

ABS DWV Fittings Technical Manual



Column Header Information:

Each product column header label identifies the following product particulars:

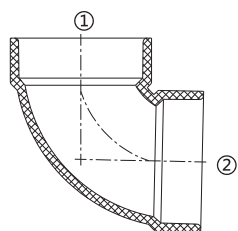
Part Number: the number used to order the part.

Size: nominal diameter of pipe with which the fitting is to be used.

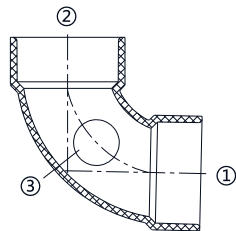
NOTE: Fittings may be same size (only one size designation) or reducing (multiple sizes designated).

Standard Pack (Std Pk) the quantity of parts packaged in an individual box or bag.

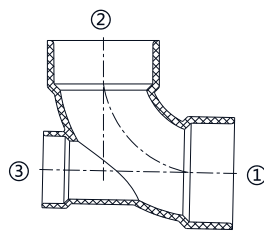
Methods of Designating Inlets of Fittings:



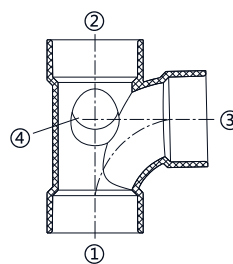
90° ELBOW



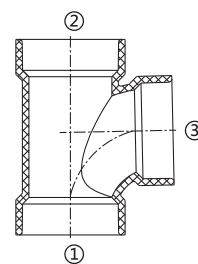
90° ELBOW WITH SIDE INLET



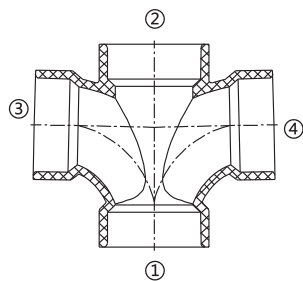
90° ELBOW W/LOW HEEL INLET



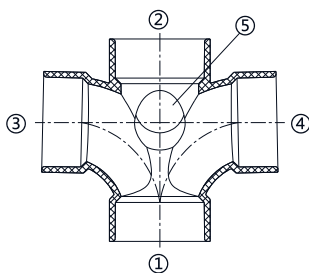
SANITARY TEE
W /RIGHT SIDE INLET



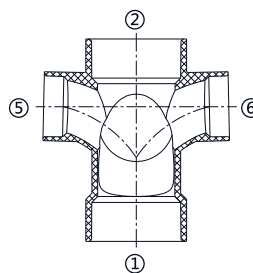
SANITARY TEE



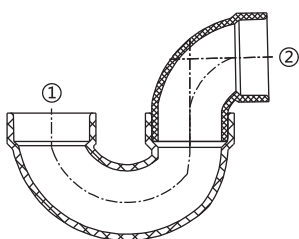
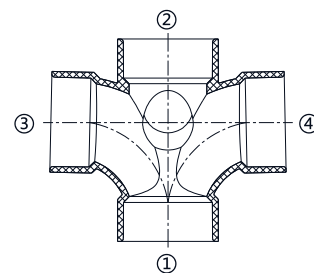
DOUBLE SANITARY TEE



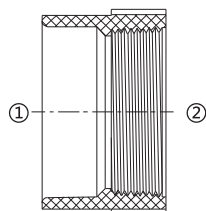
DOUBLE SANITARY TEE
W /SIDE INLET



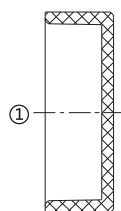
DOUBLE SANITARY TEE
W /R & L SIDE INLET



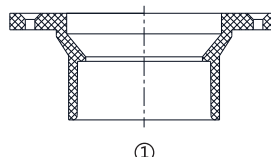
P-TRAP



FEMALE ADAPTER



CAP



CLOSET FLANGE

Introduction

The booklet presents technical informations referential to design, storage and installation of LESSO America ABS-DWV fittings.

The booklet just sets out as a referential advice or method of installation based on LESSO America's experiences and other publications. Readers must decide by yourself whether any advice or recommended method or data should be taken or not.

It is nor our intention that the guide should assume the responsibility unless the engineer so directs the installer. No representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or results to be obtained therefrom. For verification of technical or additional information not contained herein, please contact LESSO America customer service departments.

Note: LESSO America ABS-DWV fittings are not for distribution or transportation of compressed air or gas, as well as not for test.

LESSO America ABS-DWV fittings shall conform to ASTM D2661, CSA B181.1 and NSF Standard 14. ABS-DWV fittings are used in applications including sanitary drain, waste, and vent(DWV), sewer, and general drainage applications. Available sizes range from 1-1/4" to 6" in diameter. Attention should be paid that this system is intended for use in non-pressure applications where the operating temperature will not exceed 140°F. The system of installation shall be protected from chemical agents, fire stopping materials, thread sealant, or other aggressive chemical agents not compatible with ABS compounds.

Standards

ASTM D3965

This specification covers materials from only virgin ABS polymers and blends of ABS polymers suitable for use in the extrusion of pipe and molding of fittings.

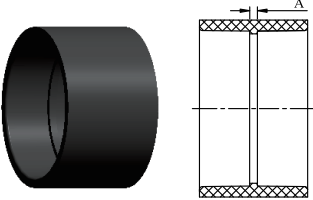
ASTM D2661

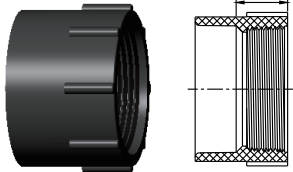
This specification covers fittings and single and coextruded acrylonitrile-butadiene-styrene(ABS) plastic drain, waste, and vent pipe(DWV) made to Schedule 40 iron pipe sizes(IPS). Plastic which does not meet the material requirements specified in Section 5 is excluded from single layer and all coextruded layers.

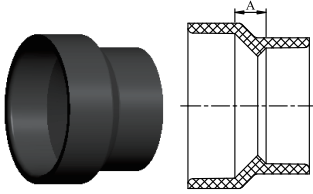
CSA B181.1

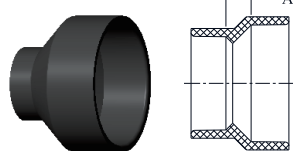
This standard specifies requirements for acrylonitrile-butadiene-styrene(ABS) drain,waste, and vent (DWV) pipe, pipe fittings, and accessories such as factory-assembled expansion joints, closet flanges, and backwater valves.

ABS DWV Fittings

<p>COUPLING (HUB×HUB)</p> 	Part Number	Size	A	Weight (Lbs)
	LN100-012	1-1/4"	1/8	0.06
	LN100-015	1-1/2"	1/8	0.06
	LN100-020	2"	1/8	0.08
	LN100-030	3"	3/16	0.34
	LN100-040	4"	1/4	0.58
	LN100-060	6"	1/4	1.57

<p>FEMALE ADAPTER (HUB×FIPT)</p> 	Part Number	Size	A	Weight (Lbs)
	LN101-012	1-1/4"	7/8	0.07
	LN101-015	1-1/2"	7/8	0.07
	LN101-020	2"	1	0.10
	LN101-030	3"	1-3/8	0.35
	LN101-040	4"	1-1/2	0.55
	LN101-060	6"	1-7/8	1.39

<p>PIPE INCREASER-REDUCER (HUB×HUB)</p> 	Part Number	Size	A	Weight (Lbs)
	LN102-212	1-1/2"×1-1/4"	13/32	0.07
	LN102-251	2"×1-1/2"	17/32	0.10
	LN102-337	3"×1-1/2"	1-3/32	0.30
	LN102-338	3"×2"	7/8	0.29
	LN102-419	4"×1-1/2"	1-9/16	0.50
	LN102-420(Canada)	4"×2"	1-1/8	0.49
	LN102-422(Canada)	4"×3"	11/16	0.54

<p>US PIPE INCREASER-REDUCER (HUB×HUB)</p> 	Part Number	Size	A	Weight (Lbs)
	LN102-420L	4"×2"	1-3/8	0.51
	LN102-422L	4"×3"	15/16	0.58

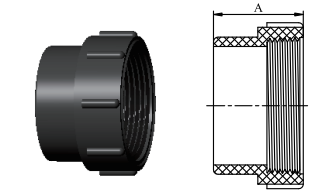
TECHNICAL MANUAL

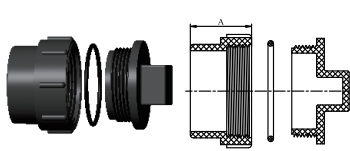
ABS DWV Fittings

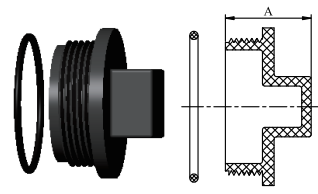
<p>TRAP ADAPTER (SPG×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN103-012	1-1/4"	1-7/16	0.04
	LN103-015	1-1/2"	1-1/2	0.05
	LN103-020	2"	1-9/16	0.07
	LN103-212	1-1/2"×1-1/4"	1-7/16	0.05
<p>TRAP ADAPTER W/PLASTIC NUT (SPG×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN103P-012	1-1/4"	1-7/16	0.07
	LN103P-015	1-1/2"	1-1/2	0.08
	LN103P-212	1-1/2"×1-1/4"	1-7/16	0.08
<p>TRAP ADAPTER W/PLASTIC NUT&WASHER (SPG×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN103X-012	1-1/4"	1-7/16	0.07
	LN103X-015	1-1/2"	1-1/2	0.09
	LN103X-020	2"	1-4/7	0.11
	LN103X-212	1-1/2"×1-1/4"	1-7/16	0.08
<p>TRAP ADAPTER-FEMALE (HUB×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN104-012	1-1/4"	13/16	0.05
	LN104-015	1-1/2"	8/9	0.06
	LN104-020	2"	8/9	0.08
	LN104-212	1-1/2"×1-1/4"	1	0.06
<p>TRAP ADAPTER W/PLASTIC NUT (HUB×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN104P-012	1-1/4"	13/16	0.08
	LN104P-015	1-1/2"	7/8	0.09
	LN104P-212	1-1/2"×1-1/4"	1	0.09
<p>TRAP ADAPTER W/PLASTIC NUT & WASHER (SPG×SJ)</p> 	Part Number	Size	A	Weight (Lbs)
	LN104X-012	1-1/4"	13/16	0.08
	LN104X-015	1-1/2"	8/9	0.10
	LN104X-020	2"	8/9	0.12
	LN104X-212	1-1/2"×1-1/4"	1	0.09

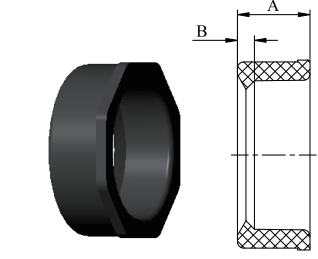
TECHNICAL MANUAL

ABS DWV Fittings

<p>CLEANOUT ADAPTER (SPG×FIPT)</p> 	Part Number	Size	A	Weight (Lbs)
	LN105-012	1-1/4"	1-3/8	0.05
	LN105-015	1-1/2"	1-1/2	0.07
	LN105-020	2"	1-9/16	0.09
	LN105-030	3"	2-1/2	0.28
	LN105-040	4"	2-7/8	0.45
	LN105-060	6"	4-5/16	1.19

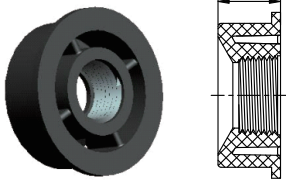
<p>CLEANOUT ADAPTER W/PLUG (SPG×CLEANOUT W/PLUG)</p> 	Part Number	Size	A	Weight (Lbs)
	LN105X-012	1-1/4"	1-3/8	0.10
	LN105X-015	1-1/2"	1-1/2	0.13
	LN105X-020	2"	1-9/16	0.17
	LN105X-030	3"	2-1/2	0.49
	LN105X-040	4"	2-7/8	0.78
	LN105X-060	6"	4-5/16	1.97

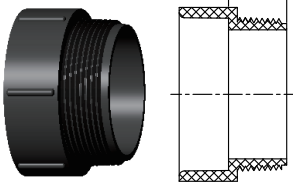
<p>PLUG WITH GASKET (MIPT)</p> 	Part Number	Size	A	Weight (Lbs)
	LN106R-012	1-1/4"	1-1/8	0.04
	LN106R-015	1-1/2"	1-7/16	0.06
	LN106R-020	2	1-7/16	0.08
	LN106R-025	2-1/2"	1-5/8	0.13
	LN106R-030	3	2	0.20
	LN106R-035	3-1/2"	2	0.28
	LN106R-040	4	2	0.33
LN106R-060	6"	2-3/16	0.78	

