

**MAXFLEX<sup>®</sup>**  
ฉนวนยางคุณภาพระดับสากล

**FR**



# MAXFLEX FR

**MAXFLEX FR** is available as tube insulation, pre-cut sheet, standard flat sheet and sheet roll. MAXFLEX FR is made from light weight elastomeric material, EPDM (ETHYLENE PROPYLENE RUBBER) design for thermal insulation usage which is CFCs free, HFCs Free, and O.D.P. Zero.

**MAXFLEX FR** is an ideal thermal insulation to prevent condensation problems on chilled water pipes, air duct systems, refrigerant lines and also to against frost formation.

**MAXFLEX FR** is non-fibrous, non-asbestos, non-formaldehyde contents and odorless. It is superior for air duct systems. It has been favored over the fibrous insulation material because of the possible health hazards and dangers caused by the loose particles of fibrous materials into air vents.

In addition to the well-known performance of **MAXFLEX FR**, the result is a product of high quality, energy saving, long lasting protection, condensation control and which helps minimize mold growth.

**MAXFLEX FR** can be used for both as interior or exterior insulating materials of air duct systems. MAXFLEX FR can be safely used without causing skin irritation and its flexibility makes installation work easy and neat. MAXFLEX FR is merchandized in ready-to-use Pressure Sensitive Adhesive and Aluminum foil surfaces.

**Better Temperature Control & Energy Conservation:** Molecular structure of MAXFLEX FR is characterized by a large number of fine cross-linked closed cells which provides effective reduction of heat loss from indoor and outdoor air ducting systems. It also reduces waste of energy by higher heat gain into the cooling systems.

**Prevent Condensation Problems:** Excellent moisture and vapor resistance due to its dense surface and the closed cell structure.

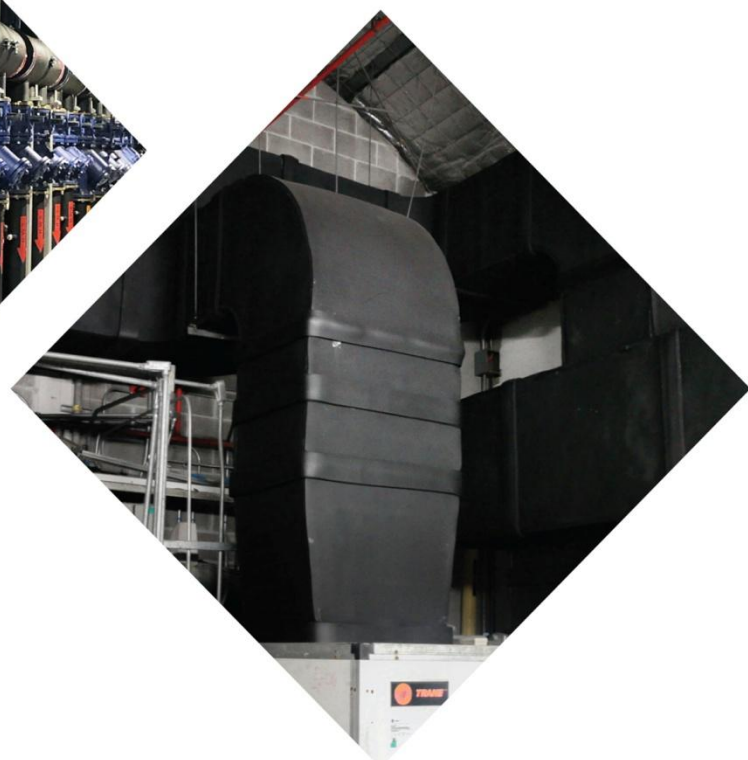
**Durable:** Outstanding Ozone/UV and Weather resistance attributes provide superior resistance against moisture, fungus growth, vermin and rodent pest.

**Excellent Sound Absorption and Noise Reduction:** Acting as a vibration damper and serve as outer shield, MAXFLEX FR greatly reduces noise from mechanical equipment, as well as noise from cross-talk and air movement.

**Excellent and Safety Fire Performance (Fire retardant):** MAXFLEX FR is complied with most international smoke and flammability standards.

**Easy to install:** Outstanding flexibility for quick and easy installation gives the finished insulation a neat aesthetic appearance. No coating is needed on most indoor usage.

