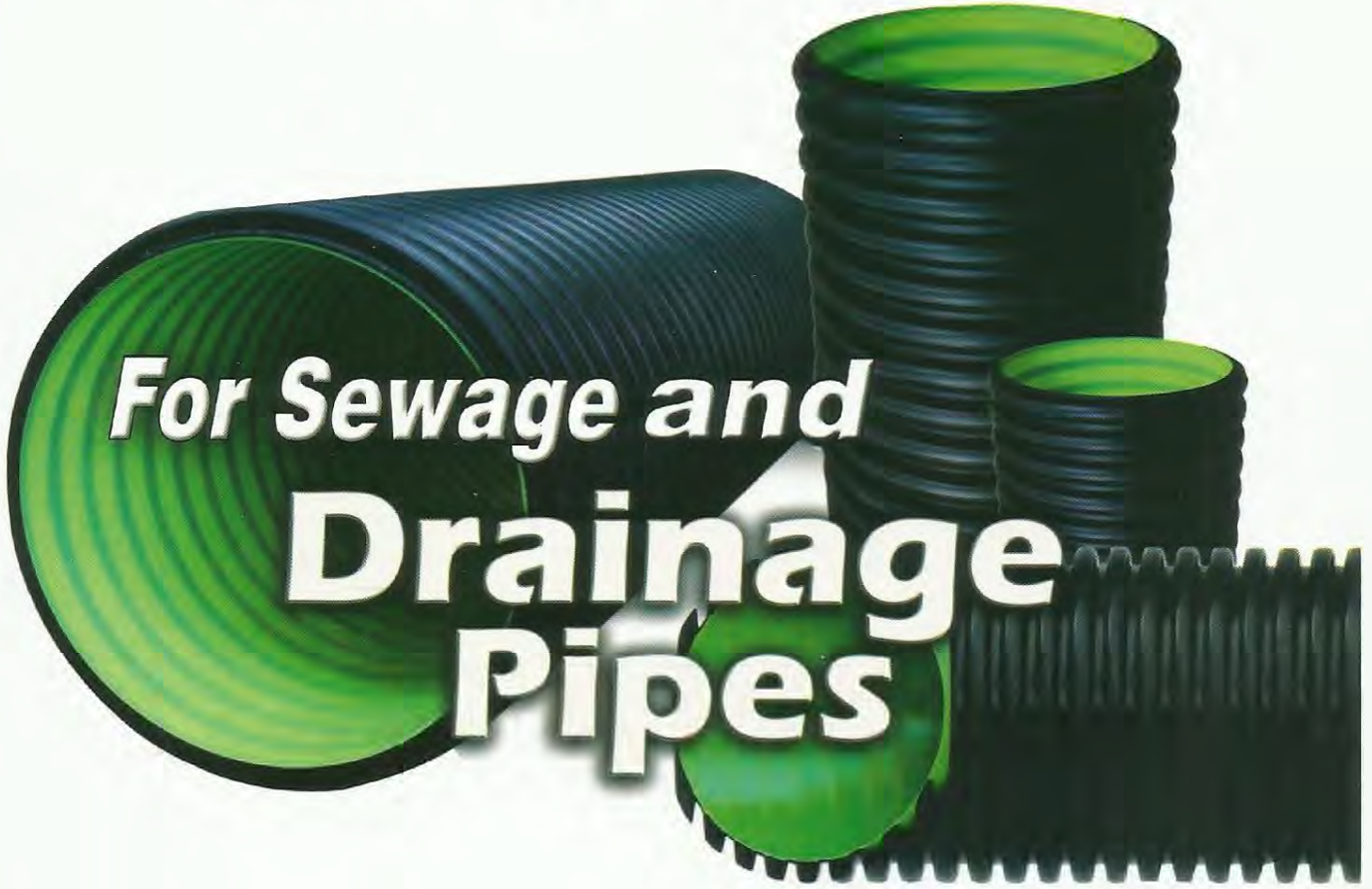


ALWASAIL الوسائل

Alwasail Industrial Co. شركة الوسائل الصناعية

الانابيب العرجة
للصرف الصحي وتصريف السيول

Corrugates Pipes



PP Currugated (SARF) Pipes & Fittings
for outdoor Sewage System



*For Water Pipes, Fittings & Gas Pipes



*For Further Details Visit NSF Web Portal



PP Corrugated Pipes and Fittings for Sewage Systems and Drainage

Technical Information:

Alwasaail Industrial Co. manufactures:

- SARF PIPE Corrugated sewage pipes
- SARF PIPE sewage fittings
- Pipes and fitting are produced from new generation, high quality Polypvopylene (PP)
- the outer layer of SARF PIPES is black and the inner layer is light grey.
- SARF PIPES are deigned for sanitary sewage systems, storm water systems and combined sewage systems. thanks to high thermal and chemical resisitance, they can be used in non-pressure industrial networks.



PP Corrugated Pipe

Polypropylene corrugated pipes standardized on the inside diameter.

The constant search for innovating products together with the need to meet the customer's requirements lead Alwasail Industrial Company to develop the project concerning the production of SARF pipes, which were standardized on the inside diameter.

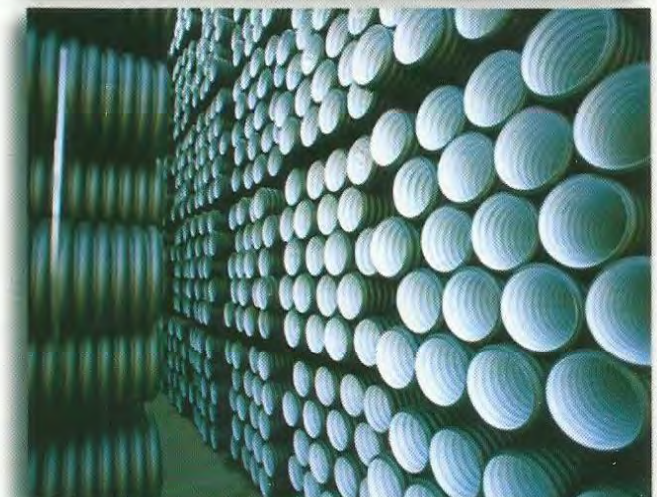
Products Range					
Inner Diameter (mm)	300	400	500	600	800
Outer Diameter (mm)	350	465	580	700	930
No of 6m bars in pallet	10	5	4	Loose	Loose
Meters per truck	480	240	192	144	72

Specifications

Polypropylene (PP) co-extruded twin-wall pipe, plain and violet internally and corrugated and black externally for underground sewer ducts not under pressure manufactured in compliance with the EN 13476 type B standard, certified by the P IIP/a mark and by UNI/IIP mark issued by the Istituto Italiano dei Plastici (Italian Institute for Plastic Materials) stiffness class corresponding to SN 4 (or 8) kN/m², produced in 6 or 12 meter bars with jointing by means of a PEAD coupling, P IIP/a and UNI/IIP mark and EPDM lip seal.

Pipe must be produced by ISO 9001:2000 and ISO 14001:2004 certified companies (environmental certification).

1. Inside nominal diameter DI...
2. SN ring stiffness measured on product test pieces according to EN ISO 9969.
3. Resistance to abrasion tested in compliance with EN 295-3 standard
4. Joint watertightness test certified at 0.5 bar under pressure and 0.3 bar negative pressure for 15 minutes according to EN 1277 standard.
5. Ring stiffness with application of constant load for 24 hours according to DIN 16961-2.
6. Marking according to the standard, including: trade-mark name, UNI/IIP mark and standard reference, P IIP mark and standard reference, nominal diameter (DN/ID), stiffness class, material, profile type, application area code, day/month/year, hour/minute of production.