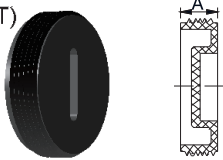
<p>FLUSH BUSHING (SPG×HUB)</p> 	Part Number	Size	A	B	Weight (Lbs)
	LN107-212	1-1/2"×1-1/4"	7/8	3/16	0.03
	LN107-251	2"×1-1/2"	15/16	3/16	0.06
	LN107-337	3"×1-1/2"	1-3/4	1-1/16	0.26
	LN107-338	3"×2"	1-3/4	1	0.27
	LN107-419	4"×1-1/2"	1-15/16	1-1/4	0.43
	LN107-420	4"×2"	1-15/16	1-3/16	0.43
	LN107-422	4"×3"	1-15/16	7/16	0.35
LN107-532	6"×4"	4-15/16	3-1/8	1.20	

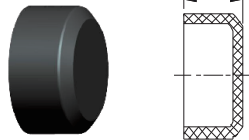
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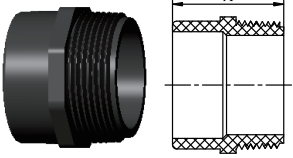
ABS DWV Fittings

FLUSH ADAPTER (SPG×FIPT) 	Part Number	Size	A	Weight (Lbs)
	LN108-209	1-1/2"×1/2"	13/16	0.06
	LN108-210	1-1/2"×3/4"	13/16	0.06
	LN108-212	1-1/2"×1-1/4"	7/8	0.04
	LN108-251	2"×1-1/2"	1	0.07
	LN108-337	3"×1-1/2"	1-3/4	0.27
	LN108-338	3"×2"	1-3/4	0.26
	LN108-422	4"×3"	1-15/16	0.35

MALE ADAPTER (HUB×MIPT) 	Part Number	Size	A	Weight (Lbs)
	LN109-012	1-1/4"	7/8	0.05
	LN109-015	1-1/2"	7/8	0.06
	LN109-020	2"	7/8	0.08
	LN109-030	3"	1-3/8	0.30
	LN109-040	4"	1-1/2	0.46
	LN109-212	1-1/2"×1-1/4"	7/8	0.06

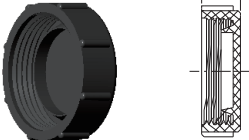
FLUSH C.O. PLUG (MPT) 	Part Number	Size	A	Weight (Lbs)
	LN110-020	2"	5/8	0.04
	LN110-030	3"	3/4	0.10
	LN110-040	4"	7/8	0.20

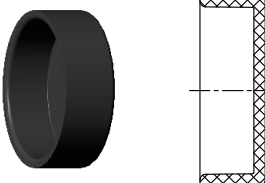
SLIP PLUG (SPG) 	Part Number	Size	A	Weight (Lbs)
	LN110S-015	1-1/2"	15/16	0.04
	LN110S-020	2"	1	0.06

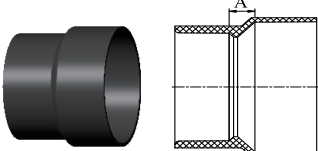
MALE ADAPTER (SPG×MIPT) 	Part Number	Size	A	Weight (Lbs)
	LN111-012	1-1/4"	1-5/8	0.05
	LN111-015	1-1/2"	1-5/8	0.06
	LN111-020	2"	1-3/4	0.09
	LN111-030	3"	3-1/16	0.31
	LN111-040	4"	3-9/16	0.53
	LN111-212	1-1/2"×1-1/4"	1-5/8	0.06

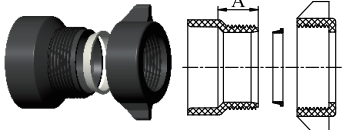
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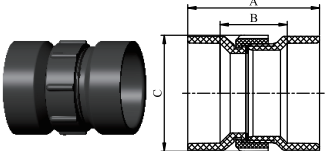
ABS DWV Fittings

P-TRAP PLUG (FIPT) 	Part Number	Size	A	Weight (Lbs)
	LN115-012	1-1/4"	5/8	0.03

CAP (HUB) 	Part Number	Size	A	Weight (Lbs)
	LN116-012	1-1/4"	7/8	0.04
	LN116-015	1-1/2"	7/8	0.05
	LN116-020	2"	15/16	0.07
	LN116-030	3"	1-3/4	0.26
	LN116-040	4"	2	0.45
	LN116-060	6"	3-5/16	1.21

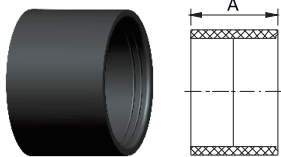
SEWER & DRAIN ADAPTER (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN117-422	4×3"	3/4	0.37

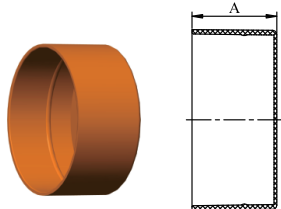
ABS-COPPER ADAPTER (HUB×SJ) 	Part Number	Size	A	Weight (Lbs)
	LN120-015	1-1/2"	1	0.11
	LN120-212	1-1/2"×1-1/4"	1	0.10

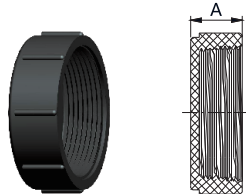
UNION (HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN126-015	1-1/2"	2-7/8	1-1/2	2-1/4	0.13
	LN126-020	2"	3-1/8	1-5/8	2-3/4	0.18

TECHNICAL MANUAL

ABS DWV Fittings

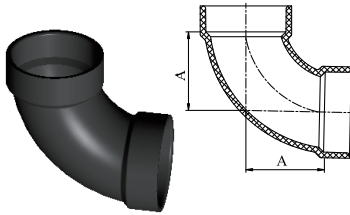
REPAIR COUPLING (HUB×HUB)	Part Number	Size	A	Weight (Lbs)
	LN130-015	1-1/2"	1-9/16	0.06
	LN130-020	2"	1-5/8	0.08
	LN130-030	3"	3-1/4	0.32
	LN130-040	4"	3-3/4	0.52

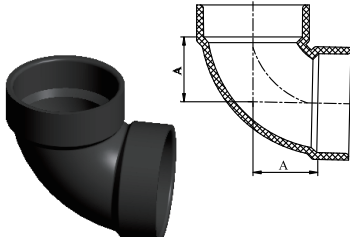
POLYETHYLENE TEST CAP	Part Number	Size	A	Weight (Lbs)
	LN132-015	1-1/2"	1-3/16	0.02
	LN132-020	2"	1-3/16	0.03
	LN132-030	3"	1-5/8	0.06
	LN132-040	4"	1-13/16	0.09

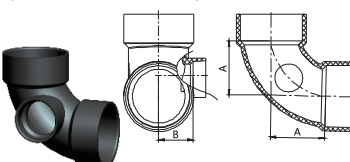
THREADED CAP (FIPT)	Part Number	Size	A	Weight (Lbs)	
	LN135-015	1-1/2"	7/8	0.06	
	LN135-020	2"	15/16	0.09	
	LN135-030	3"	1-7/16	0.28	

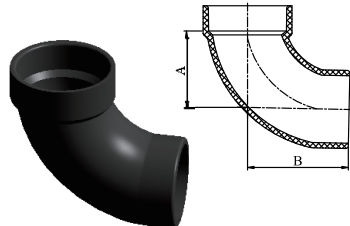
TECHNICAL MANUAL

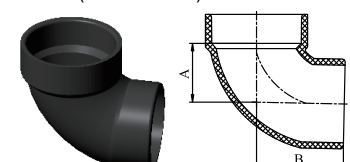
ABS DWV Fittings

90° ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN300-012	1-1/4"	1-9/16	0.12
	LN300-015	1-1/2"	1-3/4	0.15
	LN300-020	2"	2-5/16	0.24
	LN300-030	3"	3-1/16	0.75
	LN300-040	4"	3-7/8	1.32
	LN300-060	6"	5	3.21

90° ELBOW-SHORT TURN (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN300-012S	1-1/4"	1-1/8	0.11
	LN300-015S	1-1/2"	1-1/4	0.13
	LN300-020S	2"	1-9/16	0.19
	LN300-030S	3"	2-1/8	0.63
	LN300-040S	4"	2-15/16	1.13
	LN300-060S	6"	4-3/16	2.99

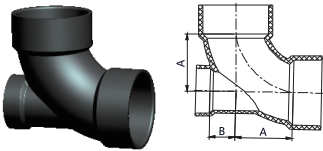
90° ELBOW WITH SIDE INLET (HUB×HUB×HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN300S-337	3"×3"×1-1/2"	3-1/16	1-15/16	0.8
	LN300S-338	3"×3"×2"	3-1/16	1-7/8	0.81

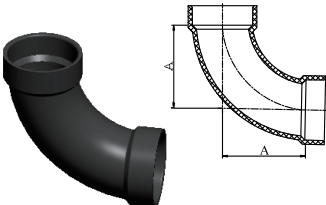
90° STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN302-012	1-1/4"	1-9/16	2-5/16	0.12
	LN302-015	1-1/2"	1-3/4	2-7/16	0.14
	LN302-020	2"	2-5/16	3-1/16	0.23
	LN302-030	3"	3-1/16	4-5/8	0.72
	LN302-040	4"	3-7/8	5-5/8	1.27
	LN302-060	6"	5	8-1/16	3.22

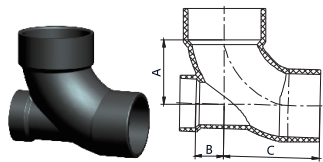
90° STREET ELBOW-SHORT TURN (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN302-015S	1-1/2"	1-1/4	2-1/16	0.12
	LN302-020S	2"	1-9/16	2-5/16	0.18
	LN302-030S	3"	2-1/8	3-11/16	0.60
	LN302-040S	4"	2-15/16	4-11/16	1.08

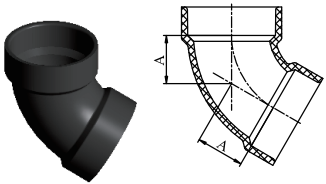
TECHNICAL MANUAL

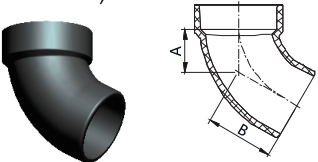
ABS DWV Fittings

90° ELBOW W/LOW HEEL INLET (HUB×HUB×HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN303-337	3"×3"×1-1/2"	3-1/16	1-1/8	0.80
	LN303-338	3"×3"×2"	3-1/16	1-3/8	0.82
	LN303-420	4"×4"×2"	3-7/8	1-9/16	1.40

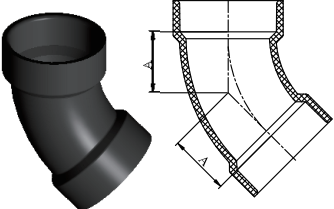
90° LONG SWEEP ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN304-012	1-1/4"	2-1/4	0.16
	LN304-015	1-1/2"	2-3/4	0.20
	LN304-020	2"	3-1/4	0.30
	LN304-030	3"	4	0.89
	LN304-040	4"	4-15/16	1.57

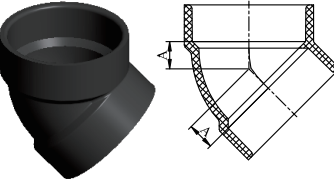
90° STREET ELBOW W/LOW HEEL INLET (HUB×SPG×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN310-338	3"×3"×2"	3-1/16	1-3/8	4-5/8	0.79

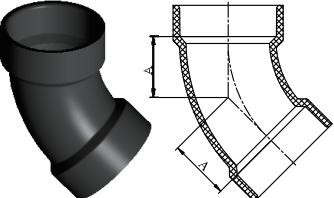
60° ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN319-015	1-1/2"	1	0.12
	LN319-020	2"	1-5/16	0.19
	LN319-030	3"	1-11/16	0.60
	LN319-040	4"	2-1/16	1.03

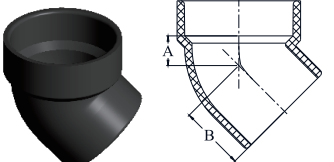
60° STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN320-015	1-1/2"	1	1-11/16	0.12
	LN320-020	2"	1-5/16	2-1/16	0.18
	LN320-030	3"	1-11/16	3-1/4	0.59
	LN320-040	4"	2-1/16	3-13/16	1.00

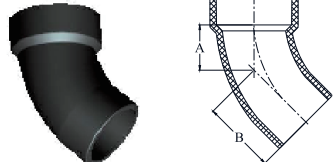
ABS DWV Fittings

45°ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN321-012	1-1/4"	1	0.11
	LN321-015	1-1/2"	1-1/8	0.13
	LN321-040	4"	2-3/16	1.09
	LN321-060	6"	2	2.39

45°ELBOW-SHORT TURN (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN321-015S	1-1/2"	1/2	0.09
	LN321-020S	2"	9/16	0.14
	LN321-030S	3"	13/16	0.48
	LN321-040S	4"	1-1/16	0.83

US 45°ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN321-020L	2"	1-1/2	0.21
	LN321-030L	3"	1-3/4	0.62