**Long year service of stable and low thermal conductivity value (K-Value).**



**MAXFLEX® FR SPECIFICATION**

Physical Properties		Maxflex® FR								Test Method
Material		EPDM Blend with additive								TGA / DSC
Cell Structure / Flexibility		Closed Cell / Excellent								-
Density		3-6 lbs/ft <sup>3</sup> (48-96 kg/m <sup>3</sup> )								ASTM D1667
Thermal Conductivity	Mean	-40°F	-22°F	-4°F	32°F	75°F	90°F	104°F	122°F	ASTM C177
	Temp.	(-40°C)	(-30°C)	(-20°C)	(0°C)	(24°C)	(32°C)	(40°C)	(50°C)	ASTM C518
BTU.In/ft <sup>2</sup> .hr.°F (W/m.K)	K Value	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	DIN 52613
		0.029	0.030	0.031	0.033	0.035	0.037	0.038	0.039	EN ISO 8497
Service Temperature *		-57°C to 125°C								Maxflex become hard at -57°C
- Maximum service Temperature		-70°F to 257°F								but can be use even at -200°C
		can withstand temperature as high as 125°C								ASTM C411
Ozone Resistance		No Crack								ASTM D1171
UV Resistance		No Crack								ASTM G154
Water Absorption		≤ 1.5% by Weight								ASTM D1056
		≤ 0.05% by Volume								ASTM C209
Water Vapor Diffusion Resistance (μ Value)		μ ≥ 12,000								DIN 52615
Water Vapor Permeability ** (g/Pa.s.m)		≤ 0.10 perm-in (0.94x10 <sup>-10</sup> )								ASTM E96
Anti Microbial, Fungus Resistance		Compliance with requirement								ASTM E2180, ASTM G21
Heat Stability (% Shrinkage) at 200°F (7 Days)		≤ 3.5 % Respectively								ASTM C534
Fire Performance (Fire Retardant)		Class V0								UL 94
		FM Approved								FM Approval
		Self-Extinguishing								ASTM D635
		B2								DIN 4102
		0, 0, 0, 5								AS 1530.3
		Compliance with requirement								NFPA 90A & NFPA 90B
- Flame spread / Smoke Developed		2.5/50								ASTM E84
- Reaction to Fire		Compliance with Euro Class E								EN ISO 11925
- Fire Index		Index 5.3								EMPA SWISSI
Surface spread of flame		Class M1								FRANCE AFNOR NF P92 501
		Class 1								BS 476 Part 7
Fire Propagation		Class 0								BS 476 Part 6
- Total Index of Performance (I)		Less than 12								
- Sub Index (i)		Less than 6								
Smoke Toxicity		Satisfies max allowable concentration for the following combustion gases CO, HCl, HF, HBr, HCN, NO <sub>x</sub> , SO <sub>2</sub>								ISO 5659-2:2017
- Smoke Density		D <sub>m</sub> ≤ 100								
		Compliance with requirement								International Marine Organization (IMO)
RoHS Test		Compliance with requirement								Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU and its amendment Directive (EU)2015/863
Nitrosamine Content		Not detected								BS EN 12868
Ozone Depleting Substances(ODS) - CFCs, HCFCs		Not detected								USEPA502.1A/82.60C
Formaldehyde Content		Not detected								ISO 17226-1
Asbestos / Dust & Fiber		Not detected								EPA600/R
Odour Test at 23°C, 40°C		Grade1.5, Grade2.0								FLTM BO 131-03
Corrosion of Copper and Stainless Steel		Non Corrosive								DIN 1988
Noise Reduction		Max. 36.3 dB(A)								DIN 52219 (19 mm. Thickness)

**Note:** \* For applications at a temperature lower than -57°C, MAXFLEX FR becomes hard but it does not affect thermal conductivity nor water vapor permeability. For heating applications, MAXFLEX FR can withstand up to +125°C heat continuously. Outdoor applications should be clad with metal sheets, aluminum, and stainless steel, etc, or painted with 2-3 layers of Maxcoat.

\*\* Water Vapor Permeability test was done under test method ASTM E96 dehydration test at 37.8°C and average value is 0.94x10<sup>-10</sup> g/Pa.s.m.

**Sound Absorption Coefficient at Frequency**

Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1"(25mm)	0.23	0.42	0.56	0.66	0.76	0.45	0.60

# MAXFLEX FR

## For Hot Water Piping and Solar Energy Heating Systems

MAXFLEX FR is very effective in reducing heat loss from indoor and outdoor hot water piping systems. Due to its outstanding ozone/UV and weather resistance property, it proves to be the best insulation for outdoor pipe line of the solar energy heating system. MAXFLEX FR contains no asbestos, no dust and fiber free. So, it is safe when being installed in places where hygiene is vital. This is one among many reasons why this product is widely selected and accepted as a replacement for the fibrous insulation material for hot water piping systems in hotels, hospitals, residential and industrial applications. It is also highly efficient in safe guarding against frost formation inside the water pipes as the information dramatically delays the time water cool down and reach freezing temperature while shut-off the heating systems. MAXFLEX FR is the ideal insulation material for hot water pipes due to the following characteristics.

