DAGHER PLAST

s.a.r.l.

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BUREAU VERITAS Certification

Certification

DAGHER PLAST S.A.R.L.

INDUSTRIAL AREA - MAZRAAT YASHOUH

LEBANON

ISO 9001:2008

PRODUCTION, STORAGE AND SALES OF POLYVINYL CHLORIDE PIPES, SALES OF POLYVINYL CHLORIDE FITTINGS

الجمهورية اللبنانية

وزارة الصناعة

Forward

After twenty one years of sales , **Dagher Plast s.a.r.l (D.P**) took the initiative of introducing u-pvc and c-pvc pipes production to Lebanon in 2008 . ever since , **D.P** has followed a policy of providing high quality pipes manufactured under strict quality control to its demanding clients.

for this purpose **D.P** used the most modern equipment and the best technical advises and experiences of its consultants.

D.P first started its u-pvc and c-pvc pipes manufacturing according to Lebanese standard then added new machines and moulds to produce pipes in accordance with international British standard specifications (EN 1401) , (EN 1329) etc.

This helped **D.P** to be (ISO 9001:2008) certified , and give it a unique position of being able to produce the widest range of u-pvc and c-pvc pipes for the uses in sewerage lines , drainage , electrical conduits and pressure. In both rubber ring or solvent cement jointing systems.

Elie N. Dagher

General manager

History of PVC

Polyvinyl chloride was discovered late in the nineteenth century. Scientists observing the newly created chemical gas, vinyl chloride, also discovered that when the gas was exposed to sunlight, it underwent a chemical reaction (now recognized as polymerization) resulting in an off-white solid material. But, the solid material was difficult to work with that it was cast aside in favor of other materials. Years later in 1920s, rubber scientist Waldo Semon was hired by BFGoodrich to develop a synthetic rubber to replace increasingly costly natural rubber. His experiments eventually produced polyvinyl chloride. Although product developers began to use PVC in a variety of ways – in shoe heels, golf balls, and raincoats, to name just a few – its application increased significantly during World War II. PVC turned out to be an excellent replacement for rubber insulation in wiring and was used extensively on U.S. Military ships. After 1945, its peace-time usage exploded.

In the U.S., PVC's materials are natural gas and rock salt.

*Natural gas is heated under pressure to form ethylene. This is called "cracking".

*Common rock salt (sodium chloride) is split by electrolysis to produce chlorine and lye (sodium hydroxide).

*Chlorine and ethylene are combined to form vinyl chloride monomer (VCM).

*VCM molecules are then joined end-to-end (polymerized) to form long chains of Polyvinyl Chloride polymer (plastic).

*The thermosplastic PVC powder is compounded, melted and extruded into pipes.

Material

Raw material

the raw material shall be PVC-U to which are added those additives that are needed to facilitate the manufacture of components conforming to the requirements of this standard.

When calculated on the basis of a known formulation, or in case of dispute or unknown formulation, determined in accordance with prEN 1905, the PVC-content shall be at least 80 % by mass for pipes and 85 % by mass for injection-moulded fittings.

Pipe material

When tested in accordance with the test method as specified in Table 1, using the indicated parameters, the pipe material shall have characteristics conforming to the requirements given in Table 1.

The pipe material shall be tested in form of a pipe.

Table 1 - Material characteristics of pipes

Characteristic	Requirements	Test parameters		Test method
Resistance to internal pressure	No failure during the test period	End caps	Type a or b	EN 921
		Test temperature	60 °C	
		Orientation	Free	
		Number of test pieces	3	
		Circumferential (hoop) stress	10 MPa	
		Conditioning period	1 h	
		Type of test	Water-in-water	
		Test period	1 000 h	

U-PVC NON PRESSURE UNDERGROUND DRAINAGE AND SEWEARGE PIPE SN4 INTRENATIONAL STANDARD ISO-4435 EUROPEAN STANDARD EN 1401-1 DIN 19534.

Push-fit rubber ring 8KN/m. Color Red Brown RAL 8023
Effective length of pipe 6 MT.

