4	8.1	
	25	3.2	5.1	6.5	
95°c	1	3.8	6.1	7.6	
	5	2.6	4.1	5.2	
	(10)a	(2.2)	(3.4)	(2.2)	

High Working Stress At Lower Wall Thickness And Higher Ow Rate

PRODUCT RANGE PIPES

GREEN PIPES

Al Sahoo PP-R PIPES SDR 11, PN 10 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	1.9	16.2	0.206
25 mm	25	2.3	20.4	0.327
32 mm	32	2.9	26.2	0.531
40 mm	40	3.7	32.6	0.834
50 mm	50	4.6	40.8	1.307
63 mm	63	5.8	51.4	2.075
75 mm	75	6.8	61.4	2.941
90 mm	90	8.2	73.6	4.254
110 mm	110	10	90	6.362

Al Sahoo PP-R PIPES SDR 7.4, PN 16 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	2.8	14.4	0.163
25 mm	25	3.5	18	0.254
32 mm	32	4.4	23.2	0.415
40 mm	40	5.5	29	0.651
50 mm	50	6.9	36.2	1.029
63 mm	63	8.6	45.8	1.633
75 mm	75	10.3	54.4	2.307
90 mm	90	12.3	65.4	3.318
110 mm	110	15.1	79.8	5.674

Al Sahoo PP-R PIPES SDR 6, PN 20 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	3.4	13.2	0.137
25 mm	25	4.2	16.6	0.216
32 mm	32	5.4	21.2	0.353
40 mm	40	6.7	26.6	0.556
50 mm	50	8.3	33.4	0.866
63 mm	63	10.5	42	1.385
75 mm	75	12.5	50	1.963
90 mm	90	15	60	2.827
110 mm	110	18.3	73.4	4.208

PRODUCT RANGE PIPES

FIBER REINFORCED GREEN PIPES

Al Sahoo PP-R PIPES SDR 11, PN 10 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	1.9	16.2	0.206
25 mm	25	2.3	20.4	0.327
32 mm	32	2.9	26.2	0.531
40 mm	40	3.7	32.6	0.834
50 mm	50	4.6	40.8	1.307
63 mm	63	5.8	51.4	2.075
75 mm	75	6.8	61.4	2.941
90 mm	90	8.2	73.6	4.254
110 mm	110	10	90	6.362

Al Sahoo PP-R PIPES SDR 7.4, PN 16 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	2.8	14.4	0.163
25 mm	25	3.5	18	0.254
32 mm	32	4.4	23.2	0.415
40 mm	40	5.5	29	0.651
50 mm	50	6.9	36.2	1.029
63 mm	63	8.6	45.8	1.633
75 mm	75	10.3	54.4	2.307
90 mm	90	12.3	65.4	3.318
110 mm	110	15.1	79.8	5.674

Al Sahoo PP-R PIPES SDR 6, PN 20 - ACCORDING TO DIN 8077/78

DIMENSION	Outer Diameter (OD) mm	Wall Thickness (S)	Internal Diameter (ID) Mm	Water Content l/mt
20 mm	20	3.4	13.2	0.137
25 mm	25	4.2	16.6	0.216
32 mm	32	5.4	21.2	0.353
40 mm	40	6.7	26.6	0.556
50 mm	50	8.3	33.4	0.866
63 mm	63	10.5	42	1.385
75 mm	75	12.5	50	1.963
90 mm	90	15	60	2.827
110 mm	110	18.3	73.4	4.208

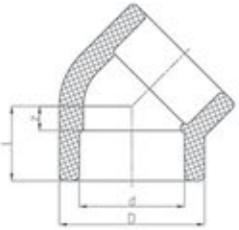
PPR FITTINGS

Alsahoo
United co. Ltd.

PPR FITTINGS PRODUCT RANGE

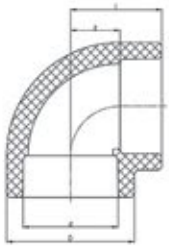
ELBOW 45

Dn	d	D	I	Z	Pieces/Box
20	19.5	29	12	6	120
25	24.5	34	24	8	100
32	31.5	43	28	10	50
40	39.4	52	32	11	30
50	49.4	65	37	13	18
63	62.5	82	44	16	24
75	74.7	99	50	20	15
90	89.7	120	58	25	8
110	109.7	148	69	32	4