- It can be use applicable continuously at 125°C (275°F for standard) and high temperature to 170°C (338°F in Hi-temp)
- Good Ozone, UV and weather resistance when being used outdoor.
- Stable and low thermal conductivity value throughout the service life.
- Very low water absorption and water vapor transmission.
- Flexibility, easy installation. Do not need any jacketing or protection even being used to insulate the piping.

Thickness Recommendation for Hot Water Piping, Storage and Solar Heating System.																	
PIPE SIZE		Condition: Ambient 35°C, Surface Temperature 40°C, Still air, Bare insulation.															
		Operating Temperature (°C)															
mm.	inch	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125
		Thickness recommend (mm)															
6	1/4	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
9	3/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
13	1/2	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
16	5/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
19	3/4	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
22	7/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
25	1	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
28	1-1/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
32	1-1/4	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
35	1-3/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
38	1-1/2	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
42	1-5/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
45	1-3/4	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
48	1-7/8	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
51	2	9	13	19	19	25	25	25	32	32	32	38	38	38	50	50	50
54	2-1/8	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
57	2-1/4	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
60	2-3/8	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
64	2-1/2	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
67	2-5/8	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
73	2-7/8	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
76	3	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	50
80	3-1/8	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	59
83	3-1/4	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	59
90	3-1/2	9	13	19	19	25	25	25	32	32	32	38	38	50	50	50	59
92	3-5/8	9	13	19	19	25	25	32	32	32	32	38	38	50	50	50	59
98	3-7/8	9	13	19	19	25	25	32	32	32	32	38	38	50	50	50	59
102	4	9	13	19	19	25	25	32	32	32	32	38	38	50	50	50	59
105	4-1/8	9	13	19	19	25	25	32	32	32	38	38	50	50	50	50	59
115	4-1/2	9	13	19	19	25	25	32	32	32	38	38	50	50	50	50	59
130	5-1/8	9	13	19	19	25	25	32	32	32	38	38	50	50	50	50	59
140	5-1/2	9	13	19	19	25	25	32	32	32	38	38	50	50	50	50	59
165	6-1/2	9	13	19	19	25	25	32	32	32	38	38	50	50	50	50	59
Storage Tank		13	19	19	25	25	32	32	32	38	38	50	50	50	50	59	63

Maxflex FR for operating temperature ≤ 100°C and Maxflex Hi-Temp for operating temperature >100°C.