PP Corrugated Pipe

Polypropylene corrugated pipes standardized on the inside diameter.

Flow Rate Table

Comparison between Alwasail SARF Pipe and PVC Pipe flow rates with 95% filling percentage.

		SARF	PVC	SARF	PVC	SARF	PVC	SARF	PVC	SARF	PVC
Slope	DN	300	315	400	400	500	500	600	630	800	800
	ID	300	299.6	400	380.4	500	475.4	600	599.2	800	760.8
2‰	Q(l/s)	48	48	104	91	189	165	307	306	661	578
5‰	Q(l/s)	76	76	165	144	298	261	485	483	1045	914
1%	Q(l/s)	108	108	233	204	422	369	686	684	1478	1292
5%	Q(l/s)	242	241	520	455	944	825	1534	1529	3304	2890

The calculation has been made by the GAUCKLER-STRICKER method.
 The roughness parameter suggested by ASTM for standard ducts with manholes, adapters, bends and gully pots: $KS=80$.
 The suggested velocities are:
 - 0.5 to 4 m/s for black waters
 - 0.5 to 7 m/s for rainwaters

Components and Special Fittings

Special fittings are fabricated with SARF pipe. Our workshop can fabricate special fittings following the purchaser drawing.

- It is possible to carry out connection between:
- Ecopal pipes and pipes of other materials (smooth Polypropylene, PVC, clay and concrete pipes).
 - Ecopal pipes and concrete manholes.

Besides special fittings made from pipe, Alwasail is able to supply a range of high density Polypropylene special fittings, by injection system. Moulded bends, branches and TEEs OD 160, 200 and 250 mm present on the externally wall such a rib structure which offers a better resistance to the loads.



PP Corrugated Pipe

SARF Pipe Technical Sheet

Construction	Outside corrugated and smooth in side Polypropylene hi density pipe call SARF pipe According to the European Norm (EB 13476-3 (P/IIP and UNI/IIP mark licences)
Composition	Neutral high density polyethylene blend,coloring master batch ad d up wih anti ox for a better thermal stability.
Colour	Outside wall black, inside wall white.
Use	Non pressure underground drainage and sewerage.
Use Limits	(-10 / +40) °C Flame propagator.
Ring Stiffness (EN ISO 9969)	≥4 and 8kN/m ² with an inside diameter eformation equal to 3%
Flexibility (EN 13968 - EN1446)	No walls delamination,slots or bend changes after outside diameter deformation equal to 30%
Impact Test at 0°C (EN 744)	No Slots,delaminations or rapture after hurt with a striker, released from 2 mt height with variable mass in function of the pipe diameter.
Hydraulic Seal Test (EE 1277)	No Loss in Pressure (test at 0.05 and 0.5 bar), or in depression (test at0.3 bar) with a diameter deformation of pipe and coupler or with anangular joint deflection. Angle of deflection applied 1° for all diameters.
Packaging	6 and 12 mt bars. Length of tolerance ± 1 %.
Fittings	Connection Polypropylene couplers, elastomeric rubbers and special pieces (bends, branches, manhole etc.).
Installation	Buried, according to the EN 1295.