Code Number	D mm	S mm
110SN4	110	3.2
125SN4	125	3.2
160SN4	160	4.0
200SN4	200	4.9
250SN4	250	6.2
315SN4	315	7.7

Table 5 - Diameters and lengths of elastomeric ring seal sockets and spigots

Dimensions in millimetres

Nominal size DN/OD[1]	Nominal outside diameter	Socket			Spigot	
	d_n	$d_{8mm,\ min.}$	$A_{min.}$	$C_{max.}$	$L_{1,\ min.}$	$H^{2)}$
110	110	110,4	32	26	60	6
125	125	125,4	35	26	67	6
160	160	160,5	42	32	81	7
200	200	200,6	50	40	99	9
250	250	250,8	55	70	125	9
315	315	316,0	62	70	132	12
(355)	355	356,1	66	70	136	13
(400)	400	401,2	70	80	150	15
(450)	450	451,4	75	80	155	17
500	500	501,5	80	80[3)]	160	18
630	630	631,9	93	95[3)]	188	23
(710)	710	712,1	101	109[3)]	210	28
800	800	802,4	110	110[3)]	220	32
(900)	900	902,7	120	125[3)]	245	36
1 000	1 000	1 003,0	130	140[3)]	270	41

[1)] Non-preferred sizes are indicated in parenthesis.
[2)] Approximate values, when a 15^0 chamfer is applied.
[3)] Higher values for *C* are allowed, provided the maufacturer states in his documentation the actual required $L_{1,min.}$ according to the equation $L_{1,min.} = A_{min.} + C$.

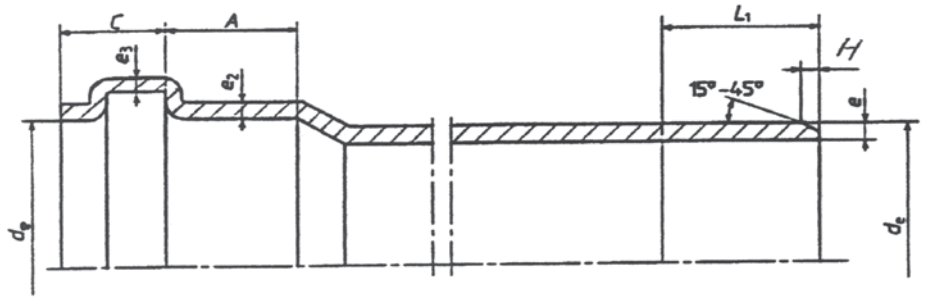


Figure 2 — Basic dimensions of sockets and spigots for elastomeric ring seal joints

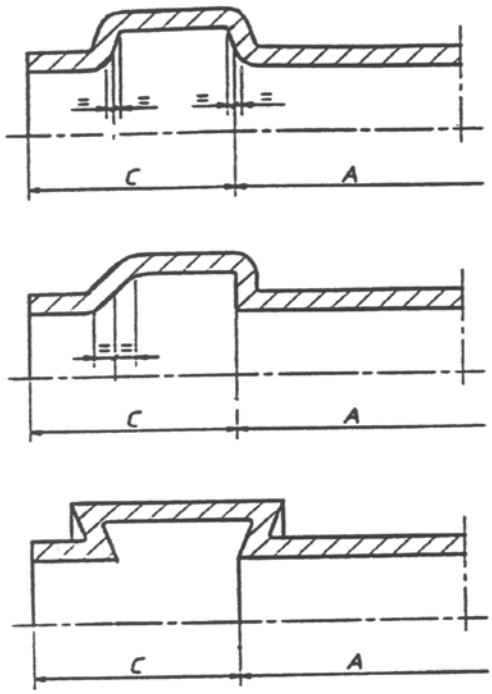


Figure 3 — Typical groove designs for elastomeric ring seal sockets

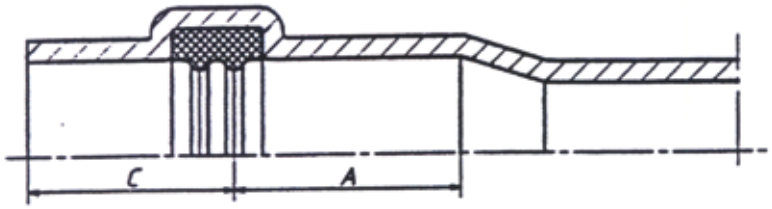


Figure 4 — Example for measuring the effective sealing point

The wall thickness of sockets, e_2 and e_3, except the socket mouth, shall conform to the Table. A reduction of 5 % of e_2 and e_3 resulting from core shifting is permitted.