**MAXFLEX FR Insulation Tube : 2meter Length/Piece (Quantity : Meters/Carton)**

ID of MAXFLEX FR Tube		Pipe Size : mm. (inch)				Products Code									
mm.	inch	Copper	Iron	PPR	PVC	6 mm.wall (1/4")	9 mm.wall (3/8")	13 mm.wall (1/2")	19 mm.wall (3/4")	25 mm.wall (1")	32 mm. wall (1-1/4")	38 mm.wall (1-1/2")	50 mm.wall (2")		
6	1/4"	6				MF06x06FR (496)	MF09x06FR (352)	MF13x06FR (200)							
9	3/8"	9				MF06x09FR (364)	MF09x09FR (266)	MF13x09FR (172)	MF19x09FR (98)						
13	1/2"	13	6 (1/4"IPS)		6	MF06x13FR (316)	MF09x13FR (234)	MF13x13FR (162)	MF19x13FR (88)	MF25x13FR (54)					
16	5/8"	16	9 (3/8"IPS)		9	MF06x16FR (266)	MF09x16FR (192)	MF13x16FR (136)	MF19x16FR (78)	MF25x16FR (52)	MF32x16FR (34)	MF38x16FR (24)			
19	3/4"	19				MF06x19FR (220)	MF09x19FR (166)	MF13x19FR (118)	MF19x19FR (72)	MF25x19FR (50)	MF32x19FR (32)	MF38x19FR (22)	MF50x19FR (12)		
22	7/8"	22	13 (1/2"IPS)	20 (1/2")	13	MF06x22FR (180)	MF09x22FR (136)	MF13x22FR (98)	MF19x22FR (64)	MF25x22FR (42)	MF32x22FR (32)	MF38x22FR (20)	MF50x22FR (12)		
25	1"		19 (3/4"IPS)	25 (3/4")			MF09x25FR (108)	MF13x25FR (80)	MF19x25FR (50)	MF25x25FR (40)	MF32x25FR (30)	MF38x25FR (18)	MF50x25FR (12)		
28	1-1/8"	28			19		MF09x28FR (98)	MF13x28FR (78)	MF19x28FR (48)	MF25x28FR (40)	MF32x28FR (24)	MF38x28FR (18)	MF50x28FR (12)		
32	1-1/4"			32 (1")			MF09x32FR (92)	MF13x32FR (64)	MF19x32FR (38)	MF25x32FR (28)	MF32x32FR (24)	MF38x32FR (16)	MF50x32FR (10)		
35	1-3/8"		25 (1"IPS)		25		MF09x35FR (84)	MF13x35FR (58)	MF19x35FR (36)	MF25x35FR (24)	MF32x35FR (22)	MF38x35FR (16)	MF50x35FR (10)		
38	1-1/2"						MF09x38FR (78)	MF13x38FR (52)	MF19x38FR (34)	MF25x38FR (22)	MF32x38FR (16)	MF38x38FR (14)	MF50x38FR (10)		
42	1-5/8"	42	32 (1-1/4"IPS)	40 (1-1/4")	32		MF09x42FR (60)	MF13x42FR (48)	MF19x42FR (32)	MF25x42FR (22)	MF32x42FR (16)	MF38x42FR (12)	MF50x42FR (10)		
45	1-3/4"						MF09x45FR (54)	MF13x45FR (42)	MF19x45FR (26)	MF25x45FR (20)	MF32x45FR (14)	MF38x45FR (12)	MF50x45FR (8)		
48	1-7/8"		38 (1-1/2"IPS)		38		MF09x48FR (50)	MF13x48FR (40)	MF19x48FR (24)	MF25x48FR (18)	MF32x48FR (14)	MF38x48FR (12)	MF50x48FR (8)		
51	2"			50 (1-1/2")			MF09x51FR (48)	MF13x51FR (36)	MF19x51FR (24)	MF25x51FR (16)	MF32x51FR (12)	MF38x51FR (10)	MF50x51FR (8)		
54	2-1/8"	54					MF09x54FR (46)	MF13x54FR (34)	MF19x54FR (24)	MF25x54FR (16)	MF32x54FR (12)	MF38x54FR (10)	MF50x54FR (8)		
57	2-1/4"						MF09x57FR (46)	MF13x57FR (32)	MF19x57FR (22)	MF25x57FR (14)	MF32x57FR (10)	MF38x57FR (10)	MF50x57FR (8)		
60	2-3/8"		51 (2"IPS)		51		MF09x60FR (46)	MF13x60FR (32)	MF19x60FR (22)	MF25x60FR (12)	MF32x60FR (10)	MF38x60FR (10)	MF50x60FR (6)		
64	2-1/2"			63 (2")				MF13x64FR (30)	MF19x64FR (18)	MF25x64FR (12)	MF32x64FR (10)	MF38x64FR (10)	MF50x64FR (6)		
67	2-5/8"	67						MF13x67FR (26)	MF19x67FR (18)	MF25x67FR (12)	MF32x67FR (8)	MF38x67FR (8)	MF50x67FR (6)		
73	2-7/8"		64 (2-1/2"IPS)		64			MF13x73FR (26)	MF19x73FR (18)	MF25x73FR (10)	MF32x73FR (8)	MF38x73FR (8)	MF50x73FR (6)		
76	3"	76		75 (2-1/2")				MF13x76FR (26)	MF19x76FR (18)	MF25x76FR (10)	MF32x76FR (8)	MF38x76FR (8)	MF50x76FR (6)		
80	3-1/8"	80						MF13x80FR (24)	MF19x80FR (14)	MF25x80FR (8)	MF32x80FR (8)	MF38x80FR (8)	MF50x80FR (6)		
83	3-1/4"							MF13x83FR (22)	MF19x83FR (14)	MF25x83FR (8)	MF32x83FR (8)	MF38x83FR (8)	MF50x83FR (6)		
90	3-1/2"		76 (3"IPS)	90 (3")	76			MF13x90FR (22)	MF19x90FR (14)	MF25x90FR (8)	MF32x90FR (8)	MF38x90FR (8)	MF50x90FR (4)		
92	3-5/8"	92						MF13x92FR (20)	MF19x92FR (14)	MF25x92FR (8)	MF32x92FR (6)	MF38x92FR (6)	MF50x92FR (4)		
98	3-7/8"							MF13x98FR (18)	MF19x98FR (14)	MF25x98FR (6)	MF32x98FR (6)	MF38x98FR (6)	MF50x98FR (4)		
102	4"		90 (3-1/2"IPS)		90			MF13x102FR (16)	MF19x102FR (14)	MF25x102FR (6)	MF32x102FR (6)	MF38x102FR (4)	MF50x102FR (4)		
105	4-1/8"	105						MF13x105FR (16)	MF19x105FR (12)	MF25x105FR (6)	MF32x105FR (6)	MF38x105FR (4)	MF50x105FR (4)		
115	4-1/2"		102 (4"IPS)	110 (4")	102			MF13x115FR (16)	MF19x115FR (12)	MF25x115FR (6)	MF32x115FR (6)	MF38x115FR (4)	MF50x115FR (4)		
130	5-1/8"	130		125 (5")				MF13x130FR (12)	MF19x130FR (8)	MF25x130FR (4)	MF32x130FR (4)	MF38x130FR (4)	MF50x130FR (2)		
140	5-1/2"		127 (5"IPS)		127			MF13x140FR (12)	MF19x140FR (8)	MF25x140FR (4)	MF32x140FR (4)	MF38x140FR (4)	MF50x140FR (2)		
165	6-1/2"		152 (6"IPS)	160 (6")	152				MF19x165FR (6)	MF25x165FR (4)	MF32x165FR (4)	MF38x165FR (4)	MF50x165FR (2)		