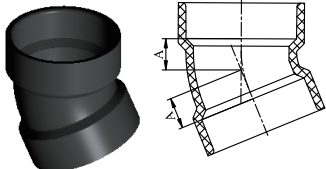
45°STREET ELBOW-SHORT TURN (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN323-015S	1-1/2"	1/2	1-1/4	0.09
	LN323-020S	2"	5/8	1-7/16	0.13
	LN323-030S	3"	7/8	2-7/16	0.45
	LN323-040S	4"	1-1/8	2-7/8	0.78

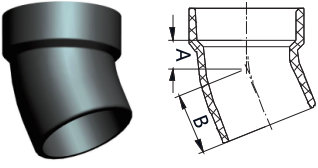
45°STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN323-012	1-1/4"	1	1-11/16	0.10
	LN323-015	1-1/2"	1-1/8	1-7/8	0.13
	LN323-040	4"	2-3/16	4	1.04
	LN323-060	6"	2	5-1/16	2.44

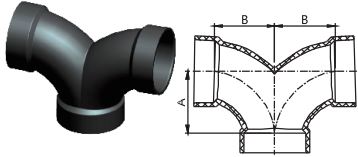
TECHNICAL MANUAL

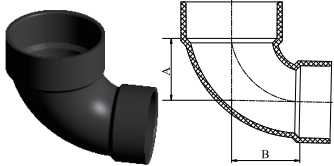
ABS DWV Fittings

US 45° STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN323-020L	2"	1-1/2	2-1/4	0.20
LN323-030L	3"	1-3/4	3-1/4	0.59	

22½° ELBOW (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
	LN324-015	1-1/2"	1/2	0.10
LN324-020	2"	11/16	0.15	
LN324-030	3"	13/16	0.49	
LN324-040	4"	1	0.83	
LN324-060	6"	1-1/2	2.27	

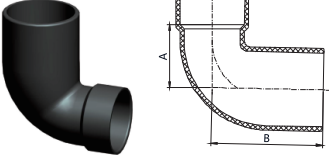
22½° STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN326-015	1-1/2"	1/2	1-1/4	0.09
LN326-020	2"	11/16	1-7/16	0.14	
LN326-030	3"	13/16	2-3/8	0.46	
LN326-040	4"	1	2-3/4	0.78	

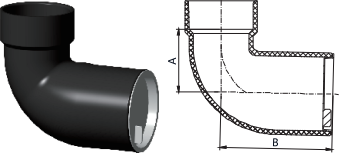
DOUBLE 90° ELBOW (HUB×HUB×HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN327-015	1-1/2"	1-3/4	1-3/4	0.22
LN327-020	2"	2-5/16	2-5/16	0.36	
LN327-030	3"	3-1/16	3-1/16	1.09	
LN327-040	4"	3-7/8	3-7/8	1.95	
LN327-241	2"×1-1/2"×1-1/2"	1-15/16	2-3/16	0.28	

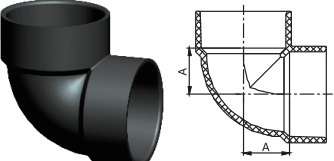
90° REDUCING CLOSET ELBOW (HUB×HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN329-422	4"×3"	3	3-3/8	0.99

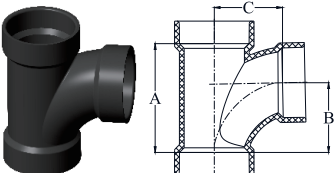
TECHNICAL MANUAL

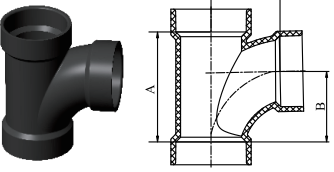
ABS DWV Fittings

90° REDUCING CLOSET STREET ELBOW (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
		LN330-342	3"×4"	3-3/8	6

90° REDUCING CLOSET STREET ELBOW W/TEST CAP (HUB×SPG) 	Part Number	Size	A	B	Weight (Lbs)
		LN330X-342	3"×4"	3-3/8	6-1/16

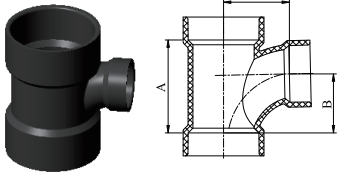
VENT ELL (HUB×HUB) 	Part Number	Size	A	Weight (Lbs)
		LN331-012	1-1/4"	1
	LN331-015	1-1/2"	1-3/16	0.13
	LN331-020	2"	1-1/2	0.20
	LN331-030	3"	1-7/8	0.62
	LN331-040	4"	2-1/2	1.11

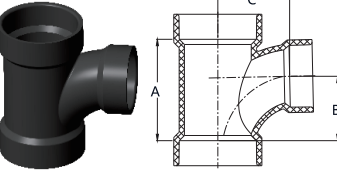
SANITARY TEE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN400-012(Canada)	1-1/4"	2-1/16	1-5/16	1-5/16
	LN400-015(Canada)	1-1/2"	2-5/16	1-7/16	1-7/16	0.19
	LN400-020(Canada)	2"	3-5/16	1-3/4	1-3/4	0.29
	LN400-030	3"	4-7/8	3-1/16	3-1/16	1.03
	LN400-040(Canada)	4"	5-1/2	3-1/8	3	1.59
	LN400-060	6"	8-1/2	5	5	4.49

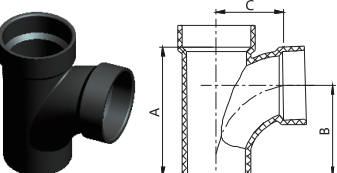
US SANITARY TEE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN400-012L	1-1/4"	2-5/16	1-9/16	1-9/16
	LN400-015L	1-1/2"	2-11/16	1-3/4	1-3/4	0.20
	LN400-020L	2"	3-11/16	2-5/16	2-5/16	0.33
	LN400-040L	4"	6-1/8	3-7/8	3-7/8	1.78

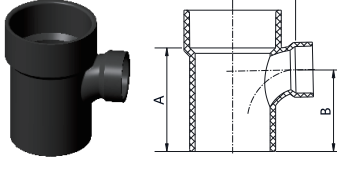
TECHNICAL MANUAL

ABS DWV Fittings

REDUCING SANITARY TEE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN401-212	1-1/2"×1-1/2"×1-1/4"	2-1/2	1-11/16	1-13/16	0.20
	LN401-222	1-1/2"×1-1/4"×1-1/4"	2-3/16	1-1/2	1-11/16	0.18
	LN401-225	1-1/2"×1-1/4"×1-1/2"	2-11/16	1-3/4	1-3/4	0.20
	LN401-241(Canada)	2"×1-1/2"×1-1/2"	2-15/16	1-9/16	1-7/8	0.25
	LN401-251(Canada)	2"×2"×1-1/2"	2-15/16	1-9/16	1-7/8	0.26
	LN401-257(Canada)	2"×1-1/2"×2"	3-3/8	1-3/4	1-3/4	0.28
	LN401-337	3"×3"×1-1/2"	2-11/16	1-3/4	2-9/16	0.62
	LN401-338(Canada)	3"×3"×2"	2-11/16	1-9/16	2-1/4	0.64
	LN401-419	4"×4"×1-1/2"	3-1/16	2	3-1/4	1.03
	LN401-420	4"×4"×2"	3-3/16	2-1/16	3-5/16	1.03
	LN401-422	4"×4"×3"	4-3/4	3	3-9/16	1.40
	LN401-532	6"×6"×4"	5-13/16	3-5/8	4-5/16	3.13

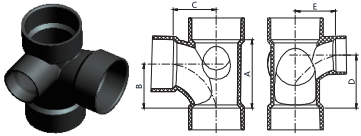
US REDUCING SANITARY TEE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN401-241L	2"×1-1/2"×1-1/2"	3-1/8	1-15/16	2-3/16	0.27
	LN401-251L	2"×2"×1-1/2"	3-1/8	1-15/16	2-3/16	0.28
	LN401-257L	2"×1-1/2"×2"	3-11/16	2-5/16	2-5/16	0.32
	LN401-338L	3"×3"×2"	3-5/16	2-1/8	2-7/8	0.70

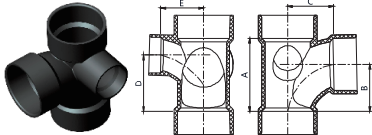
STREET SANITARY TEE (SPG×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN403-015	1-1/2"	3-7/16	2-7/16	1-3/4	0.20
	LN403-020	2"	4-7/16	3-1/16	2-5/16	0.33
	LN403-030	3"	6-7/16	4-5/8	3-1/16	1.01
	LN403-040	4"	7-7/8	5-5/8	3-7/8	1.76

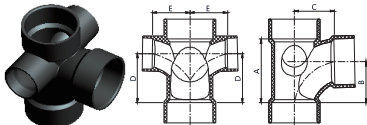
REDUCING STREET SANITARY TEE (SPG×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN404-241	2"×1-1/2"×1-1/2"	3-13/16	2-5/8	2-3/16	0.26
	LN404-251	2"×2"×1-1/2"	3-7/8	2-11/16	2-3/16	0.27
	LN404-257	2"×1-1/2"×2"	4-7/16	3-1/16	2-5/16	0.32
	LN404-337	3"×3"×1-1/2"	4-3/16	3-1/4	2-9/16	0.58
	LN404-338	3"×3"×2"	4-13/16	3-11/16	2-7/8	0.68

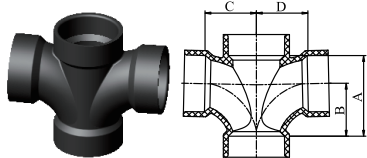
TECHNICAL MANUAL

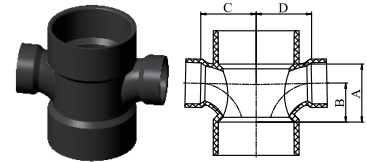
ABS DWV Fittings

SANITARY TEE W /LEFT SIDE INLET (ALL HUB) 	Part Number	Size	A	B	C	D	E	Weight (Lbs)
	LN416-337	3"×3"×3"×1-1/2"	4-7/8	3-1/16	3-1/16	3-11/16	2-9/16	1.13
	LN416-338	3"×3"×3"×2"	4-7/8	3-1/16	3-1/16	3-11/16	2-7/8	1.18
	LN416-329	3"×3"×2"×2"	3-5/16	2-1/8	2-7/8	2-1/8	2-7/8	0.83
	LN416-420	4"×4"×4"×2"	6-1/8	3-7/8	3-7/8	5	3-5/16	1.92

SANITARY TEE W /RIGHT SIDE INLET (ALL HUB) 	Part Number	Size	A	B	C	D	E	Weight (Lbs)
	LN417-337	3"×3"×3"×1-1/2"	4-7/8	3-1/16	3-1/16	3-11/16	2-9/16	1.13
	LN417-338	3"×3"×3"×2"	4-7/8	3-1/16	3-1/16	3-11/16	2-7/8	1.18
	LN417-329	3"×3"×2"×2"	3-5/16	2-1/8	2-7/8	2-1/8	2-7/8	0.83
	LN417-420	4"×4"×4"×2"	6-1/8	3-7/8	3-7/8	5	3-5/16	1.92

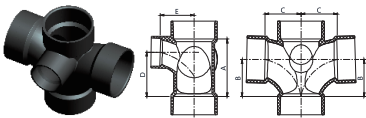
SANITARY TEE W /R& L SIDE INLET (ALL HUB) 	Part Number	Size	A	B	C	D	E	Weight (Lbs)
	LN418-337	3"×3"×3"×1-1/2"×1-1/2"	4-7/8	3-1/16	3-1/16	3-11/16	2-9/16	1.20
	LN418-338	3"×3"×3"×2"×2"	4-7/8	3-1/16	3-1/16	3-11/16	2-7/8	1.33
	LN418-420	4"×4"×4"×2"×2"	6-1/8	3-7/8	3-7/8	5	3-5/16	2.03

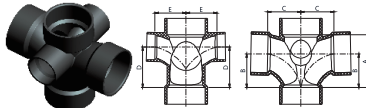
DOUBLE SANITARY TEE (ALL HUB) 	Part Number	Size	A	B	C	D	Weight (Lbs)
	LN428-015	1-1/2"	2-11/16	1-3/4	1-3/4	1-3/4	0.26
	LN428-020	2"	3-11/16	2-5/16	2-5/16	2-5/16	0.42
	LN428-030	3"	4-7/8	3-1/16	3-1/16	3-1/16	1.30
	LN428-040	4"	6-1/8	3-7/8	3-7/8	3-7/8	2.24