In such a case the average of two opposite wall thickness shall be equal to or exceed the values given in the Table.

Where a sealing ring is located by means of a retaining cap or ring the wall thickness in this are shall be calculated by addition of the wall thickness of the socket and the wall thickness of the retaining cap or ring at the corresponding places in the same cross-section

Wall thicknesses of sockets

Dimensions in millimetres

Nominal size DN/OD[1)]	Nominal outside diameter d_n	SN 2 SDR 51[2)]		SN 4 SDR 41		SN 8 SDR 34	
		$e_{2,\,min.}$	$e_{3,\,min.}$	$e_{2,\,min.}$	$e_{3,\,min.}$	$e_{2,\,min.}$	$e_{3,\,min.}$
110	110	—	—	2,9	2,4	2,9	2,4
125	125	—	—	2,9	2,4	3,4	2,8
160	160	2,9	2,4	3,6	3,0	4,3	3,6
200	200	3,6	3,0	4,4	3,7	5,4	4,5
250	250	4,5	3,7	5,5	4,7	6,6	5,5
315	315	5,6	4,7	6,9	5,8	8,3	6,9
(355)	355	6,3	5,3	7,8	6,6	9,4	7,8
400	400	7,1	6,0	8,8	7,4	10,6	8,8
(450)	450	8,0	6,6	9,9	8,3	11,9	9,9
500	500	8,9	7,4	11,1	9,3	13,2	11,0
630	630	11,1	9,3	13,9	11,6	16,6	13,8
(710)	710	12,6	10,5	15,7	13,1	—	—
800	800	14,1	11,8	17,7	14,7	—	—
(900)	900	16,0	13,2	19,8	16,5	—	—
1 000	1 000	17,8	14,7	22,0	18,4	—	—

[1)] Non-preferred sizes are indicated in parenthesis.
[2)] SDR 51 is applicable for application are code "U" only.

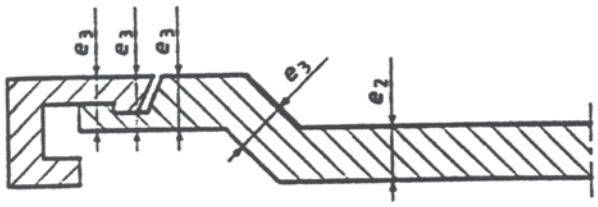


Figure 5 — Example for calculation of the wall thickness of sockets with retaining cap

The dimensions of "O-ring type" sockets shall conform to the Table

Dimensions of "O-ring type" sockets

Dimensions in millimetres

Nominal size DN/OD[1)]	Nominal outside diameter d_n	Socket		Groove			
		$d_{sm,\ max.}$	$B_{min.}$	$d_{3,\ min.}$	$d_{3,\ max}$	$f_{min.}$	$f_{max.}$
110	110	110,9	6	120,3	121,3	9,1	11,1
125	125	125,9	7	137,1	138,2	10,4	12,6
160	160	161,0	9	173,8	175,0	11,7	14,1
200	200	201,1	12	215,6	217,0	13,0	15,8
250	250	252,0	18	272,9	274,5	19,5	26,7
315	315	317,3	20	338,9	340,9	20,8	28,4
(355)	355	357,5	22	383,0	385,2	22,5	30,5
400	400	402,8	24	427,1	429,5	24,1	32,6
(450)	450	453,5	26	480,2	482,8	27,0	36,3
500	500	503,5	28	533,2	536,0	29,9	39,9
630	630	633,9	34	669,6	673,0	34,4	46,4
(710)	710	714,1	38	753,8	757,0	39,0	52,1

[1)] Non-preferred sizes are indicated in parenthesis.

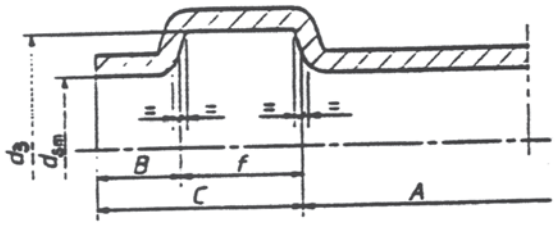


Figure 6 — Basic dimensions for "O-ring type" sockets

UPVC NON PRESSURE UNDERGROUND DRAINAGE AND SEWEARGE PIPE SN2 INTRENATIONAL STANDARD ISO-4435 EUROPEAN STANDARD EN 1401-1 DIN 19534.