Note: Suffix code (A,B,C) are production time.

**MAXFLEX FR Standard Sheet Insulation and Continuous Sheet Roll**

MAXFLEX FR Standard Sheet and Continuous Sheet Roll	Products Code (Size, Length, Quantity per Carton)									
	3mm. Thick (1/8")	6mm. Thick (1/4")	9mm. Thick (3/8")	13mm. Thick (1/2")	16mm. Thick (5/8")	19mm. Thick (3/4")	25mm. Thick (1")	32mm. Thick (1-1/4")	38mm. Thick (1-1/2")	50mm. Thick (2")
Standard Flat Sheet Size 1.2m. x 0.9m.	MSF03FR (48pcs./ctn.)	MSF06FR (24pcs./ctn.)	MSF09FR (16pcs./ctn.)	MSF13FR (12pcs./ctn.)	MSF16FR (10pcs./ctn.)	MSF19FR (8pcs./ctn.)	MSF25FR (6pcs./ctn.)	MSF32FR (5pcs./ctn.)	MSF38FR (4pcs./ctn.)	MSF50FR (3pcs./ctn.)
Sheet Roll Width 1.2m. Continuous Length	MSR03FR (L=15.0m.) (18.3m <sup>2</sup> / ctn)	MSR06FR (L=21.9m.) (26.7m <sup>2</sup> / ctn)	MSR09FR (L=15.2m.) (18.5m <sup>2</sup> / ctn)	MSR13FR (L=11.0m.) (13.4m <sup>2</sup> / ctn)	MSR16FR (L=9.7m.) (11.8m <sup>2</sup> / ctn)	MSR19FR (L=7.0m.) (8.5m <sup>2</sup> / ctn)	MSR25FR (L=5.5m.) (6.7m <sup>2</sup> / ctn)	MSR32FR (L=4.0m.) (4.8m <sup>2</sup> / ctn)	MSR38FR (L=3.0m.) (3.7m <sup>2</sup> / ctn)	MSR50FR (L=2.4m.) (2.9m <sup>2</sup> / ctn)

Note: Insulation thickness 3 mm. and 6 mm. shall be supplied with one side skin. Additional product specifications as an above. Please consult the manufacturer.

**MAXFLEX FR Pre-Cut Sheet Insulation (1.2 meter Length/Sheet)**

Chilled Water Pipe Iron Pipe Size	Sheet Size : Length x Width		13mm. wall (1/2")		19mm. wall (3/4")		25mm. wall (1")	
	ID (inch)	(m.)	(inch)	Product Code	Pcs/ctn	Product Code	Pcs/ctn	Product Code
6" IPS	1.2 x 0.61	48" x 24"	MCS1312061FR	12	MCS1912061FR	8	MCS2512061FR	6
8" IPS	1.2 x 0.76	48" x 30"	MCS1312076FR	12	MCS1912076FR	8	MCS2512076FR	6
10" IPS	1.2 x 0.91	48" x 36"	MCS1312091FR	12	MCS1912091FR	8	MCS2512091FR	6
12" IPS	1.2 x 1.12	48" x 44"	MCS1312112FR	12	MCS1912112FR	8	MCS2512112FR	6
14" IPS	1.2 x 1.22	48" x 48"	MCS1312122FR	12	MCS1912122FR	8	MCS2512122FR	6
16" IPS	1.2 x 1.37	48" x 54"	MCS1312137FR		MCS1912137FR		MCS2512137FR	
18" IPS	1.2 x 1.52	48" x 60"	MCS1312152FR		MCS1912152FR		MCS2512152FR	
Chilled Water Pipe Iron Pipe Size	Sheet Size : Length x Width		32mm. wall (1-1/4")		38mm. wall (1-1/2")		50mm. wall (2")	
	ID (inch)	(m.)	(inch)	Product Code	Pcs/ctn	Product Code	Pcs/ctn	Product Code
6" IPS	1.2 x 0.61	48" x 24"	MCS3212061FR	5	MCS3812061FR	4	MCS5012061FR	3
8" IPS	1.2 x 0.76	48" x 30"	MCS3212076FR	5	MCS3812076FR	4	MCS5012076FR	3
10" IPS	1.2 x 0.91	48" x 36"	MCS3212091FR	5	MCS3812091FR	4	MCS5012091FR	3
12" IPS	1.2 x 1.12	48" x 44"	MCS3212112FR	5	MCS3812112FR	4	MCS5012112FR	3
14" IPS	1.2 x 1.22	48" x 48"	MCS3212122FR	5	MCS3812122FR	4	MCS5012122FR	3
16" IPS	1.2 x 1.37	48" x 54"	MCS3212137FR		MCS3812137FR		MCS5012137FR	
18" IPS	1.2 x 1.52	48" x 60"	MCS3212152FR		MCS3812152FR		MCS5012152FR	