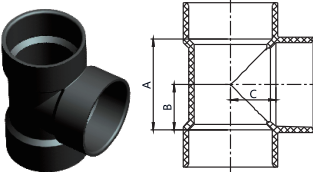
REDUCING DOUBLE SANITARY TEE (ALL HUB) 	Part Number	Size	A	B	C	D	Weight (Lbs)
	LN429-251	2"×2"×1-1/2"×1-1/2"	3-1/8	2	2-3/16	2-3/16	0.34
	LN429-323	3"×3"×2"×1-1/2"	3-1/4	2-1/16	2-1/2	2-7/16	0.72
	LN429-337	3"×3"×1-1/2"×1-1/2"	2-11/16	1-13/16	2-9/16	2-9/16	0.66
	LN429-338	3"×3"×2"×2"	3-5/16	2-1/8	2-7/8	2-7/8	0.77
	LN429-420	4"×4"×2"×2"	3-3/16	2-1/16	3-5/16	3-5/16	1.10
LN429-422	4"×4"×3"×3"	4-3/4	3	3-9/16	3-9/16	1.66	

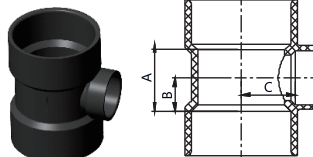
TECHNICAL MANUAL

ABS DWV Fittings

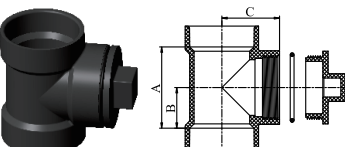
DOUBLE SANITARY TEE W/SIDE INLET (ALL HUB)	Part Number	Size	A	B	C	D	E	Weight (Lbs)
		LN438-337	3"×3"×3"×3"×1-1/2"	4-7/8	3-1/16	3-1/16	3-11/16	2-9/16
LN438-338		3"×3"×3"×3"×2"	4-7/8	3-1/16	3-1/16	3-11/16	2-7/8	1.43
LN438-420		4"×4"×4"×4"×2"	6-1/8	3-7/8	3-7/8	3-7/8	3-5/16	2.35

DOUBLE SANITARY TEE W/R&L SIDE INLET (ALL HUB)	Part Number	Size	A	B	C	D	E	Weight (Lbs)
		LN439-338	3"×3"×3"×3"×2"×2"	4-7/8	3-1/16	3-1/16	3-11/16	2-7/8

VENT TEE (HUB×HUB×HUB)	Part Number	Size	A	B	C	Weight (Lbs)
		LN441-015	1-1/2"	2-3/8	1-3/16	1-3/16
LN441-020		2"	3	1-1/2	1-1/2	0.27
LN441-030		3"	3-3/4	1-7/8	1-7/8	0.83
LN441-040		4"	5-1/16	2-1/2	2-1/2	1.47

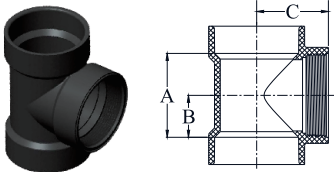
REDUCING VENT TEE (HUB×HUB×HUB)	Part Number	Size	A	B	C	Weight (Lbs)
		LN441-337	3"×3"×1-1/2"	2-3/8	1-3/16	1-7/8
LN441-338		3"×3"×2"	3	1-1/2	1-7/8	0.64

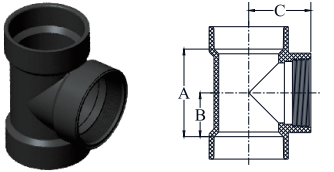
TEST TEE (HUB×HUB×CLEANOUT W/PLUG)	Part Number	Size	A	B	C	Weight (Lbs)
		LN444X-015(Canada)	1-1/2"	1-7/8	1	1-13/16
LN444X-020(Canada)		2"	2-3/8	1-3/16	2	0.32
LN444X-030(Canada)		3"	3-11/16	1-7/8	2-11/16	0.95
LN444X-040(Canada)		4"	4-15/16	2-7/16	3-1/4	1.62
LN444X-427		4"×3"×4"	5-3/16	2-7/16	3-1/4	1.57

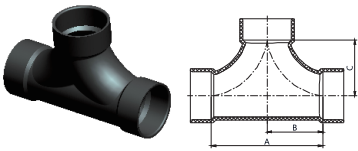
US TEST TEE (HUB×HUB×CLEANOUT W/PLUG)	Part Number	Size	A	B	C	Weight (Lbs)
		LN444X-015L	1-1/2"	2-3/8	1-3/16	1-13/16
LN444X-020L		2"	3	1-1/2	2-1/8	0.36
LN444X-030L		3"	3-3/4	1-7/8	2-5/8	0.97
LN444X-040L		4"	5	2-1/2	3-3/8	1.71

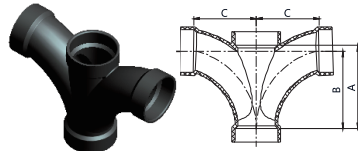
TECHNICAL MANUAL

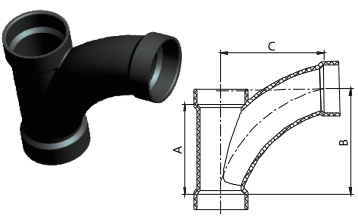
ABS DWV Fittings

TEST TEE (HUB×HUB×FIPT) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN445-015(Canada)	1-1/2"	1-7/8	1	1-13/16	0.17
	LN445-020(Canada)	2"	2-3/8	1-3/16	2	0.24
	LN445-030(Canada)	3"	3-11/16	1-7/8	2-11/16	0.76
	LN445-040(Canada)	4"	4-15/16	2-7/16	3-1/4	1.30
	LN445-427	4"×3"×4"	5-3/16	2-7/16	3-1/4	1.25

US TEST TEE (HUB×HUB×FIPT) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN445-015L	1-1/2"	2-3/8	1-3/16	1-13/16	0.18
	LN445-020L	2"	3	1-1/2	2-1/8	0.27
	LN445-030L	3"	3-3/4	1-7/8	2-5/8	0.76
	LN445-040L	4"	5	2-1/2	3-3/8	1.35

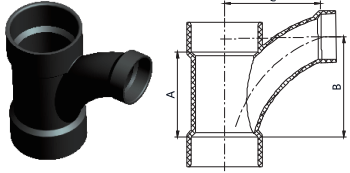
TWO-WAY CLEANOUT (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN448-030	3"	8-1/8	4-1/16	4-1/16	2.05
	LN448-040	4"	9-13/16	4-15/16	4-15/16	2.61

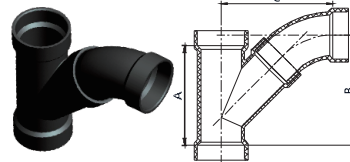
DOUBLE FIXTURE FITTING (ALL HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN500-020	2"	4-5/8	4-1/4	3-1/2	0.59
	LN500-030	3"	6-3/4	6-1/4	4-15/16	1.88
	LN500-241	2"×1-1/2"×1-1/2"×1-1/2"	3-1/2	3-7/8	2-7/8	0.40
	LN500-251	2"×2"×1-1/2"×1-1/2"	3-1/2	3-1/8	2-7/8	0.42
	LN500-257	2"×1-1/2"×2"×2"	4-5/8	4-1/4	3-1/2	0.59
LN500-338	3"×2"×3"×3"	6-3/4	6-1/4	4-15/16	1.75	

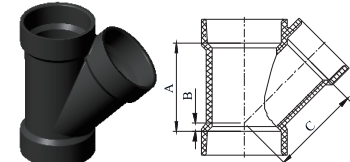
COMBINATION WYE & 1/8 BEND (ONE PIECE)(HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN501-015	1-1/2"	3-1/2	3-15/16	3-15/16	0.32
	LN501-020	2"	4-7/16	5-1/8	5-1/8	0.51
	LN501-030	3"	6-1/2	7-9/16	7-9/16	1.67
	LN501-040	4"	8-1/2	10	10	3.09

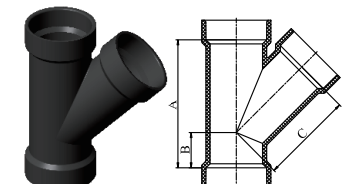
TECHNICAL MANUAL

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REDUCING COMBINATION WYE & 1/8 BEND (ONE PIECE) (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN502-241	2"×1-1/2"×1-1/2"	3-1/2	3-15/16	4-3/16	0.37
	LN502-251	2"×2"×1-1/2"	3-1/2	3-15/16	4	0.38
	LN502-257	2"×1-1/2"×2"	4-7/16	5-1/8	5-1/8	0.51
	LN502-337	3"×3"×1-1/2"	3-1/2	3-15/16	4-3/4	0.79
	LN502-338	3"×3"×2"	4-7/16	5-1/8	5-1/16	0.92
	LN502-420	4"×4"×2"	4-1/2	5-1/8	6-1/8	1.36
	LN502-422	4"×4"×3"	6-1/2	7-9/16	8-1/16	2.14

COMBINATION WYE & 1/8 BEND (TWO PIECE)(HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN503-020	2"	6-3/4	5-9/16	5-11/16	0.61

45° WYE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN600-012	1-1/4"	3-5/8	1-1/16	2-9/16	0.22
	LN600-015(Canada)	1-1/2"	2-7/8	1/2	2-3/8	0.21
	LN600-020(Canada)	2"	3-11/16	5/8	2-15/16	0.33
	LN600-030(Canada)	3"	4-15/16	7/8	4-3/8	1.05
	LN600-040(Canada)	4"	6-5/8	1-1/16	5-13/16	1.93
	LN600-060	6"	10-3/16	1-3/4	8-7/16	5.16

US 45° WYE (HUB×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN600-015L	1-1/2"	4	1-1/8	2-7/8	0.27
	LN600-020L	2"	5	1-3/8	3-5/8	0.41
	LN600-030L	3"	6-5/8	1-5/8	5	1.27
	LN600-040L	4"	8-1/4	1-7/8	6-3/8	2.23

TECHNICAL MANUAL

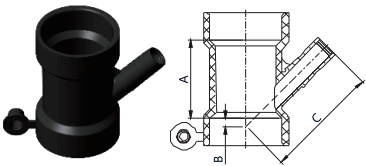
ABS DWV Fittings

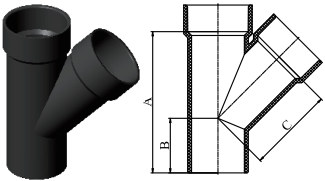
45° REDUCING WYE (HUB×HUB×HUB)	Part Number	Size	A	B	C	Weight (Lbs)
	LN601-241	2"×1-1/2"×1-1/2"	3-9/16	3/4	3	0.29
	LN601-251(Canada)	2"×2"×1-1/2"	2-13/16	1/4	2-7/8	0.27
	LN601-337(Canada)	3"×3"×1-1/2"	2-13/16	3/16	3-9/16	0.63
	LN601-338(Canada)	3"×3"×2"	3-7/16	1/6	3-5/6	0.70
	LN601-419	4"×4"×1-1/2"	3-7/8	0	4-9/16	1.13
	LN601-420(Canada)	4"×4"×2"	3-11/16	3/16	4-3/4	1.10
	LN601-422(Canada)	4"×4"×3"	5-3/16	1/2	5-1/4	1.50
	LN601-530	6"×6"×3"	7-1/8	3/16	7-7/16	3.48
	LN601-532	6"×6"×4"	7-5/16	9/16	7-7/16	3.64

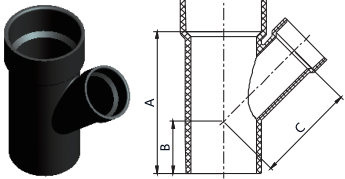
US 45° REDUCING WYE (HUB×HUB×HUB)	Part Number	Size	A	B	C	Weight (Lbs)
	LN601-251L	2"×2"×1-1/2"	4-3/8	1-1/16	3-7/16	0.35
	LN601-337L	3"×3"×1-1/2"	4-1/4	1/2	4-5/16	0.78
	LN601-338L	3"×3"×2"	5	7/8	4-5/8	0.88
	LN601-420L	4"×4"×2"	5-1/16	3/8	5-9/16	1.32
	LN601-422L	4"×4"×3"	6-5/8	1-1/16	6	1.76

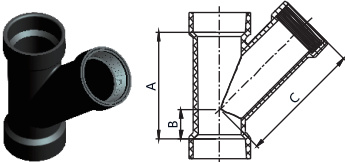
TECHNICAL MANUAL

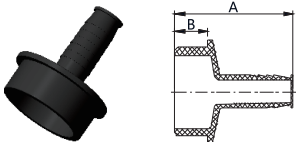
ABS DWV Fittings

DISHWASHER Y (HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN601-209	1-1/2"×1-1/2"×1/2"	2-1/16	3/16	3
	LN601-210	1-1/2"×1-1/2"×3/4"	2-5/16	1/8	3-1/8	0.15

45° STREET WYE (SPG×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN602-015	1-1/2"	4-3/4	1-7/8	2-7/8
	LN602-020	2"	5-3/4	2-1/8	3-5/8	0.42
	LN602-030	3"	8-1/8	3-1/8	5	1.23
	LN602-040	4"	10-1/16	3-11/16	6-3/8	2.21