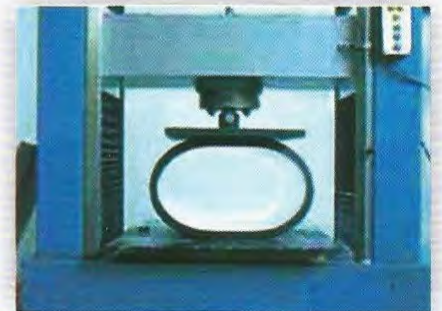
PP Corrugated Pipe

SARF Pipe Advantages

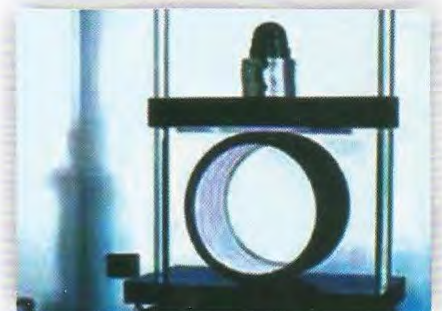
- SARF Pipe is made with high density Polypropylene, that is, a polymer which offers a high impact resistance even at low temperatures as well as an excellent chemical resistance, presents better resistance to the abrasion in respect to other materials used in pipe production.
- Peculiar geometric structure guarantees a high deflection resistance and it is produced in two ring stiffness classes (Class 4 kN/m² - Class 8 kN/m²). In this way the pipe can fulfil different applications even in deep underground.
- Outer black wall guarantees a high UV stability, inner wall is white to ease the pipe TV inspection.
- SARF Pipe is produced in 6 and 12 meter bars; in this way the number of joints is reduced.
- Can be connected with coupler and elastomeric seal or butt welding. The elastomeric seal is placed inside the corrugation, thus avoiding the risk of being displaced during the coupling operation. The elastomeric seal of a particular profile not only avoids leakage, but also the groundwater entrance into the pipe.
- Extremely versatile, due to the possibility to have a wide assortment of special fittings and can be connected with any other type of existing pipes.
- SARF Pipe is extremely easy to handle due to its lightness. It is easy to store, to transport and to install and does not need any particular equipment to be moved.
- Partially flexible and can avoid obstacle during pipe-lining and digging inaccuracy.



Ring Stiffness Test



Ring Flexibility Test



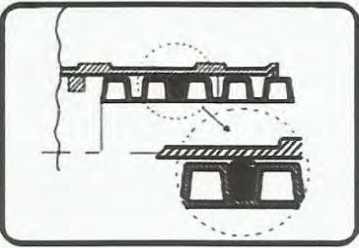
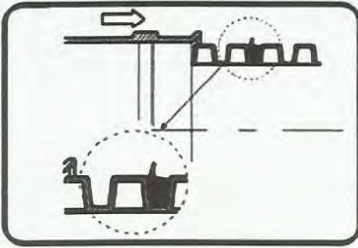
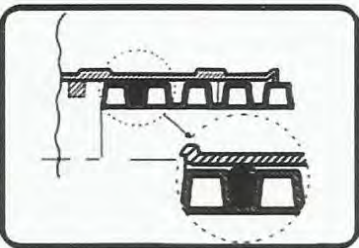
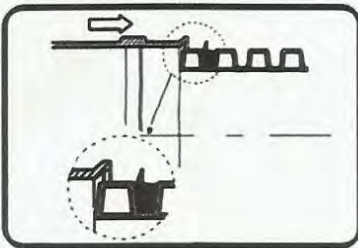
Creep Ratio Test



Tightness Test of the coupler-pipe system under hydrostatic pressure and negative pressure

PP Corrugated Pipe

SARF Pipe: Jointing with Coupling



The sealing ring is placed in the groove of the first pipe corrugation (for the pipes from Ø 250 mm to Ø 1200 mm) or in the second pipe corrugation (for the pipes from Ø 125 mm to Ø 250 mm).

The coupler must be installed on the pipes with a constant and equally distributed thrust until the internal seat is reached.



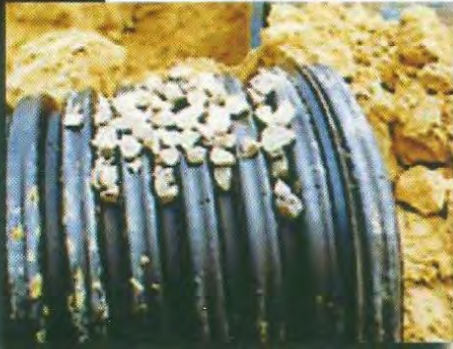
>>
 The insertion of the seal between two corrugations is made by hand; in case of big diameters this operation can be made by using a simple lever system.