Note: The above sheet size is for 1" wall thickness. For other thickness pre cut sheet size will vary to cover circumference.

# MAXFLEX FR

## For Air Duct Systems

Being dust and fiber free, MAXFLEX FR is an ideal thermal insulation for air ducting system. It has been favored over the fibrous insulating material because of the possible health hazards and dangers caused by the loose particles of fibrous materials in to air vents. MAXFLEX FR can be safely handled without causing skin irritation. The products also have superior resistance against moisture, fungus growth, vermin and rodent attack. The dense surface skin laminate with aluminum foil eliminates the need for another layer of vapor barrier or further coating. Physical Strengths of the specially modified elastomeric material ensures long year service life with stable and low thermal conductivity value. MAXFLEX FR has been widely used in Air Ducting Systems due to the following superior characteristics.

- Strength contracture of elastomer and close cell that can be use long year service life of duct (Low K- value)
- Excellent moisture and vapor resistance due to its dense surface skin and closed cell structure.
- Outstanding ozone/UV and weather resistance.
- Flexible, makes instruction work easy and neat.
- Protecting Moisture resistance without fungi ants termites and mice
- MAXFLEX FR type of roll and sheet able to use insulation inside and outside supply of ductwork

### Thickness Recommendation for Air Ducting Systems

Condition: Surface temperature is above dew point  $-1^{\circ}\text{C}$  to avoid condensation without cladding (Bare Insulation)

Ambient Condition	Dew Point	Operating Temperature (Cool Air Temperature)					
		$+17^{\circ}\text{C}$ ( $+62.6^{\circ}\text{F}$ )	$+15^{\circ}\text{C}$ ( $+59^{\circ}\text{F}$ )	$+13^{\circ}\text{C}$ ( $+55.4^{\circ}\text{F}$ )	$+10^{\circ}\text{C}$ ( $+50.0^{\circ}\text{F}$ )	$+7^{\circ}\text{C}$ ( $+44.6^{\circ}\text{F}$ )	$+5^{\circ}\text{C}$ ( $+41^{\circ}\text{F}$ )
$27^{\circ}\text{C}$ ( $80.6^{\circ}\text{F}$ ), 50% RH	$16^{\circ}\text{C}$	6 mm.	6 mm.	6 mm.	9 mm.	9 mm.	9 mm.
$27^{\circ}\text{C}$ ( $80.6^{\circ}\text{F}$ ), 70% RH	$21^{\circ}\text{C}$	6 mm.	6 mm.	9 mm.	9 mm.	13 mm.	13 mm.
$30^{\circ}\text{C}$ ( $86.0^{\circ}\text{F}$ ), 70% RH	$24^{\circ}\text{C}$	9 mm.	9 mm.	9 mm.	9 mm.	13 mm.	16 mm.
$30^{\circ}\text{C}$ ( $86.0^{\circ}\text{F}$ ), 75% RH	$25^{\circ}\text{C}$	9 mm.	9 mm.	13 mm.	13 mm.	19 mm.	19 mm.
$32^{\circ}\text{C}$ ( $89.6^{\circ}\text{F}$ ), 80% RH	$28^{\circ}\text{C}$	16 mm.	16 mm.	25 mm.	25 mm.	25 mm.	32 mm.
$34^{\circ}\text{C}$ ( $93.2^{\circ}\text{F}$ ), 85% RH	$31^{\circ}\text{C}$	19 mm.	25 mm.	25 mm.	32 mm.	32 mm.	38 mm.
$35^{\circ}\text{C}$ ( $95^{\circ}\text{F}$ ), 85% RH	$32^{\circ}\text{C}$	25 mm.	25 mm.	32 mm.	38 mm.	50 mm.	50 mm.
$35^{\circ}\text{C}$ ( $95^{\circ}\text{F}$ ), 90% RH	$33^{\circ}\text{C}$	32 mm.	32 mm.	38 mm.	50 mm.	56 mm.	56 mm.