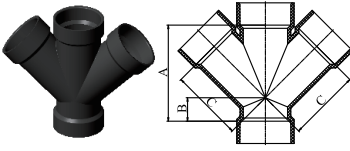
45° REDUCING STREET WYE (SPG×HUB×HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN603-337	3"×3"×1-1/2"	5-13/16	2-1/16	4-5/16
	LN603-338	3"×3"×2"	6-9/16	2-3/8	4-5/8	0.86
	LN603-422	4"×4"×3"	8-3/8	2-13/16	6	1.73

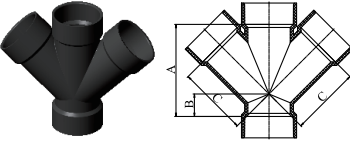
CLEANOUT WYE (HUB×HUB×FIPT) 	Part Number	Size	A	B	C	Weight (Lbs)
		LN604-015	1-1/2"	3-7/8	1-1/16	4-1/2

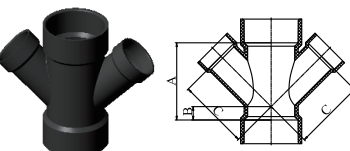
DISHWASHER ADAPTER (SP×BARB) 	Part Number	Size	A	B	Weight (Lbs)
		LN610-015	1-1/2"	2-9/16	11/16

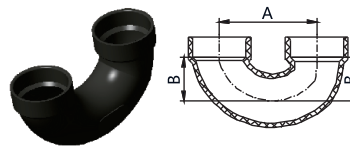
TECHNICAL MANUAL

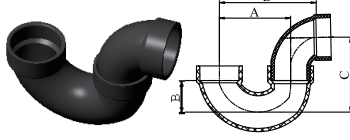
ABS DWV Fittings

45° DOUBLE WYE (ALL HUB)	Part Number	Size	A	B	C	Weight (Lbs)
	LN611-015	1-1/2"	4	1-1/8	2-7/8	0.34
	LN611-020	2"	5	1-3/8	3-5/8	0.53
	LN611-030(Canada)	3"	5-3/8	7/8	4-1/2	1.42
	LN611-040	4"	8-1/4	1-7/8	6-3/8	2.89

US 45° DOUBLE WYE (ALL HUB)	Part Number	Size	A	B	C	Weight (Lbs)
	LN611-030L	3"	6-5/8	1-5/8	5	1.62

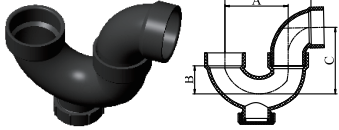
45° REDUCING DOUBLE WYE (ALL HUB)	Part Number	Size	A	B	C	Weight (Lbs)
	LN612-251	2"×2"×1-1/2"×1-1/2"	4-3/8	1-1/16	3-7/16	0.44
	LN612-337	3"×3"×1-1/2"×1-1/2"	4-1/4	1/2	4-5/16	0.86
	LN612-338	3"×3"×2"×2"	5	7/8	4-5/8	0.98
	LN612-420	4"×4"×2"×2"	5-1/16	3/8	5-9/16	1.45
	LN612-422	4"×4"×3"×3"	6-5/8	1-1/16	6	2.15
	LN612-532	6"×6"×4"×4"	6-7/8	3/16	7-7/16	4.14

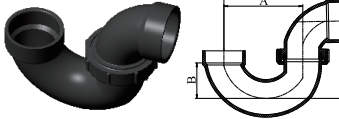
RETURN BEND (HUB×HUB)	Part Number	Size	A	B	Weight (Lbs)
	LN700-015	1-1/2"	3-7/16	1-9/16	0.24
	LN700-020	2"	5	2-1/4	0.41
	LN700-030	3"	6-1/4	2-5/8	1.17
	LN700-040	4"	8-1/16	3-7/16	2.13

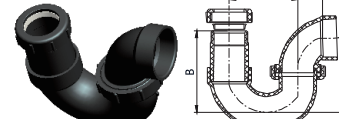
P-TRAP (HUB×HUB)	Part Number	Size	A	B	C	D	Weight (Lbs)
	LN706X-015	1-1/2"	3-7/16	1-9/16	3-5/8	4-11/16	0.35
	LN706X-020	2"	5	2-1/4	4-5/8	6-9/16	0.59
	LN706X-030	3"	6-1/4	2-5/8	6-3/8	8-3/8	1.73
	LN706X-040	4"	8-1/16	3-7/16	8-3/16	11	3.16

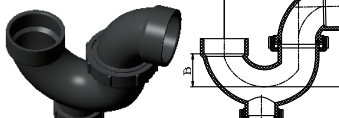
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P-TRAP (HUB×HUB×CLEANOUT W/PLUG) 	Part Number	Size	A	B	C	D	Weight (Lbs)
		LN707X-015	1-1/2"	3-7/16	1-9/16	3-5/8	4-11/16
	LN707X-020	2"	5	2-1/4	4-5/8	6-9/16	0.63

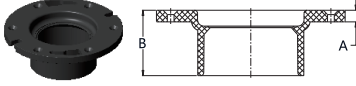
P-TRAP W/UNION JOINT (HUB×HUB) 	Part Number	Size	A	B	C	D	Weight (Lbs)
		LN708P-012	1-1/4"	3-3/8	1-9/16	3-5/8	4-5/8
	LN708P-015	1-1/2"	3-7/16	1-9/16	3-3/4	4-3/4	0.38
	LN708P-020	2"	5	2-1/4	4-7/8	6-5/8	0.67

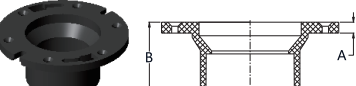
LA PATTERN P-TRAP W/UNION & PLASTIC NUT (HUB×SJ) 	Part Number	Size	A	B	C	D	Weight (Lbs)
		LN711M-015	1-1/2"	3-7/16	4-1/8	3-3/4	4-3/4

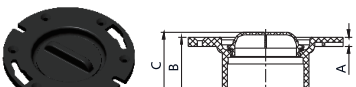
P-TRAP W/UNION & C/O (HUB×HUB×C/O) 	Part Number	Size	A	B	C	D	Weight (Lbs)
		LN712-015	1-1/2"	3-7/16	1-9/16	3-3/4	4-3/4


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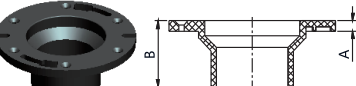
ABS DWV Fittings

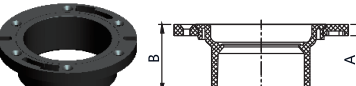
CLOSET FLANGE (HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN800-040	4×4"	7/16	2	0.50
	LN800-422(Canada)	4×3"	7/16	2-7/16	0.54

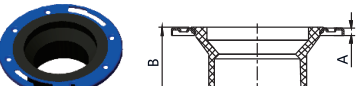
US CLOSET FLANGE (HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN800-422L	4×3"	7/16	2-13/16	0.60

CLOSET FLANGE W/THREADED TEST PLUG (HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN800T-422C(Canada)	4"×3"	7/16	2-3/4	3	0.63
	LN800T-040C	4"×4"	7/16	2-5/16	3-1/8	0.62

US CLOSET FLANGE W/THREADED TEST PLUG (HUB) 	Part Number	Size	A	B	C	Weight (Lbs)
	LN800T-422CL	4" ×3"	7/16	3-1/8	3	0.65

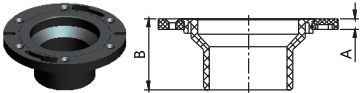
REDUCING CLOSET FLANGE (SPG) 	Part Number	Size	A	B	Weight (Lbs)
	LN801-422	4"×3"	7/16	2-13/16	0.56

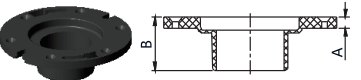
CLOSET FLANGE W/ADJUSTABLE PLASTIC RING (HUB) 	Part Number	Size	A	B	Weight (Lbs)
	LN810P-422	4"×3"	7/16	2-11/16	0.60
	LN810P-040	4"×4"	7/16	2	0.52

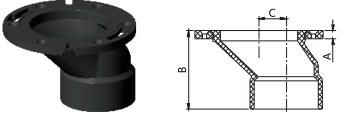
CLOSET FLANGE W/ADJUSTABLE - Metal-Ring- (Epoxy-Coated)-(H) 	Part Number	Size	A	B	Weight (Lbs)
	LN811-422	4"×3"	5/16	2-13/16	0.77
	LN811-040	4"×4"	5/16	2	0.66

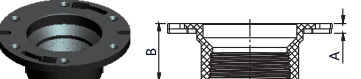
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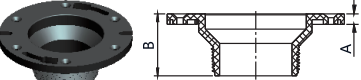
ABS DWV Fittings

<p>CLOSET FLANGE W/ADJUSTABLE PLASTIC RING (SPG)</p> 	Part Number	Size	A	B	Weight (Lbs)
	LN812P-422	4"×3"	7/16	2-13/16	0.59

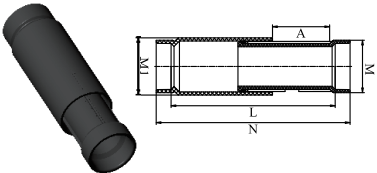
<p>CLOSET FLANGE, ABS-3" INSIDE FIT</p> 	Part Number	Size	A	B	Weight (Lbs)
	LN813-422	4"×3"	7/16	2-1/8	0.40

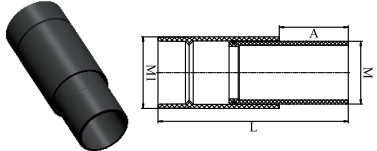
<p>ADJUSTABLE OFFSET FLANGE (HUB)</p> 	Part Number	Size	A	B	C	Weight (Lbs)
	LN820-422	4" ×3"	7/16	4-5/16	1-1/2	0.79

<p>CLOSET FLANGE (FIPT)</p> 	Part Number	Size	A	B	Weight (Lbs)
	LN830-422	4"×3"	7/16	2-1/2	0.58

<p>CLOSET FLANGE (MIPT)</p> 	Part Number	Size	A	B	Weight (Lbs)
	LN831-422	4"×3"	7/16	2-1/2	0.52

ABS DWV Fittings

EXPANSION JOINT (HUB×HUB) 	Part Number	Size	A	L	M	M1	N	Weight (Lbs)
	LNH119-015	1-1/2"	3	10	2-1/4	2-7/16	8-1/2	0.47
	LNH119-020	2"	3	10	2-11/16	2-15/16	8-1/2	0.61
	LNH119-030	3"	2	10-5/8	4	4	7-9/16	1.32
	LNH119-040	4"	8	22-3/8	5	5	18-13/16	3.39

EXPANSION JOINT (HUB×SPG) 	Part Number	Size	A	L	M	M1	Weight (Lbs)	
	LNH119S-030	3"	3-7/8	10-5/8	3-1/2	4	1.29	

FIPT: Female Iron Pipe Thread
MIPT: Male Iron Pipe Thread
Spg: Spigot
SJ: Slip Joint
W/: with

Materials

Virgin black ABS plastic shall conform to the requirements prescribed in Specification D3965 with a cell classification of 32222. The form of the material shall be as agreed upon between the seller and the purchaser in accordance with Specification D3965.

MSDS

SECTION I PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: Guangdong LESSO Technology Industrial Co., LTD.

Address: LESSO Industrial Estate, Longjiang Town, Shunde District, Foshan City, Guangdong(China).
Jiantao Industrial Estate, Taoyuan Town, Heshan City, Guangdong(China).

Phone: +86-757-23888333

Fax: +86-757-23888565

Trade Name: ABS, Acrylonitrile-Butadiene-Styrene **Chemical Name:** ABS/ Styrene Copolymer

SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS#	Weight %	ACGIH TLV	OSHA PEL
Acrylonitrile-Butadiene-Styrene(ABS Resin)	9003-56-9	>70%	None established	None established
Tris(tribromophenyl)cyanurate	25713-60-4	<17%	None established	None established
Antimony Oxide	1309-64-4	<7%	None established	None established

SECTION III HAZARD IDENTIFICATION

Most Important Hazards	None
Adverse Human Health Effects	None
Environmental Effects	None
Physical and Chemical Hazards	None

SECTION IV FIRST AID MEASURES

Inhalation	In case of gases evolving from melted resin, move subject to fresh air. Treat symptomatically.
Skin Contact	In case of pellets or powder, wash with water. In case of melt, wash affected skin area and clothing with plenty of (soap and) water. Seek medical advice.
Eye Contact	In case of pellets or powder, flush with plenty of water for at least 15 minutes. Seek medical advice if any dust particles still remain. In case of gases evolving from melted resin of high temperature, flush with plenty of Water for at least 15 minutes. Seek medical advice if necessary.
Ingestion	Induce vomiting. Rinse mouth with water. Seek medical advice if necessary.

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SECTION V FIRE FIGHTING MEASURES

Extinguishing Media: Water spray, ABC dry chemical, foam, carbon dioxide

Special Fire Fighting Procedure: Fire fighters should be equipped for protection against high heat, depletion of oxygen, heavy smoke and molten plastic.