Push-fit rubber ring 4kN/m. Color Red Brown RAL 8023
Effective length of pipe 6 MT.

Code Number	D mm	S mm
50SN2	50	1.8
75SN2	75	2.0
110SN2	110	2.5
125SN2	125	3.0
160SN2	160	3.2
200SN2	200	3.9
250SN2	250	4.9
315SN2	315	6.2

U-PVC PRESSURE PIPE FOR WATER CONVEYANCE
DIN 8061/8062

Push-fit rubber ring 8KN/m. Color Dark Grey RAL 7011
Effective length of pipe 6 MT.

Code Number	D mm	S mm
20PN16	20	2
25PN16	25	2
32PN10	32	3
40PN10	40	3
50PN10	50	3
63PN10	63	3
75PN10	75	3.6
110PN10	110	4.2
125PN10	125	4.8
160PN10	160	6.2
200PN10	200	7.7

U-PVC PIPES FOR SOIL & WASTE DISCHARGE
WITHIN THE BUILDING STRUCTURE
EUROPEAN STANDARD EN 1329-1 DIN 19531 ISO-3633 B
Underground telecommunication pipes NFT 54-013

Code Number	D mm	S mm
1/2	21.1	2.0
3/4	26.6	2.0
1	33.4	2.0
11/4	42.1	2.5
11/2	48.0	2.5
2	60.0	2.5
3	75.0	2.5
4	100	3.0
5	125	3.0
6	160	3.0
8	200	3.2

SOLVET CEMENT SOCKET
Effective length of pipe 6 MT.
Color light grey RAL 7037

Fitting material

When tested in accordance with the method as specified in Table 2, using the indicated parameters, the fitting material shall have characteristics conforming to the requirements given in Table 2.

The fitting material shall be tested, in the actual formulation, in the form of an extruded or injection-moulded pipe.

Fabricated fittings or parts of fabricated fittings shall be made from pipes conforming to this standard, except for the requirements for the wall thickness, and/or moldings from PVC-U which conform to material, mechanical and physical characteristics as required in this standard.

Table 2 - Material characteristics of fittings

Characteristic	Requirements	Test parameters		Test method
Resistance to internal pressure	No failure during the test period	End caps	Type a or b	EN 921
		Dimensions	50 mm $\leq d_n \leq$ 110 mm	
			3 mm $\leq e \leq$ 15 mm	
		Free lenght for injection-moulded pipe	≥140 mm	
		Test temperature	60 ^{0}C	
		Orientation	Free	
		Number of test pieces	3	
		Circumferential (hoop) stress	6.3 MPa	
		Conditioning period	1 h	
		Type of test	Water-in-water	
		Test period	1 000 h	

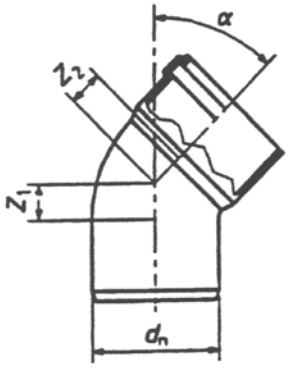


Figure 8 — Bend with single socket (unswept)

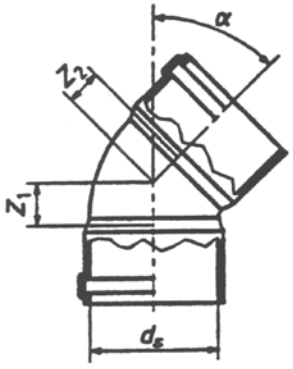


Figure 9 — Bend with all sockets (unswept)

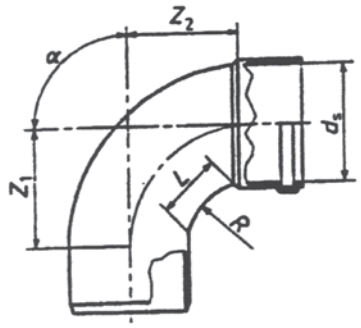


Figure 10 — Bend with single socket (swept)