In areas of low relative humidity, insulation thickness 6mm. will be sufficient for condensation control purpose. However, we would recommend a minimum thickness of 9mm. In order to significantly reduce the heat gain from outer sources.

### MAXFLEX ACCESSORIES



MAXTAPE



MAXGLUE



MAXFIX, MAXFIX STAND



MAXCOAT

### DIMENSION OF PACKAGING

	Width (cm.)	Length (cm.)	Height (cm.)
TUBE 2 meter	39	207	33
STANDARD FLAT SHEET	102	130	19
0.9m. X 1.2m.	Carton box or Plastic Wrap		
SHEET ROLL	46	110	46
	Carton box or Rolled in Plastic Wrap		
	Width (cm.)	Length (cm.)	Height (cm.)
PRE-CUT SHEET			
6" IPS - 8" IPS	86	130	19
10" IPS	102	130	19
12" IPS	130	130	19
>12" IPS	Carton box or Rolled in Plastic Wrap		

# MAXFLEX FR

## For Chilled Water Piping & Refrigerating Systems

MAXFLEX FR is applied onto the chilled water pipes and refrigerating systems not simply to control condensation problems, but also to reduce waste of energy by higher heat gain into the cooling systems. MAXFLEX FR has been widely used in refrigerating and central cooling systems due to the following superior characteristics.

- Low and stable thermal conductivity value.
- Very low water absorption and high moisture resistance.
- Complies with most international Smoke and Flammability Standards.
- FM approvals are the independent testing standards of international insurance carrier, FM Global. MAXFLEX FR products conform to the highest standards for safety and property loss prevention.
- Having UV and Ozone resistance due to Non-polar Close Cell Polymer Base.
- Outstanding flexibility for quick and easy installation. Gives the finished insulation a neat aesthetic appearance.

Thickness Recommendation for Chilled Water Piping and Refrigeration.					
Condition: Surface temperature is above dew point $-1^{\circ}\text{C}$ to avoid condensation without cladding (Bare Insulation).					
Outside Diameter (OD.) of Steel Pipe	Pipe Line Temperature				
	$+15^{\circ}\text{C}$ ( $59^{\circ}\text{F}$ )	$+7^{\circ}\text{C}$ ( $44.6^{\circ}\text{F}$ )	$+2^{\circ}\text{C}$ ( $35.6^{\circ}\text{F}$ )	$-10^{\circ}\text{C}$ ( $14^{\circ}\text{F}$ )	$-18^{\circ}\text{C}$ ( $-0.4^{\circ}\text{F}$ )
Maximum Ambient Temperature $28^{\circ}\text{C}$ ( $82.4^{\circ}\text{F}$ ), 75%RH, Dew Point $23.26^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	9	13	19	25	32
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	9	19	19	32	38
3"IPS-6"IPS (89-168mm.)	9	19	25	32	38
Pipe $\geq 8$ "IPS (219mm.)	13	19	25	32	38
Maximum Ambient Temperature $32^{\circ}\text{C}$ ( $86^{\circ}\text{F}$ ), 75%RH, Dew Point $27.16^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	13	19	19	25	32
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	13	19	25	32	38
3"IPS-6"IPS (89-168mm.)	13	19	25	32	38
Pipe $\geq 8$ "IPS (219mm.)	13	25	25	38	50
Maximum Ambient Temperature $35^{\circ}\text{C}$ ( $95^{\circ}\text{F}$ ), 80%RH, Dew Point $31.2^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	19	25	32	38	50
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	19	32	32	38	50
3"IPS-6"IPS (89-168mm.)	25	32	38	50	56
Pipe $\geq 8$ "IPS (219mm.)	25	38	38	50	59
Maximum Ambient Temperature $35^{\circ}\text{C}$ ( $95^{\circ}\text{F}$ ), 85%RH, Dew Point $31.7^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	25	25	32	38	50
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	25	32	38	50	53
3"IPS-6"IPS (89-168mm.)	25	38	50	56	63
Pipe $\geq 8$ "IPS (219mm.)	32	50	50	63	75
Maximum Ambient Temperature $35^{\circ}\text{C}$ ( $95^{\circ}\text{F}$ ), 90%RH, Dew Point $32.2^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	25	38	38	56	59
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	32	50	50	63	69
3"IPS-6"IPS (89-168mm.)	38	53	53	75	84
Pipe $\geq 8$ "IPS (219mm.)	38	56	59	88	100
Maximum Ambient Temperature $38^{\circ}\text{C}$ ( $100.4^{\circ}\text{F}$ ), 90%RH, Dew Point $35.8^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	50	50	59	75	94
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	50	59	69	88	100
3"IPS-6"IPS (89-168mm.)	56	69	84	100	125
Pipe $\geq 8$ "IPS (219mm.)	63	84	100	125	138
Maximum Ambient Temperature $45^{\circ}\text{C}$ ( $114^{\circ}\text{F}$ ), 90%RH, Dew Point $43.0^{\circ}\text{C}$					
Pipe up to 1" IPS (35mm.)	50	56	63	75	100
1 1/4"IPS- 2 1/2"IPS (42-76mm.)	56	63	69	88	125
3"IPS-6"IPS (89-168mm.)	63	75	84	100	138
Pipe $\geq 8$ "IPS (219mm.)	69	84	100	125	150