Unusual Fire and Explosion Hazards: Under burning conditions, ABS will release acrylonitrile, butadiene, Styrene, hydrocarbon fragments, hydrogen cyanide, carbon monoxide and carbon dioxide. The combustion products of ABS like those from other natural and synthetic products must be considered toxic.

SECTION VI ACCIDENTAL RELEASE MEASURES

Mehods for Cleaning up Procedure: Recovery if not contaminated or Disposal

Personal Precautions: Pellets or powder remained on ground may cause slipping

Environmental Precautions: Gather pellets and powder thoroughly to avoid birds or fishes taking from draining water.

SECTION VII HANDLING AND STORAGE

Handling Prevent from fire around handling area. Maintain good housekeeping standards to prevent accumulation of dust. To avoid dust explosion resulting from the existence of powder, electrostatics eliminators and grounding should be fixed to such equipment as air transferring pipes, bag filters and hoppers. Use electrically conductive filters for bag fitters.

Storage Keep the materials at a cool dry place. Protect from direct sunlight, rain and violent temperature fluctuation. Fire is inhibited around storage area.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations. Personal Protective Equipment
Personal Protective Equipment Eye/Face Protection	Use safety glasses. If that is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles.
Skin Protection	No precautions other than clean body-covering clothing should be Needed.
Respiratory Protection	For most conditions, no respiratory protection should be needed however, If handling at elevated temperatures without sufficient Ventilation, use an approved air-purifying respirator. In dusty atmospheres, use an approved dust respirator.
Exposure Guideline(s)	Although some of the additives used in this product may have exposure guidelines, these additives are encapsulated in the product and no exposure would be expected under normal handling conditions.

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SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Opaque, Black, Solid

Melting Point: Softening above 100°C

Odor: No Specific Odor

Specific Gravity(H₂O=1): 1.05

Solubility in Water: Insoluble

Vapor Density: Not Determined

SECTION X STABILITY AND REACTIVITY

(a) Stability: Stable and non-reactive under normal handling and storage condition.

Conditions to Avoid: Not Applicable

(b) Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Not Applicable

(c) Incompatible Materials: None Known

(d) Hazardous Decomposition Products: Hydrogen cyanide, carbon monoxide, carbon dioxide and small amounts of acrylonitrile, butadiene, and styrene.

SECTION XI TOXICOLOGICAL INFORMATION

Irritation: Tetrabromobisphenol A: Slightly irritation to eyes and skin.

Acrylonitrile-butadiene-styrene copolymer: Fumes or vapors generated from decomposing resins may be irritant to eyes.

Acute oral toxicity(LD₅₀): Tetrabromobisphenol A:Weak

Acrylonitrile-butadiene-styrene copolymer: Not determined

Mutagenicity: Tetrabromobisphenol A: Not determined

Acrylonitrile-butadiene-styrene copolymer: Not determined

SECTION XII ECOLOGICAL INFORMATION

To avoid being taken by ocean species or birds, disposal of the waste to the ocean and water sources is inhibited.

SECTION XIII DISPOSAL CONSIDERATIONS

Controlled incineration or landfill according to local, state or national laws and health and pollution. Inadequate incineration may generate toxic gases such as CO, HCN, AN and SM.

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SECTION XIV TRANSPORTATION INFORMATION

Avoid wetting or rough handling so that the packaging will not be damaged. In case the bags are damaged and the pellets are scattered, pay attention so that no one will slip and fall. All of the materials that have spilled shall be rapidly collected.

SECTION XV REGULATORY INFORMATION

None available

Product Physical Characters

ABS COMPOUND CHARACTERS

Property	Requirement	Test Method
Izod Impact, 23°C	210J/m	ASTM D3965
Izod Impact, -30°C	110J/m	
Deflection temperature under load , 1.82MPa	82°C	
Tensile stress at yield point	31.0MPa	
Modulus of elasticity in tension	1650MPa	

ABS DWV FITTING PHYSICAL CHARACTERS(ASTM D2661)

Property	Requirement	Test Method
Tup Impact Test	27J	ASTM D2444
Flattening The minimum load of 750	lbf/ft (11kN/m)	ASTM D2412

ABS DWV FITTING PHYSICAL CHARACTERS(CSA B181.1)

Property	Requirement	Test Method
Chemical Resistance Test	The Maximum Weight Change,0.5%	CSA B181.0
Crush Resistance Test	The Maximum Platen Travel,01 inches	
Dimensional Stability	The Maximum ID Change,10%	
Water Resistance	The Maximum Weight Change,0.5%	

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
A						
Acetaldehyde	Usual technical	-	-	-	-	-
Acetamide 5%	Aqueous	+	+			-
Acetic acid 10%	Aqueous	+				-
Acetic acid 50%	Aqueous	-	-	-	-	-
Acetic acid 80%	Aqueous	-	-	-	-	-
Acetic acid glacial	Usual technical	-	-	-	-	-
Acetic anhydride	Usual technical	-	-	-	-	-
Acetone	Usual technical	-	-	-	-	-
Acetophenone	Usual technical	-	-	-	-	-
Acetyl chloride	Usual technical	-	-	-	-	-
Acrylonitrile	Usual technical	-	-	-	-	-
Adipic acid	Saturated aqueous					-
Alcohol (see note 1)	Usual technical					-
Allyl alcohol	Usual technical	-	-	-	-	-
Allyl chloride	Usual technical	-	-	-	-	-
Alum (s)(see note 2)	Saturated aqueous	+	+	+	-	-
Aluminium chloride	Saturated aqueous	+	+	+	-	-
Aluminium fluoride	Saturated aqueous	+	+	+	-	-
Aluminium hydroxide (see note 3)	Suspended aqueous	+	+	+	-	-
Aluminium nitrate	Saturated aqueous	+	+	+	-	-
Aluminium oxalate (see note3)	Suspended aqueous	+	+	+	-	-
Aluminium sulphate	Saturated aqueous	+	+	+	-	-
Ammonia 35%Sp.gr.=0.88	Aqueous	+	+	+	-	-
Ammonia dry gas	Usual commercial	-	-	-	-	-
Ammonia liquid	Usual commercial	-	-	-	-	-
Ammonium carbonate (see note4)	Saturated aqueous	+				-
Ammonium chloride (see note4)	Saturated aqueous	+	+	+	-	-
Ammonium fluoride (see note4)	Saturated aqueous	+				-
Ammonium hydroxide Sp.gr.=0.88	Aqueous	+	+	+	-	-
Ammonium molybdate	Saturated aqueous	+				-
Ammonium nitrate	Saturated aqueous	+	+	+	-	-
Ammonium persulphate	Saturated aqueous	+	+	+	-	-
Ammonium phosphate(s)	Saturated aqueous	+	+	+	-	-

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Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
Ammonium sulphate	Staturated aqueous	+	+	+	-	-
Ammonium thiocyanate	Staturated aqueous	+	+	+	-	-
n-Amyl acetate	Usual technical	-	-	-	-	-
n-Amyl alcohol	Usual technical	-	-	-	-	-
Aniline	Usual technical	-	-	-	-	-
Animal glue,oils (see note5)	Usual commercial					-
Antifreeze (see note5)	Usual proprietary					-
Antimony trichloride	Staturated aqueous					-
Aqua regia	Usual technical	-	-	-	-	-
Aromatic hydrocarbons	Various blends	-	-	-	-	-
B						
Barium bromide	Staturated aqueous	+	+	+	-	-
Barium carbonate (see note6)	Staturated aqueous	+	+	+	-	-
Barium chloride	Staturated aqueous	+	+	+	-	-
Barium hydroxide	Staturated aqueous	+	+	+	-	-
Barium sulphate (see note6)	Staturated aqueous	+	+	+	-	-
Battery acid Sp.gr=1.18	Aqueous	+	+	+	-	-
Beer	Usual commercial	+				-
Benzaldehyde	Usual technical	-	-	-	-	-
Benzene	Usual technical	-	-	-	-	-
Benzoyl chloride	Usual technical	-	-	-	-	-
Benzyl chloride	Usual technical	-	-	-	-	-
Borax	Staturated aqueous	+	+	+	-	-
Boric acid	Staturated aqueous	+	+	+	-	-
Brake fluids (see note 5)	Usual proprietary					-
Brine (seenote7)	Usual proprietary	+	+	+	-	-
Bromine	Anhydrous liquid	-	-	-	-	-
Bromine water	Staturated aqueous	-	-	-	-	-
Bromine, trace levels	Aqueous, for sterilization	+				-
Butane	Gaseous	+	+	+	-	-
2-Butoxyethanol	Usual technical	-	-	-	-	-
Buttermilk	Usual commercial	+				-
n-Butyl acetate	Usual technical	-	-	-	-	-
n-Butyl alcohol	Usual technical	-	-	-	-	-
n-Butyl acid	Usual technical	-	-	-	-	-

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
C						
Cab O-Sil(see note3)	Suspended aqueous	+	+	+	-	-
Calcium bromide	Staturated aqueous	+	+	+	-	-
Calcium carbonate (see note 6)	Staturated aqueous	+	+	+	-	-
Calcium chloride	Staturated aqueous	+	+	+	-	-
Calcium hydroxide (see note 6)	Usual industrial	+	+	+	-	-
Calcium nitrate	Staturated aqueous	+	+	+	-	-
Calcium oxide (see note 6)	Powder	+	+	+	-	-
Calcium sulphate	Staturated aqueous	+	+	+	-	-
Carbon dioxide	Gaseous	+	+	+	-	-
Carbon disulphide	Liquid	-	-	-	-	-
Carbon monoxide	Gaseous	+	+	+	-	-
Carbon tetrachloride	Usual commercial	-	-	-	-	-
Castor oil	Usual commercial	-	-	-	-	-
Caustic potash 20%	Aqueous	+	+	+	-	-
Caustic Potash	Staturated aqueous	+	+	+	-	-
Caustic soda 20%	Aqueous	+	+	+	-	-
Caustic soda	Staturated aqueous	+	+	+	-	-
Cellosolve	Usual commercial	-	-	-	-	-
Cellosolve acetate	Usual commercial	-	-	-	-	-
Chloral hydrate	Usual technical					-
Chlorine gas (dry) trace levels	Usual industrial	-	-	-	-	-
Chlorine gas (wet)	Usual industrial	-	-	-	-	-
Chlorine liquid	Usual industrial	-	-	-	-	-
Chlorine dioxide, trace levels	Aqueous, for sterilization	-				+
Chlorobenzene	Usual technical	-	-	-	-	-
Chloroform	Usual technical	-	-	-	-	-
Chromic acid (see note 9)	Staturated aqueous	-	-	-	-	-
Cider	Usual commercial	+				-
Citric acid 10%	Aqueous	+	+	+	-	-
Coca-Cola	Usual proprietary	+				-
Copper chloride (s)	Staturated aqueous	+	+	+	-	-
Copper nitrate	Staturated aqueous	+	+	+	-	-
Copper sulphate	Staturated aqueous	+	+	+	-	-
Corn oil	Usual commercial	-	-	-	-	-
Cottonseed oil	Usual commercial	-	-	-	-	-
Creosote	Usual commercial	-	-	-	-	-
Cresol(s)	Usual commercial	-	-	-	-	-

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

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Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
Cutting fluids (see note 5)	Usual industrial					-
Cyclohexane	Usual technical	-	-	-	-	-
Cyclohexanol	Usual technical	-	-	-	-	-
Cyclohexanone	Usual technical	-	-	-	-	-
D						
Dekalin	Usual technical	-	-	-	-	-
Detergents (see note 5)	Usual proprietary					-
Developers, photographic (see note 5)	Usual industrial					-
Dextrins	Saturated aqueous	+	+	+	-	-
Dextrose	Saturated aqueous	+	+	+	-	-
Di-iso-butyl ketone	Usual technical	-	-	-	-	-
Di-n-butyl phthalate	Usual technical					
Dichlorobenzene(s)	Usual technical	-	-	-	-	-
1,2-Dichloroethane	Usual technical	-	-	-	-	-
1,1-Dichloroethylene	Usual technical	-	-	-	-	-
Dichloromethane	Usual technical	-	-	-	-	-
1,2-Dichloropropane	Usual technical	-	-	-	-	-
Diesel	Usual commercial					-
Diethanolamine	Usual technical	+	+	*	-	-
Diethyl ether	Usual technical	-	-	-	-	-
Diethyl phthalate	Usual technical	-	-	-	-	-
Dimethylformamide	Usual technical	-	-	-	-	-
Di-octyl phthalate	Usual commercial	-	-	-	-	-
1,4-Dioxane	Usual technical	-	-	-	-	-
Drinking Water	Usual domestic	+	+	+	-	-
E						
EDTA	Saturated aqueous	+	+	+	-	-
Emulsifiers (see note 5)	Usual proprietary					-
Emulsions photographic (see note 5)	Usual industrial					-
2-Ethoxyethanol	Usual commercial	-	-	-	-	-
2-Ethoxyethyl acetate	Usual commercial	-	-	-	-	-
Ethyl acetate	Usual technical	-	-	-	-	-
Ethyl acrylate	Usual technical	-	-	-	-	-
Ethyl alcohol	Usual technical	-	-	-	-	-
Ethyl chloride	Usual technical	-	-	-	-	-
Ethyl ether	Usual technical	-	-	-	-	-
Ethylene glycol	Usual commercial	+	+	+	-	-
Ethylene oxide	Usual commercial	-	-	-	-	-
Expandite PJ700	Proprietary mastic	+				-