>>
 The insertion of the seal between two corrugations is made by hand; in case of big diameters this operation can be made by using a simple lever system.



>>
 We suggest using mechanical means and interposing a board to distribute the stress uniformly.



>>
 The choice of the back-filling material is very important. The material granulometry must be such to be easily inserted into the corrugation. The photograph shows the material chosen for groundwater excavation. This type of granulometry also guarantees a good drainage.

مقاسات الماسورة

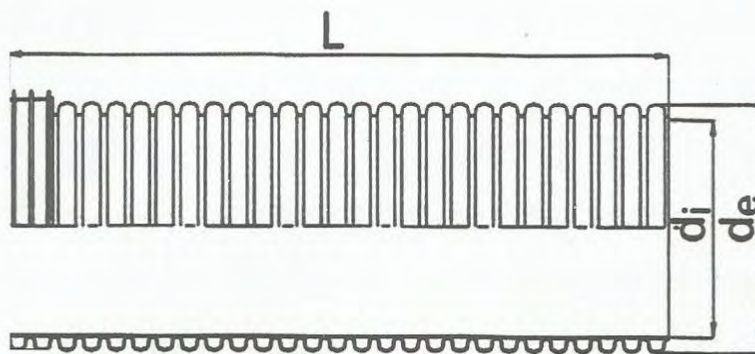
PP SARF PIPE

Sewage Pipe

DN/ID	L (mm)
160	2000
160	3000
160	6000
200	2000
200	3000
200	6000
250	2000
250	3000
250	6000

قطر الماسورة

طول الماسورة

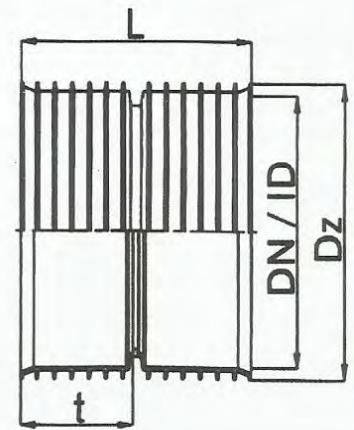


PP SARF PIPE

Coupling

وصلة

DN/ID	Dz1 (mm)	t (mm)	L (mm)
160	191	82	180
200	254	101	220
250	317	125	270

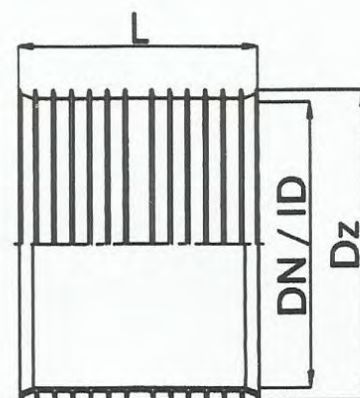


PP SARF PIPE

Sleeve

وصلة

DN/ID	Dz1 (mm)	L (mm)
160	191	180
200	254	220
250	317	270

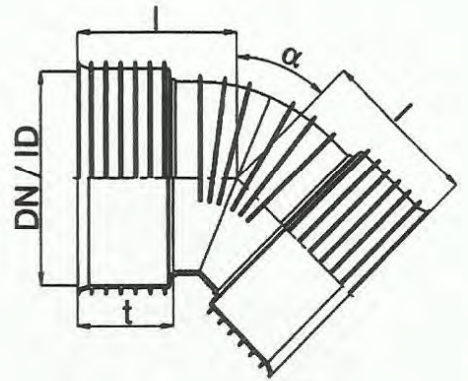


PP SARF PIPE

Bend

كوع

DN/ID	Angle (degrees)	l (mm)	t (mm)
160	15°	114	82
160	30°	124	82
160	45°	134	82
160	90°	170	82
200	15°	144	101
200	30°	152	101
200	45°	170	101
200	90°	215	101
250	15°	176	125
250	30°	192	125
250	45°	210	125
250	90°	273	125