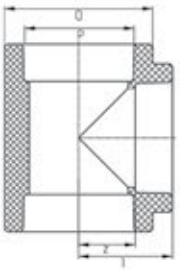
ELBOW 90

Dn	d	D	I	Z	Pieces/Box
20	19.5	29	28	13	120
25	24.5	34	32	16	80
32	31.5	43	38	20	80
40	39.4	52	44	23	50
50	49.4	65	52	28	30
63	62.5	82	62	34	20
75	74.7	99	71	41	12
90	89.7	120	83	50	6
110	109.7	148	99	62	3



TEE

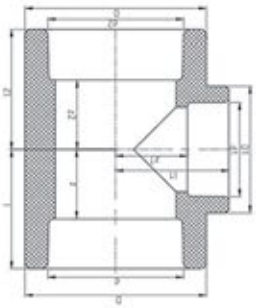
Dn	d	D	I	Z	Pieces/Box
20	19.5	29	28	13	120
25	24.5	34	32	16	80
32	31.5	43	38	20	80
40	39.4	52	44	23	50
50	49.4	65	52	28	30
63	62.5	82	62	34	20
75	74.7	99	71	41	12
90	89.7	120	83	50	6
110	109.7	148	99	62	3



PPR FITTINGS PRODUCT RANGE

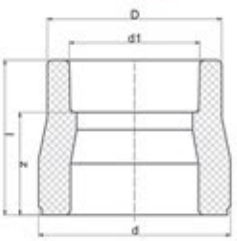
REDUCING TEE

Dn	Dn1	Dn2	d	d1	d	D	D1	D2	l	l1	Z	Z1	Pieces /Box
25	20	25	24.5	19.5	24.5	34	29	34	32	32	16	16	140
32	20	32	31.5	19.5	31.5	43	34	43	38	38	20	20	80
32	25	32	31.5	24.5	31.5	43	34	43	38	38	20	20	80
40	20	40	39.4	19.5	39.4	52	43	52	44	44	24	24	60
40	25	40	39.4	24.5	39.4	52	43	52	44	44	23	23	50
40	32	40	39.4	31.5	39.4	52	43	52	44	44	23	23	50
50	20	50	49.4	19.5	49.4	65	43	65	52	52	28	28	30
50	25	50	49.4	24.5	49.4	65	43	65	52	52	28	28	30
50	32	50	49.4	31.5	49.4	65	43	65	52	52	28	28	30
50	40	50	49.4	39.4	49.4	85	85	85	62	62	39	39	30
63	20	63	62.5	19.5	62.5	85	43	85	62	62	35	35	16
63	25	63	62.5	24.5	62.5	85	43	85	62	62	35	35	16
63	32	63	62.5	31.5	62.5	85	43	85	62	62	35	35	16
63	40	63	62.5	39.4	62.5	85	85	85	62	62	35	35	16
63	50	63	62.5	49.4	62.5	85	85	85	62	62	35	35	16
75	20	75	74.7	19.5	74.7	100	43	100	71	71	41	41	12
75	25	75	74.7	24.5	74.7	100	43	100	71	71	41	41	12
75	32	75	74.7	31.5	74.7	100	43	100	71	71	41	41	12
75	40	75	74.7	39.4	74.7	100	65	100	71	71	41	41	12
75	50	75	74.7	49.4	74.7	100	65	100	71	71	41	41	12
75	63	75	74.7	62.5	74.7	100	101	100	71	71	41	41	12
90	63	90	89.7	62.5	89.7	120	120	120	83	83	50	50	6
90	75	90	89.7	74.7	89.7	120	120	120	83	83	50	50	6
110	63	110	109.7	62.5	109.7	148	85	148	99	99	62	62	4
110	75	110	109.7	74.4	109.7	148	100	148	99	99	62	62	4
110	90	110	109.7	89.7	109.7	148	120	148	99	99	62	62	4



SOCKET

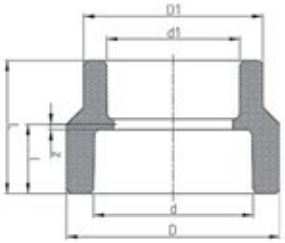
Dn	d	D	l	Z	Pieces/Box
20	19.5	29	34	5	150
25	24.5	34	7	5	120
32	31.5	43	41	5	60
40	39.4	52	46	5	80
50	49.4	65	52	5	70
63	62.5	82	60	5	63
75	74.7	99	65	5	32
90	89.7	120	76	10	14
110	109.7	148	80	6	7