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Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
F						
Fatty acids (see note18)	Usual technical					-
Ferric chloride	Staturated aqueous	-	-	-	-	-
Ferric nitrate	Staturated aqueous	+	+	+	-	-
Ferric sulphate (see note 4)	Staturated aqueous	+				-
Ferrous chloride	Staturated aqueous	+	+	+	-	-
Ferrous sulphate	Staturated aqueous	+	+	+	-	-
Fixing solutions (see note 5)	Usual industrial					-
Fluorine	Pure gas	-	-	-	-	-
Fluosiliclic acid 34%	Aqueous	+	+	+	-	-
Flutec PP3	Usual technical	+				-
Formalin	Usual technical	-	-	-	-	-
Formic acid 3%	Aqueous	+	+	+	-	-
Formic acid 50%	Aqueous	-	-	-	-	-
Formic acid 90%	Usual technical	-	-	-	-	-
Fructose	Usual technical	+	+	+	-	-
Furfural	Usual technical	-	-	-	-	-
Furfuryl alcohol	Usual technical	-	-	-	-	-
G						
Gasoline	Usual commercial	-	-	-	-	-
Gelatin (e)	Usual commercial	+	+	+	-	-
Gypsum (see note6)	Staturated aqueous	+	+	+	-	-

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Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
H						
n-Heptane	Usual technical	-	-	-	-	-
n-Hexane	Usual technical	-	-	-	-	-
Hydrazine (see note 10)	Usual technical					-
Hydrazine hydrate	Usual technical	*				-
Hydrochloric acid 10%	Aqueous	+	+	+	-	-
Hydrochloric acid 30%	Aqueous	+	+	*	-	-
Hydrochloric acid 37%	Aqueous					-
Hydrochloric acid 40%	Aqueous					-
Hydrochloric acid 60%	Aqueous					-
Hydrofluoric acid anhydrous	anhydrous					-
Hydrogen	Gaseous	+	+	+	-	-
Hydrogen peroxide 3%	10 vols aqueous	+			-	-
Hydrogen peroxide 3%	100 vols aqueous					-
Hydrogen sulphide	Gaseous	*				-
Hypochlorous acid 14%	14% AV Chloride	-	-	-	-	-
I						
IMS	Usual industrial	-	-	-	-	-
Ink (see note 5)	Usual industrial					-
Iodine, tincture of	Usual commercial	-	-	-	-	-
Iron salts (see note 19)	Usual technical					-
Kerosene	Usual commercial					-
L						
Lactic acid 10%	Aqueous					-
Lactic acid 75%	Aqueous	-	-	-	-	-
Lanolin	Usual commercial	+	+	+	-	-
Latex, natural	Unadulterated emulsion	+				-
Latex, synthetic (see note 5)	Emulsion					-
Lead acetate	Saturated aqueous	+	+	+	-	-
Lemon juice	Usual commercial	+	+	+	-	-
Lemonade	Usual commercial	+				-
Lemonade	Powder	+	+	+	-	-
Linseed oil	Raw or boiled	-	-	-	-	-

NOTE: DO NOT USE OR TEST THE PRODUCTS IN THIS CATALOG WITH COMPRESSED AIR OR OTHER GASES. FAILURE TO FOLLOW THIS WARNING CAN RESULT IN PERSONAL INJURY OR DAMAGE TO PROPERTY.

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
M						
Magnesium carbonate (see note 6)	Staturated aqueous	+	+	+	-	-
Magnesium chloride	Staturated aqueous	+	+	+	-	-
Magnesium hydroxide (see note 6)	Staturated aqueous	+	+	+	-	-
Magnesium nitrate	Staturated aqueous	+	+	+	-	-
Magnesium sulphate	Staturated aqueous	+	+	+	-	-
Mercuric chloride	Staturated aqueous	*				-
Mercurous nitrate	Staturated aqueous	*	*	*	-	-
Mercury	Metallic liquid	+				-
Mesityl oxide	Usual technical	-	-	-	-	-
Metallic soaps	Suspended aqueous	+	+	+	-	-
Methane	Landfill gas	*				-
Methyl acetate	Usual technical	-	-	-	-	-
Methyl alcohol	Usual technical	-	-	-	-	-
Methyl carbitol	Usual commercial	-	-	-	-	-
Methyl cellosolve	Usual commercial	-	-	-	-	-
Methyl ethyl ketone	Usual technical	-	-	-	-	-
Methyl-iso-but yl ketone	Usual technical	-	-	-	-	-
Methyl methacrylate	Usual technical	-	-	-	-	-
Methylated spirits (industrial)	Usual commercial	-	-	-	-	-
Milk	From any animal	+	+	+	-	-
Mineral oil (see note 11)	Usual proprietary					-
Molasses	Usual commercial	+	+	+	-	-
MSG	Suspended aqueous	+	+	+	-	-
N						
Naphtha	Usual commercial	-	-	-	-	-
Nickel chloride	Suspended aqueous	+	+	+	-	-
Nickel nitrate	Suspended aqueous	+	+	+	-	-
Nickel sulphate	Suspended aqueous	+	+	+	-	-
Nitric acid, fuming	Nitric acid, fuming	-	-	-	-	-
Nitric acid, 10%	Usual technical	+				-
Nitric acid, 40%	Usual technical	-	-	-	-	-
Nitric acid, 50%	Usual technical	-	-	-	-	-
Nitric acid, 70%	Usual technical	-	-	-	-	-
Nitrobenzene	Usual technical	-	-	-	-	-
Nitrotoluene	Usual technical	-	-	-	-	-

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
O						
Oleic acid	Usual technical	-	-	-	-	-
Olive Oil	Usual commercial	-	-	-	-	-
Orange juice	Usual commercial	+	+	+	-	-
Oxalic acid	Suspended aqueous	+	*	*	-	-
Oxygen	Gaseous	+	+	+	-	-
Ozone, trace levels	Aqueous, for sterilization	+				-
P						
Paint(see note5)	Usual proprietary					-
Paraffin(Liquie)	Usual technical	+	+	+	-	-
Paraffin fuel	Usual commercial					-
n-Pentane	Usual technical	-	-	-	-	-
Pepsi-cola	Usual proprietary	+				-
Peracetic acid, trace levels	Aqueous, for sterilization	+				-
Perfume (see note 5)	Usual commercial					-
Peroxyacetic acid,Trace levels	Aqueous, for sterilization	+				-
Petrol	Usual commercial	-	-	-	-	-
Petroleum	Natural crude	-	-	-	-	-
Petroleum ether	Boiling30-90°C	-	-	-	-	-
Petroleum jelly	Usual commercial	+				-
Phosphoric acid 85%	Usual technical	-	-	-	-	-
Plaster or Paris (see note 6)	Staturated aqueous	+	+	+	-	-
Plasticizers (see note 12)	Usual industrial					-
Polish (see note 5)	Usual proprietary					-
Potable water	Usual domestic	+	+	+	-	-
Potash	Staturated aqueous	+	+	+	-	-
Potassium bicarbonate	Staturated aqueous	+	+	+	-	-
Potassium bisulphate	Staturated aqueous	+	+	+	-	-
Potassium bisulphate	Staturated aqueous	+	+	+	-	-
Potassium bromate (see note 13)	Staturated aqueous	+	+	+	-	-
Potassium bromide (see note 14)	Staturated aqueous	+	+	+	-	-
Potassium carbonate	Staturated aqueous	+	+	+	-	-
Potassium chlorate	Staturated aqueous	+	+	+	-	-
Potassium chloride	Staturated aqueous	+	+	+	-	-
Potassium cyanide	Staturated aqueous	+	+	+	-	-

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
Potassium dichromate	Staturated aqueous	+	+	+	-	-
Potassium ferricyanide	Staturated aqueous	+	+	+	-	-
Potassium ferrocyanide	Staturated aqueous	+	+	+	-	-
Potassium fluoride	Staturated aqueous	+	+	+	-	-
Potassium hydroxide20%	Staturated aqueous	+	+	+	-	-
Potassium hydroxide	Staturated aqueous	+	+	+	-	-
Potassium iodate (see note 15)	Staturated aqueous	+	+	+	-	-
Potassium iodate (see note 16)	Staturated aqueous	+	+	+	-	-
Potassium metaborate	Staturated aqueous	+	+	+	-	-
Potassium nitrate	Staturated aqueous	+	+	+	-	-
Potassium permanganate	Staturated aqueous					-
Potassium persulphate	Staturated aqueous	+	+	+	-	-
Potassium sulphate	Staturated aqueous	+	+	+	-	-
Potassium sulphite	Staturated aqueous	+	+	+	-	-
Potassium thiosulphate	Staturated aqueous	+	+	+	-	-
Propionic acid	Usual technical	-	-	-	-	-
iso-Propyl acid	Usual technical					-
Propylene glycol	Usual technical	+	+	+	-	-
Pyridine	Usual technical	-	-	-	-	-
R						
Rectified spirit	Usual commercial	-	-	-	-	-
Refrigerant 22	Usual commercial	-	-	-	-	-

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
S						
Saltpetre	Saturated aqueous	+	+	+	-	-
Sea water	From anywhere	+	+	+	-	-
Slaked lime (see note 6)	Saturated aqueous	+	+	+	-	-
Soda water	Usual commercial	+				-
Sodium acetate	Saturated aqueous	+	+	+	-	-
Sodium aluminate	Saturated aqueous	+	+	+	-	-
Sodium benzoate	Saturated aqueous					-
Sodium bicarbonate	Saturated aqueous	+	+	+	-	-
Sodium bisulphate	Saturated aqueous	+	+	+	-	-
Sodium bisulphite	Saturated aqueous	+	+	+	-	-
Sodium bromate (see note 13)	Saturated aqueous	+	+	+	-	-
Sodium bromide (see note 14)	Saturated aqueous	+	+	+	-	-
Sodium carbonate	Saturated aqueous	+	+	+	-	-
Sodium chlorate	Saturated aqueous	+	+	+	-	-
Sodium chloride	Saturated aqueous	+	+	+	-	-
Sodium cyanide	Saturated aqueous	+	+	+	-	-
Sodium dichromate	Saturated aqueous	+	+	+	-	-
Sodium ferrocyanide	Saturated aqueous	+	+	+	-	-
Sodium fluoride	Saturated aqueous	+	+	+	-	-
Sodium hydroxide 20%	Aqueous	+	+	+	-	-
Sodium hydroxide	Saturated aqueous	+	+	+	-	-
Sodium hypochlorite 14%	14% AV Chloride	-	-	-	-	-
Sodium iodide (see note 16)	Saturated aqueous	+	+	+	-	-
Sodium metabisulphite	Saturated aqueous	+	+	+	-	-
Sodium metaborate (see note 17)	Saturated aqueous	+	+	+	-	-
Sodium nitrate	Saturated aqueous	+	+	+	-	-
Sodium nitrite	Saturated aqueous	+	+	+	-	-
Sodium nitrite	Saturated aqueous	+	+	+	-	-
Sodium phosphate (s)	Saturated aqueous	+	+	+	-	-
Sodium silicate	Saturated aqueous	+	+	+	-	-

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
Sodium sulphate	Staturated aqueous	+	+	+	-	-
Sodium sulphite	Staturated aqueous	+	+	+	-	-
di-Sodium tetraborate	Staturated aqueous	+	+	+	-	-
Sodium thiosulphate	Staturated aqueous	+	+	+	-	-
Soft soap	Emulsified in water	+	+	+	-	-
Spindle oil (see note 5)	Usual industrial					-
Stannic chloride	Staturated aqueous					-
Stannous chloride	Staturated aqueous					-
Starch	Staturated aqueous	+	+	+	-	-
Steam	Usual industrial	-	-	-	-	-
Stearic acid (see note3)	Staturated aqueous	+	+	+	-	-
Stoddard solvent	Usual industrial	-	-	-	-	-
Sulphamic acid	Staturated aqueous	+	+	+	-	-
Sulphur (see note 3)	Suspended aqueous	+				-
Sulphur dioxide gas (dry)	Usual technical					-
Sulphur dioxide gas (wet)	Usual technical	-	-	-	-	-
Sulphur dioxide liquid	Usual technical	-	-	-	-	-
Sulphuric acid 10%	Aqueous	+	+	+	-	-
Sulphuric acid 30%	Aqueous	+	+	+	-	-
Sulphuric acid 50%	Aqueous	+		-	-	-
Sulphuric acid 70%	Aqueous	-	-	-	-	-
Sulphuric acid 90%	Aqueous	-	-	-	-	-
Sulphuric acid 95%	Aqueous	-	-	-	-	-
Sulphuric acid 98%	Aqueous	-	-	-	-	-
Sulphuric acid, Oleum	Usual technical	-	-	-	-	-
Surfactants (see note 18)	Usual proprietary					-