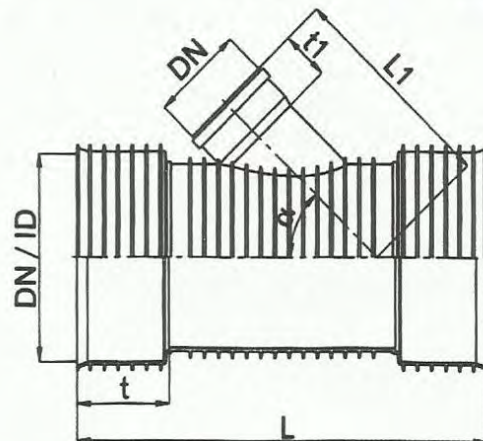


PP SARF PIPE

Y-Tee 45 Degrees / Smooth PVC Pipe

قسام ربط

DN/ID	DN1 (mm)	L (mm)	L1 (mm)	t (mm)	t1 (mm)
160	160	449	294	82	78
200	160	487	308	101	78
200	200	549	378	101	92
250	160	555	470	125	90
250	200	555	450	125	108
250	250	555	450	125	135

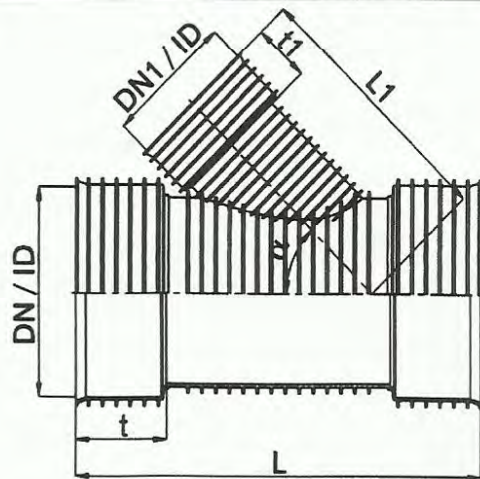


PP SARF PIPE

Y-Tee 45 Degrees / Corrugated SARF Pipe

قسام ربط

DN/ID	DN1 (mm)	L (mm)	L1 (mm)	t (mm)	t1 (mm)
160	160	449	298	82	82
200	160	487	312	101	82
200	200	549	387	101	101
250	160	555	430	125	82
250	200	555	430	125	101
250	250	555	430	125	125

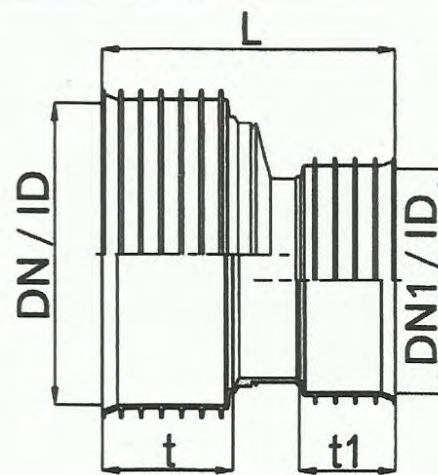


PP SARF PIPE

Eccentric Reducer

وصلة نقاص

DN/ID	DN1/ID (mm)	L (mm)	t (mm)	t1 (mm)
200	160	240	101	82
250	200	288	125	101

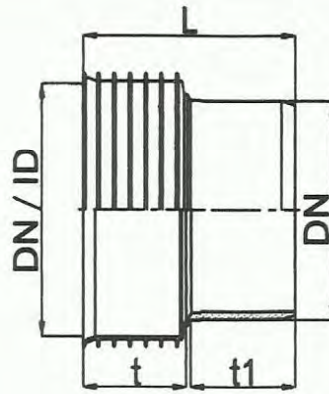


PP SARF PIPE

Coupling for PVC Socket

وصلة ربط

DN/ID	DN1/ID (mm)	L (mm)	t (mm)	t1 (mm)
160	160	175	82	82
200	200	226	101	102
250	250	272	125	124