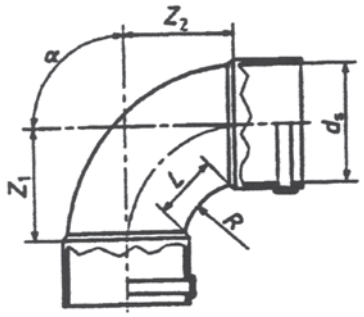


Figure 11 — Bend with all sockets (swept)

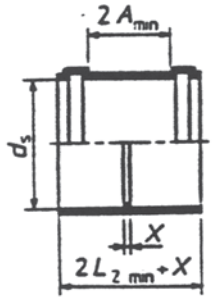


Figure 12 — Coupler

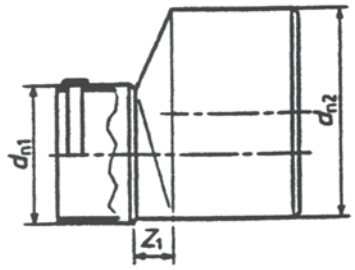


Figure 13 — Reducer

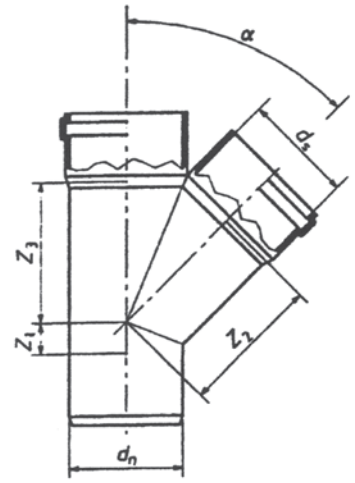


Figure 14 — Branch (unswept)

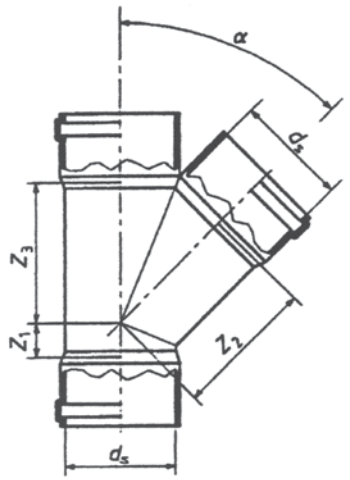


Figure 15 — Branch with all sockets (unswept)

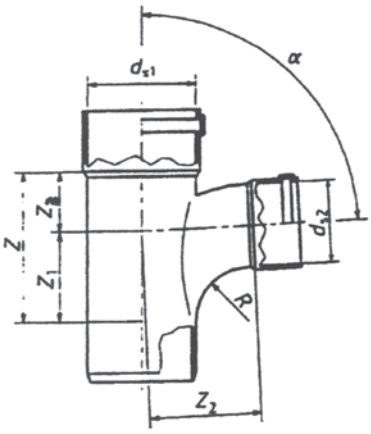


Figure 16 — Reducing branch (swept)

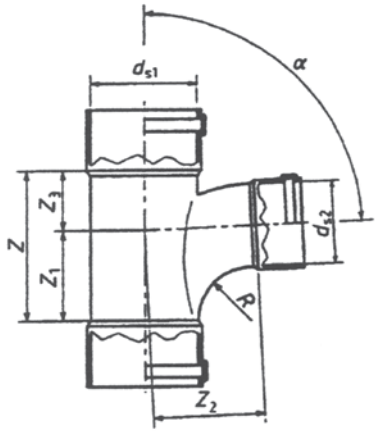


Figure 17 — Reducing branch with all sockets (swept)