TECHNICAL MANUAL

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
T						
Tannin 10%	Aqueous					-
Tartaric acid	Saturated aqueous	+	+	+	-	-
1,1,2,2-Tetrachloroethane	Usual technical	-	-	-	-	-
Tetrahydrofuran	Usual technical	-	-	-	-	-
Tetralin	Usual technical	-	-	-	-	-
Thionyl chloride	Usual technical	-	-	-	-	-
Toluene	Usual technical	-	-	-	-	-
Tomato Juice	Usual commercial	+				-
Transformer oil (see note 5)	Usual industrial					-
Tri-n-butyl phosphate	Usual technical	-	-	-	-	-
Trichlorobenzene(s)	Usual technical	-	-	-	-	-
Trichloroethylene	Usual technical	-	-	-	-	-
Tricresyl phosphate	Usual industrial	-	-	-	-	-
Turpentine	Usual commercial	-	-	-	-	-
U						
Urea	Saturated aqueous	+	+	+	-	-
Uric acid (see note 3)	Suspended aqueous	+	+	+	-	-
V						
Vaseline	Usual technical	+	+	+	-	-
Vinegar	Usual commercial	+				-
Vinoleo 77/14	Proprietary grease	+	+	+	-	-
Vinyl acetate	Usual industrial	-	-	-	-	-
W						
Water	Technical/ Domestic & Ultra Pure	+	+	+	-	-
Water glass	Saturated aqueous	+	+	+	-	-
Wetting agents (see note 5)	Usual proprietary					-
White spirit	Usual commercial	-	-	-	-	-

Product Chemical Resistance Information

Chemical & Concentration	Usage	20°C (68°F)	40°C (104°F)	60°C (140°F)	80°C (176°F)	100°C (212°F)
X						
Xylene	Usual technical	-	-	-	-	-
Y						
Yeast	Suspended aqueous	+				-
Z						
Zinc bromide 40%	Aqueous	+				-
Zinc bromide 60%	Aqueous	-	-	-	-	-
Zinc chloride (see note 6)	Staturated aqueous	+	+	+	-	-
Zinc chloride 40%	Aqueous	+				-
Zinc chloride 60%	Aqueous	-	-	-	-	-
Zinc nitrate	Staturated aqueous	+	+	+	-	-
Zinc oxide (see note 6)	Staturated aqueous	+	+	+	-	-
Zinc phosphate (s) (see note 3)	Suspended aqueous	+	+	+	-	-
Zinc sulphate	Staturated aqueous	+	+	+	-	-

+Resistant *Likely to be Resistant -Not Resistant □No data available

Product Chemical Resistance Information

These notes are to be readed in conjunction with the Chemical Resistance tables:

1. See under Allyl, Amyl, Butyl, Ethyl, Furfuryl, Methyl, or iso-Propyl
2. These are compounds whose general formula is either $(R1)2SO4(R2)2(SO4)6.24 H2O$ or $(R1)(R2)(SO4)2. 12 H2O$, where R1 represents an atom of Potassium, Sodium, Ammonium, Rubidium, Caesium, Silver, or Thallium; and R2 represents an atom of Aluminium, Iron, Chromium, Manganese or Thallium.
3. This substance is insoluble in pure water. If conveyed aqueous it would always be in the form of a suspension.
4. This substance decomposes in hot water.
5. Substances which are generally categorized can have widely variable compositions, and therefore each needs to be tested for suitability.
7. Solutions other than sea water and aqueous Sodium chloride should be for suitability tests.
8. This substance is sparingly soluble in water, which then reacts with it.
9. A solution of Chromium trioxide in water, often produced by the action of concentrated Sulphuric acid on Sodium dichromate.
10. This substance is explosive and would not normally be considered suitable for conveyance in plastic pipework.
11. Oils can contain variable amounts of aromatic hydrocarbons and additives.
12. Most plasticizers are not suitable for conveyance in plastics.
13. Not for conveyance in the presence of Bromide.
14. Not for conveyance in the presence of Bromate.
15. Not for conveyance in the presence of Iodide.
16. Not for conveyance in the presence of Iodate.
17. The substance decomposes in cold water.
18. Some of this group of chemicals could be very aggressive towards plastics and rubbers, but others would be quite harmless.
19. See under either Ferrous or Ferric.

Handling and Storage

Handling

The fittings should be handled with reasonable care. Because thermoplastic product is more lighter in weight than metal product, there is sometimes a tendency to throw it around. This should be avoided. Removing and handling pallets of product should be done with a forklift. Fittings must not fall or be thrown off the truck or into the trench, which perhaps leads to damage such as rupture, scatches, splits. Any damaged fittings must be discarded. In all cases, severe contact with any sharp objects(rocks, angle irons, forks on forklifts, etc.) should be avoided. Besides, all ABS products should be handled at cool and dry place.

Storage

Fittings should be stored in their original cartons to keep them free of dirt and reduce the potential damage. If possible, fittings should be stored indoors.

Solvent Cement Joint Procedure

1. Solvent Cement—Use only solvent cement designed for ABS. Use a solvent cement meeting the requirements of Specification D2235.
 - 1.1 Application of Cement—Using the applicator supplied with the can of solvent cement, or a brush or roll with a width of about one half the pipe diameter for pipe sizes above 2 in. (51 mm), apply a moderate, even coating of cement in the fitting socket to cover only the surfaces to be joined. Heavy or excessive application of solvent cement may become an obstruction in the pipe and prevent satisfactory joining. Quickly apply a heavy coat of solvent cement to the outside of the pipe. Make sure that the coated distance on the pipe is equal to the depth of the fitting socket.
2. Assembly—Make the joint as quickly as possible after application of the solvent cement and before the solvent cement dries. Should the solvent cement dry partially before the joint is made up, reapply solvent cement before assembling. Insert the pipe into the fitting socket, making sure that the pipe is inserted to the full depth of the fitting socket. Hold the joint together firmly for about 30 s for small diameter pipe and 60 s for diameters above 6 in. (152 mm) to avoid push-out. Remove excessive solvent cement from the exterior of the joint with a clean, dry cloth.
3. Set Time—Do not attempt to disturb the pipe and fitting joint until after the solvent cement has set, or damage to the joint and loss of fit may result. Reasonable handling of assembly is permissible within 2 min after joining. Allow 15 min for the joint to develop good handling strength and the joint will withstand the stresses of normal installation. A badly misaligned installation will cause excessive stresses in the joint, pipe, and fittings and constitutes a plumbing code violation and should be avoided. The recommendation of the solvent cement manufacturer should be followed for best results.
4. Cure Time—Joint strength development is very rapid during periods of high ambient temperatures, low relative humidity, and using interference-type fittings. Joint strength development is not as rapid during periods of low ambient temperatures, high relative humidity, and using loose fits. Therefore, the recommendations of the solvent cement manufacturer should be followed for best results prior to leak testing.

Solvent Cement Joint Procedure

RECOMMENDED INITIAL SET TIME

Temperature Range/Nominal Pipe Size	1/2"-1 1/4"	1 1/2"-2"	2 1/2"-8"
16-38°C/60-100°F	2min	5min	30min
5-16°C/40-60°F	5min	10min	2h
-10-5°C/0-40°F	10min	15min	12h

Note: Initial set schedule is the necessary time to allow before the joint can be carefully handled.
In damp or humid weather allow 50% more set time.

RECOMMENDED JOINT CURING TIME

Relative humidity≤60%/ Nominal Pipe Size	1/2"-1 1/4"		1 1/2"-2"		2 1/2"-8"	
	≤1.1MPa	≤1.1-2.5MPa	≤1.1MPa	≤1.1-2.5MPa	≤1.1MPa	≤1.1-2.5MPa
Temperature Range during assembly and cure periods						
16-38°C/60-100°F	15min	6h	30min	12h	1.5h	24h
5-16°C/40-60°F	20min	12h	45min	24h	4h	48h
-10-5°C/0-40°F	30min	48h	1h	96h	72h	8days

Note : Joint cure schedule is the necessary time to allow before pressurizing system.
In damp or humid weather allow 50% more cure time.

The above data are based on laboratory tests and are intended as guidelines. For more specific information, contact should be made with cement manufacturer.

Special Consideration in Installation and safety precautions

1. Solvent cements generally have several years shelf life depending on the manufacturer. Always check the shelf life and the date of manufacture before the solvent cements are used.
2. Because the ABS solvent cements are flammable substances and has pungent odor, fireworks is strictly prohibited at the construction site and its vicinity. Meanwhile, keep the air in circulation.
3. Solvent cement are composed of volatile solvents and require special conditions for storage. Because of the flammability, they must not be stored in an area where they might be exposed to ignition, heat, sparks or open flame.
4. Solvent cements avoids contact with the skin, in case of eye contact, flush repeatedly with water if it occurs.
5. Keep out of reach of Children with solvent cements.
6. Construction environment should be kept dry. It is not appropriate that operate in a humid environment. Wipe the pipe orifice with dry cloth to keep it being dry.
7. All the brush, cotton and other goods should be clean, no grease and dirty.
8. Solvent cement and detergent should be sealed after used, to prevent evaporation.
9. Technical Data that the ABS pipe manufacturers provide should be strictly observed.

Limited Warranty

Except as otherwise mandated by law, LESSO America warrants to Buyer only that the Products directly manufactured by LESSO America will be free from defects in material and workmanship for a period of three years from the date of installation. Buyer agrees that this warranty shall be effective so long as the Products are used solely for the normal purposes for which they are intended and in conformity with industry established engineering, installation, operating, and maintenance specifications, recommendations and instructions. Violation thereof shall void this warranty and relieve LESSO America from any obligation under this warranty.

LESSO America may modify at any time design of products or materials used therein or discontinue their manufacture without any liability.

LESSO America shall not assume responsibility, and expressly disclaims any liability, due to Buyer's, any installer's or end user's failure to comply with such specifications, recommendations and instructions, including, but not limited to, damage due to improper control of system hydraulics, improper winterization procedures, improper voltage supply, contact with incompatible materials or chemicals, excavation/digging, excessive weight, temperature shocking, U.V.degradation, vibration and vandalism. LESSO America shall not be liable for damages due to any acts of nature including, but not limited to, lightning, earthquakes, ground movement, frost heave, floods, or any other event of force majeure.

Buyer shall notify LESSO America of any alleged defects within 48 hours of discovery of any alleged defect and within three years' warranty period. LESSO America is not liable for any warranty claim if such notice is not provided. After the examination of the returned products, if the goods are determined to be defective in materials or workmanship directly provided by LESSO America, LESSO America will, at its sole option, may either repair or replace the defective Products, or reimburse Buyer for the cost of such Products. This shall be Buyer's only remedy. All costs of shipping such questionable Products and any replacements thereof to and from LESSO America's facility shall be borne by Buyer.

THIS LIMITED WARRANTY REPLACES ALL OTHER ORAL OR WRITTEN WARRANTIES, LIABILITIES OR OBLIGATIONS OF LESSO America . THIS WARRANTY MAY NOT BE EXTENDED, ALTERED OR OTHERWISE MODIFIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY COMPANY. BY ITS ACCEPTANCE OF THE PRODUCTS, CUSTOMER HEREBY SPECIFICALLY AND EXPRESSLY WAIVES ALL OTHER LIABILITY OR OBLIGATION OF ANY KIND OR CHARACTER OF COMPANY, INCLUDING WITHOUT LIMITATION LIABILITY PREDICATED UPON STRICT LIABILITY OR TORT, AND ALL DAMAGES AND LOSSES AS A RESULT THEREOF, INCLUDING BUT NOT LIMITED TO ALL KNOWN, UNKNOWN, FORESEEABLE, UNFORESEEABLE, ABSOLUTE, CONTINGENT, LIQUIDATED, NON-LIQUIDATED, COMPENSATORY, GENERAL, SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES, AND WITH RESPECT TO THE PRODUCTS, THEIR RETURN, REPAIR, RESTORATION AND REPLACEMENT.

Buyer agrees that LESSO America will not be responsible for other parts or labor in connection with repairing, replacing, or returning such Products while Products are in possession of LESSO America for analysis, nor for any delays beyond LESSO America's reasonable control(including, with limitation, delays due to unavailability of materials, equipment, other supplies or labor, strikes, governmental regulation etc.), provided that any delay shall toll the warranty period for the same amount of time as the delay itself. In no event shall LESSO America be liable for consequential or incidental damages of any kind, including any damage to any property, building, its contents or any person therein, resulting from the breach of this warranty.

LESSO

CHINA LESSO GROUP HOLDINGS LIMITED

(Hong Kong Listed Stock Code: 2128)

www.lesso.com

LESSO AMERICA, INC.

Add: 1010 Railroad Street, Corona, CA, 92882 United States

Tel: (951) 547-6888

Fax: (951) 547-6886

Toll free: (888) 988-8839

Web: www.lessoamerica.com

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