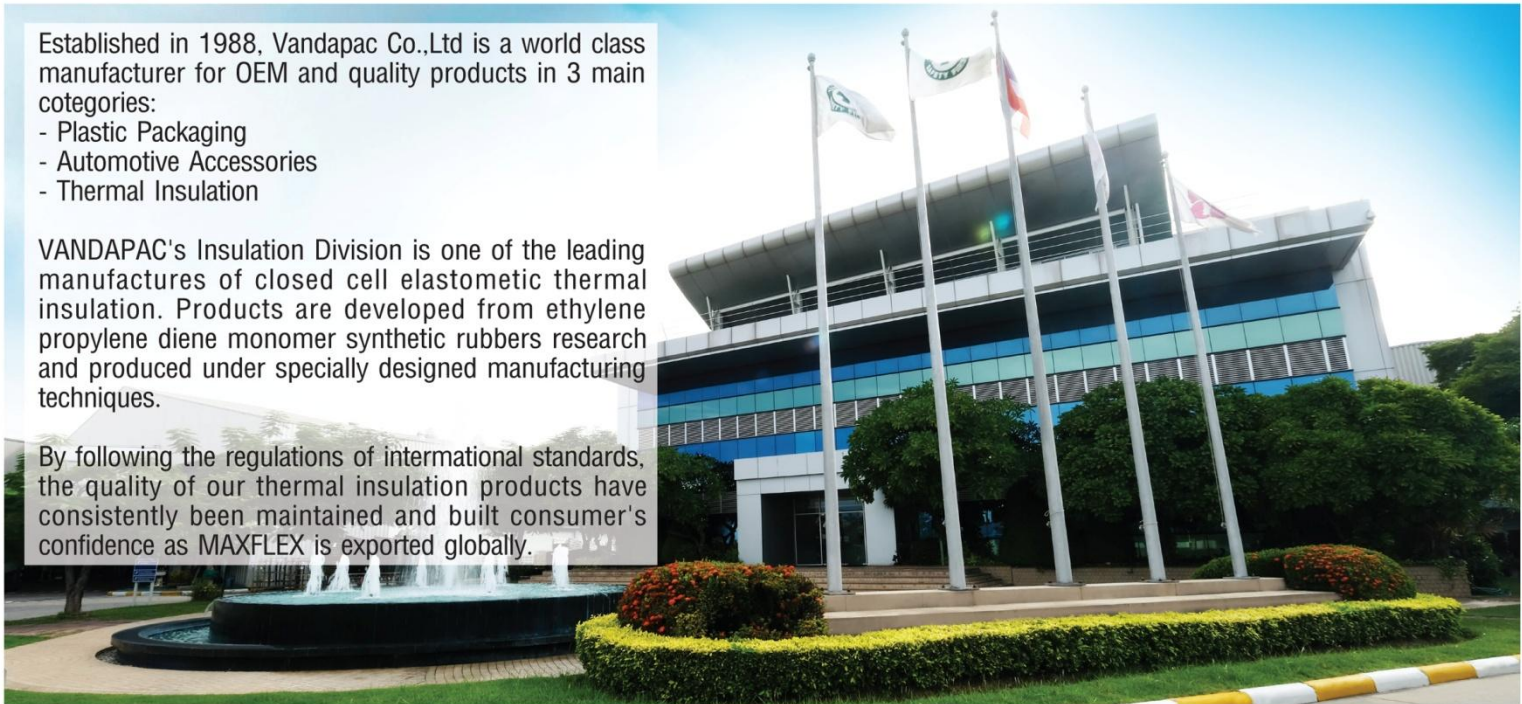


Established in 1988, Vandapac Co.,Ltd is a world class manufacturer for OEM and quality products in 3 main categories:

- Plastic Packaging
- Automotive Accessories
- Thermal Insulation

VANDAPAC's Insulation Division is one of the leading manufactures of closed cell elastomeric thermal insulation. Products are developed from ethylene propylene diene monomer synthetic rubbers research and produced under specially designed manufacturing techniques.

By following the regulations of international standards, the quality of our thermal insulation products have consistently been maintained and built consumer's confidence as MAXFLEX is exported globally.



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