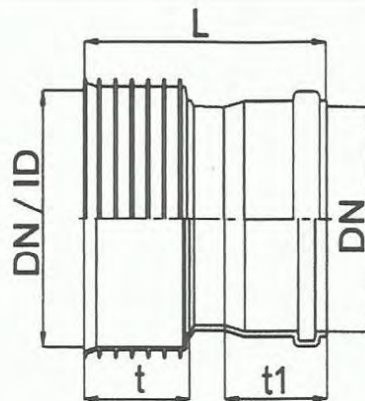


PP SARF PIPE

Coupling for Smooth PVC Pipe

وصلة للأنابيب

DN/ID	DN1/ID (mm)	L (mm)	t (mm)	t1 (mm)
160	160	175	82	78
200	200	235	101	102
250	250	282	125	124

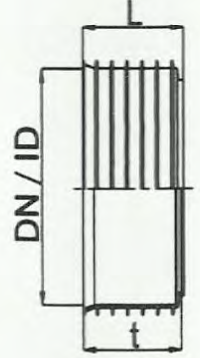


PP SARF PIPE

Plug

DN/ID	L (mm)	t (mm)
160	90	82
200	118	101
250	143	125

نهاية خط

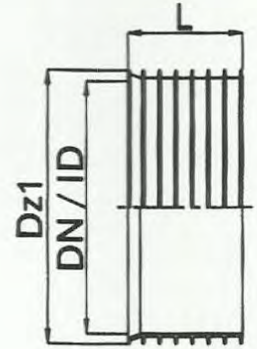


PP SARF PIPE

Leak-Proof Connection

وصلة إصلاح

DN/ID	Dz1 (mm)	L (mm)
160	191	90
200	254	110
250	317	135

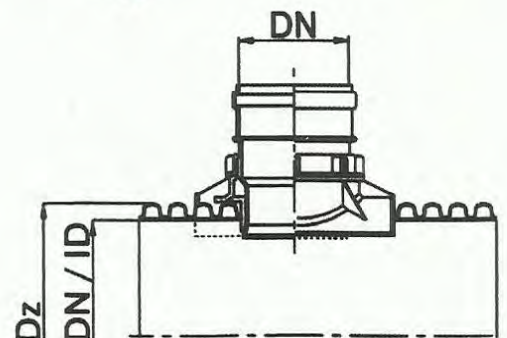


PP SARF PIPE

Saddle

مربط

DN/ID	DN (mm)	Dz (mm)
250	200	282



PP SARF PIPE

Seal

ربل

DN/ID	H (mm)	B (mm)
160	11.1	10.2
200	14.5	11.9
250	17.3	14.3

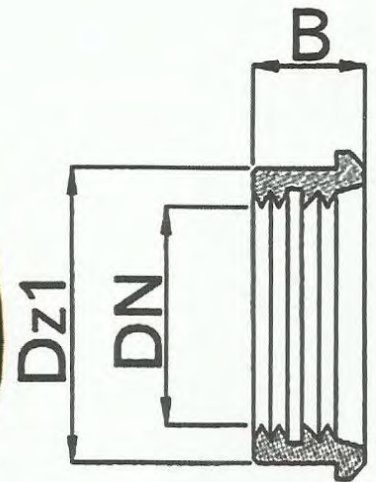


PP SARF PIPE

"In-situ" Seal

ربل داخلي

DN/ID	DN1 (mm)	B (mm)
110	140	68
160	190	68
200	234	68
250	284	80



فروع المبيعات (العربية السعودية)