PPR FITTINGS PRODUCT RANGE

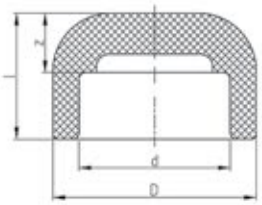
SOCKET REDUCER

Dn	d	d1	D	D1	l	Z	Pieces/Box
25-20	24.5	19.5	34	29	36	22	10
32-20	31.5	19.5	43	29	37	23	10
32-25	31.5	24.5	43	34	39	23	10
40-20	39.4	19.5	52	34	43	28	10
40-25	39.4	24.5	52	34	43	27	10
40-32	39.4	31.5	52	43	45	27	10
50-20	49.4	19.5	65	43	51	36	10
50-25	49.4	24.5	65	43	51	35	10
50-32	49.4	31.5	65	43	51	33	10
50-40	49.4	39.4	65	52	53	33	10
63-20	62.5	18.5	80	34	56	42	5
63-25	62.5	24.5	80	34	56	40	5
63-32	62.5	31.5	80	43	58	40	5
63-40	62.5	39.4	80	52	60	40	5
63-50	62.5	49.4	80	65	63	40	5
75-50	74.7	49.4	100	65	67	44	3
75-63	74.7	62.5	100	80	71	44	3
90-63	89.7	62.5	110	80	78	51	1
90-75	89.7	74.7	110	99	81	51	1
110-75	109.7	74.7	148	100	90	60	2
110-90	109.7	89.7	148	110	93	61	1



END CAP

Dn	d	D	l	Pieces/Box
20	19.5	29	25	120
25	24.5	34	28	150
32	31.5	43	32	100
40	39.4	52	36	60
50	49.4	65	41	120
63	62.5	82	48	70
75	74.7	99	54	16
90	89.7	120	66	8
110	109.7	148	79	8



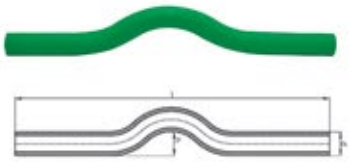
SHORT CROSS OVER

D	D1	H	l	S	Pieces/Box
20	19.5	42	90	4.3	60
25	24.5	47	100	4.8	50
32	31.5	67	130	5.8	20

PPR FITTINGS PRODUCT RANGE

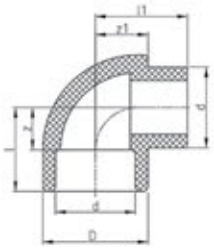
LONG CROSSOVER

Dn	d	S	H	L	Pieces/Box
20	20	300	200	45	100
25	25	300	200	55	70
32	32	300	200	65	50



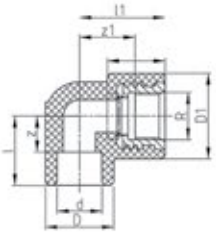
ELBOW 90 MALE THREAD

Dn-Rp	d	D	I	H1	Z	Z1	SW	Pieces/Box
20-½	19.5	29	28	34	14	49	36	60
20-¾	19.5	34	32	40	18	56	44	50
25-½	24.5	34	32	38	16	53	36	40
25-¾	39.4	34	32	40	16	56	44	40
32-1	31.5	43	38	48	20	66	51	30



BRACKET FEMALE THREAD

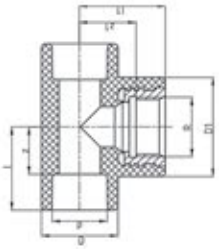
Dn-Rp	d	D	D	L	L_1	H	T	Z	Z_1	Pieces/ Box
20-½	19.5	35	29	35	27	15	40	21	11	70
25-½	24.5	35	29	37	30	17	40	23	14	60
25-½	24.5	43	34	43	35	22	50	28	19	30
32-½	31.5	43	43	43	35	22	50	28	17	30



PPR FITTINGS PRODUCT RANGE

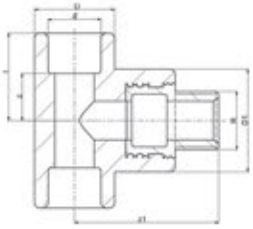
FEMALE THREAD TEE

Dn-Rp	d	D	l	l1	Z	Z1	SW	Pieces/ Box
20-½	19.5	29	28	34	14	20	36	60
25-½	24.5	34	32	38	16	24	36	50
25-¾	24.5	34	32	40	16	25	44	40
32-¾	31.5	43	38	45	20	30	44	20
50-1	31.5	43	38	48	20	30	52	20



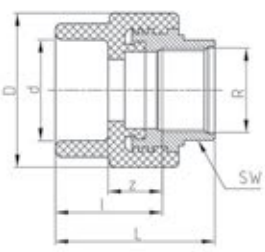
MALE THREAD TEE

Dn-Rp	SW	H	l	D1	S	Pieces/ Box
20-½	38	14.5	56	4.4	20	60
20-¾	45	14.5	56	4.4	20	40
25-½	38	16	61	4.9	25	40
25-¾	45.2	16	69	4.9	25	40