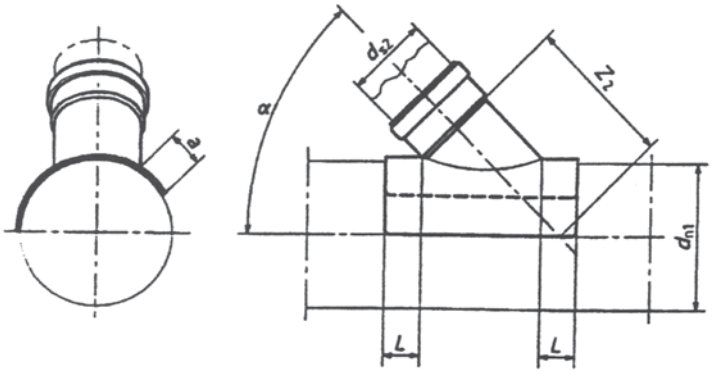


Figure 18 — Saddle branch

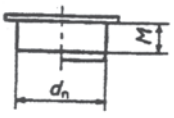


Figure 19 — Plug

Installing plastic pipes

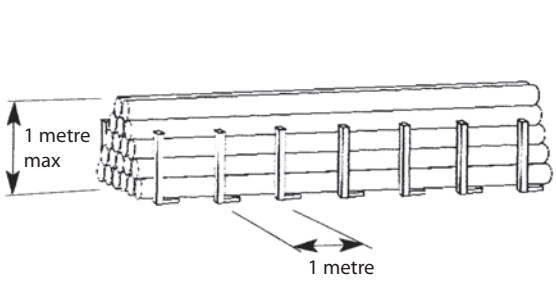
storage and handling of plastic pipes

Pipe transportation

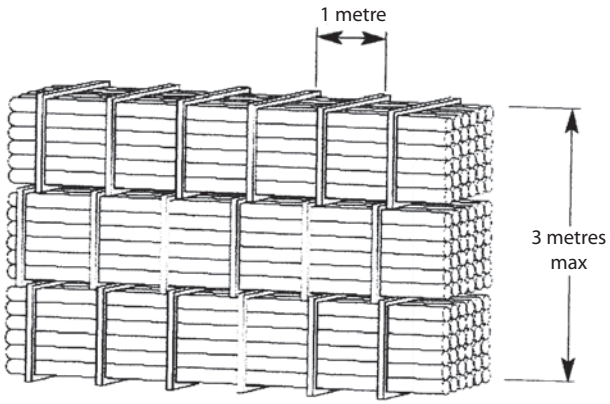
When transporting plastic pipes, care must be taken to ensure that the pipes are fully supported during movement in order to prevent bending, sagging or stressing. Vehicles should be capable of supporting the full length of pipe. - the unsupported overhang must not exceed 1m. Any surfaces that may be in contact with material should be free of nails or sharp edges. Where side supports are used they should be smooth, free from sharp edges, and at centres of not more that 1.5m. Pipes should always be loaded with the heaviest at the bottom.

Pipe storage and handling

Pipes should be stored flat and without any bending stresses. Storage heights should not normally exceed 1m, however pipes in timber storage frames may be stacked to heights not exceding 1.5m. The total stack height of pipes in timber storage frames should not exceed 3m. Where storage frames are used they should provide a minimum of 75mm bending width at centres of not greater than 1m. When the storage includes pipes of different diameters and weights, it is advisable to stack the largest and/or heaviest on the bottom.



Storage of Loose Pipes



Storage of Bundled Pipes

both pipes and fittings should be protected against UV radiation, and protected against dirt and moisture. A general recommendation is to store the pipes and fittings indoors in the manufacturers original packaging, until they are required for installation.

Wide fabric or nylon slings should be used for pipe lifting. Hooks, chains or metal slings must never be used.

Special care should be taken when handling and transporting PVC-U or PVC -C at temperatures or below 0°c as they become brittle at low temperatures.

In summary, the following guidelines should always be followed:
- pipes should be supported along their length during transportation and storage
- loading and storage areas should be free from nails, sharp edges or stone
- do not throw or drop pipes from vehicles
- pipes must never be dragged along the ground
-pipes should not be shacked excessively high
- protect pipes from direct sunlight
- ensure that stored pipes do not come into contact with unsuitable chemicals or oils
- take extra care when handling pipes in cold weather conditions
- examine all pipes prior to use, and disregard any pipes that are damaged, gouged or badly scratched

Fittings storage

Plastic pipe fittings should preferably be stored in their original packaging until required for use. It is not advisable to store loose plastic pipe fittings in storage bins together with metal pipe fittings. This is because grease and oils can contaminate the plastic material, occasionally leading to stress cracking of the plastic.

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