فاكس	جوال	هاتف	ص.ب	الموقع
٠٦ ٣٨١ ١٣٠٦	٠٥٠ ٦٣٩ ٥٨٣٣	٠٦ ٣٨١ ٦٦٥٨/٣٩١٤	١٢٤	بريدة (فرع الرئيسي)
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٠٣ ٥٨٢ ٥٦٣٤	٠٥٠ ٦٣١ ٤٠٢١	٠٣ ٥٨٢ ٥٥٣٤		الهفوف
٠٢ ٦٦٥ ٧٤٧٣	٠٥٠ ٦٤٢ ٣٥٩٨	٠٢ ٦٦٥ ٧٤٧٣/٤٥٣٦	٦٩٦٣	جدة (واحد)
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٠٤ ٨٤٥ ٧٢٧٧	٠٥٠ ٦٤١ ٥٦١٠	(٠٤) ٨٤٦ ١٤٩٣	٢٥٠	المدينة
٠٧ ٥٤٤ ١٩٨٦	٠٥٠ ٦٣٤ ٨٩٤٧	٠٧ ٥٤٤ ١٩٨٦	١٣١٧	نجران
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٠٢ ٧٤٠ ٢١٧٩	٠٥٠ ٦٤٠ ٣٩٦٧	٠٢ ٧٤٠ ٢١٧٩	٧٠٤٢	الطائف
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٠٣ ٣٨٦ ١٩٦٠	٠٥٠ ٦٤٤ ٢٣٣٨	٠٣ ٣٨٦ ١٢٢٥		القرية العليا

SALES BRANCHES (SAUDI ARABIA)

Location	P.O.Box	Tel.No.	Mobile No.	Fax No.
Buraidah (Main Branch)	124	(06) 381 6658/3914	050 639 5833	06 381 1306
Buraidah (Al-Muwatha)	124	06 324 9419	050 639 0297	06 325 7067
Dammam	8893	03 817 1375	050 643 7317	03 817 6347
Hail	2393	06 543 5219	050 613 7256	06 532 2138
Hofuf		03 582 5534	050 6314021	03 582 5634
Jeddah (One)	6963	02 665 7473/4536	050 642 3598	02 665 7473
Jeddah (Two)	6963	02 227 5734/5735	050 642 0914/050 643 7907	02 227 4659
Jizan (Sabia)	112	07 327 4880	050 634 6456	07 327 4883
Jouf	1083	04 624 4076	050 636 7925	04 624 6840
Kharj	1606	01 550 1616	050 640 4317	01 551 0458
Madina	250	04 846 1493	050 641 5610	04 845 7277
Najran	1317	07 544 1986	050 634 8947	07 544 1986
Onaizah	1509	06 361 0128	050 641 8763	06 361 0128
Riyadh-Main Br.	21599	01 450 84 31/32//33/34	050 635 4815/050 635 9145	01 450 8435/8422/8166
Riyadh-Salam Street	21599	01 411 4679	050 640 2491	01 411 1914
Tabuk	2008	04 428 8374	050 635 8753	04 428 8374
Taif	7042	02 740 2179	050 640 3967	02 740 2179
Wadi Al-Dwasir	525	01 786 2081	050 641 9643	01 786 2081
Zulfi	725	06 422 4927	050 635 1903	06 423 2421
Olaya Village		03 386 1225	050 644 2338	03 386 1960

Manufacturing Facility

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Kingdom of Saudi Arabia
Tel: +966 6 322 0545 / 294 / 314
Fax: +966 6 322 0291 /701
Email: info@al-wasail.com



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Kingdom of Saudi Arabia
Mob: +966 506 375 685
Tel: +966 1 450 8431 / 32 / 33 / 34
Fax: +966 1 454 8057 / 450 8166
abdulhameed@al-wassel.com



*For Water Pipes, Fittings & Gas Pipes



*For Further Details Visit NSF Web Portal



The Company engages in a policy of continuous development and improvement of its products. Therefore, the company reserves the right to modify the design and / or specifications of any products or equipment without notice and without incurring liability.

MADE IN SAUDI ARABIA

صنع بالسعودية