MALE THREAD ADAPTOR

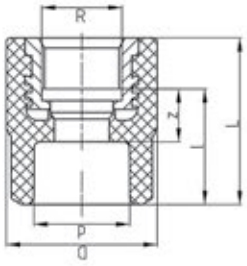
Dn-G	d	L	Z
20-½	19.5	50	34
20-¾	19.5	53	38
25- ½	24.5	51	35
25- ¾	24.5	54	38
32-1	31.5	62	43
40-1 ¼	39.4	72	51
50-1 ½	49.4	77	53
63-2	62.5	88	60
75-2 ½	47.7	102	71
90-3	89.7	143	111
110-4	109.7	161	124



PPR FITTINGS PRODUCT RANGE

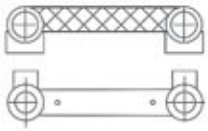
FEMALE THREAD ADAPTOR

Dn-Rp	d	D	D_1	l	Z	SW
20-½	19.5	35	29	40	11	36
25-½	19.5	35	34	41	11	36
25-¾	24.5	43	34	42	11	44
32-¾	24.5	43	43	44	11	44
32-1	31.5	50	43	48	12	51
40-1 ¼	39.4	62	52	54	13	63
50-1 ½	49.4	69	64	57	14	70
63-2	62.5	84	79	68	19	85
75-2 ½	74.7	113	99	82	22	114
90-3	89.7	129	124	92	27	-
110-4	109.7	160	151	165	27	-



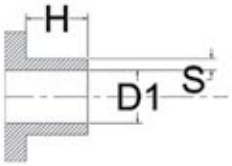
DOUBLE ELBOW

Dn-Rp	D	d1	d	l	H	h		
20-½	34	38.5	34	25	150	93	3	8



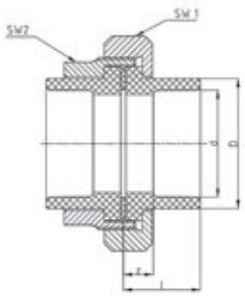
MALE THREAD UNION

Dn-Rp	D1	H	H1	l	S	B	Pieces/Box
20-½	20	14.5	14.5	70	4.4	45°	100
25-¾	25	16	16	80	4.9	45°	80
32-¾	32	18	18	80	4.8	45°	60



UNION BRASS

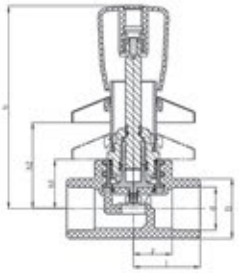
Dn-Rp	d	L	l	l_1	Z	SW	SW_1	Pieces/ Box
20-½	19.5	37.5	20.5	15.5	11	40	25	80
25-½	24.5	41	22.5	16.75	12	47	30	72
32-1	31.5	48.5	27	20	13.7	56	37	36
40-1 ¼	39.4	52	29.5	20.35	16	68	46	24
50-1 ½	49.4	57.5	32.8	23	20	85	53	16



PPR FITTINGS PRODUCT RANGE

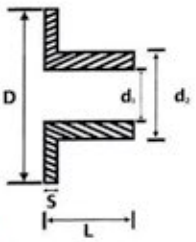
CANCEALED VALVE

Dn-Rp	d	D	D1	Z	N	H
20-¾	19.5	34	45	46	75	112
25-¾	24.5	34	45	43	75	112
32-¾	31.5	43	45	39	75	112



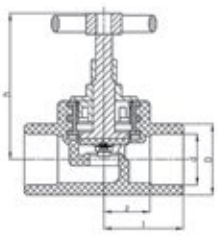
BALL VALVE/BRASS

d	d_1	d_2	D	L	S
20	19.5	28.5	33.85	20.55	4.6
25	24.5	33.2	38.8	22.7	5.5
32	31.5	43	44.2	27	6.1
40	39	54.5	61.2	29.5	7.7
50	49	67.7	77	32.2	9
63	61.9	87	96	3	11
75	73.4	103	115	43.7	13.15
90	88.2	117	131	45.7	15
110	108	145	162.25	48	16



GLOBE VALVE

Dn-Rp	d	D	D1	Z	L	H
20-½	19.5	34	45	46	75	69
25-¾	24.5	34	45	46	75	69
32-¾	31.5	43	45	39	75	69



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السهو

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