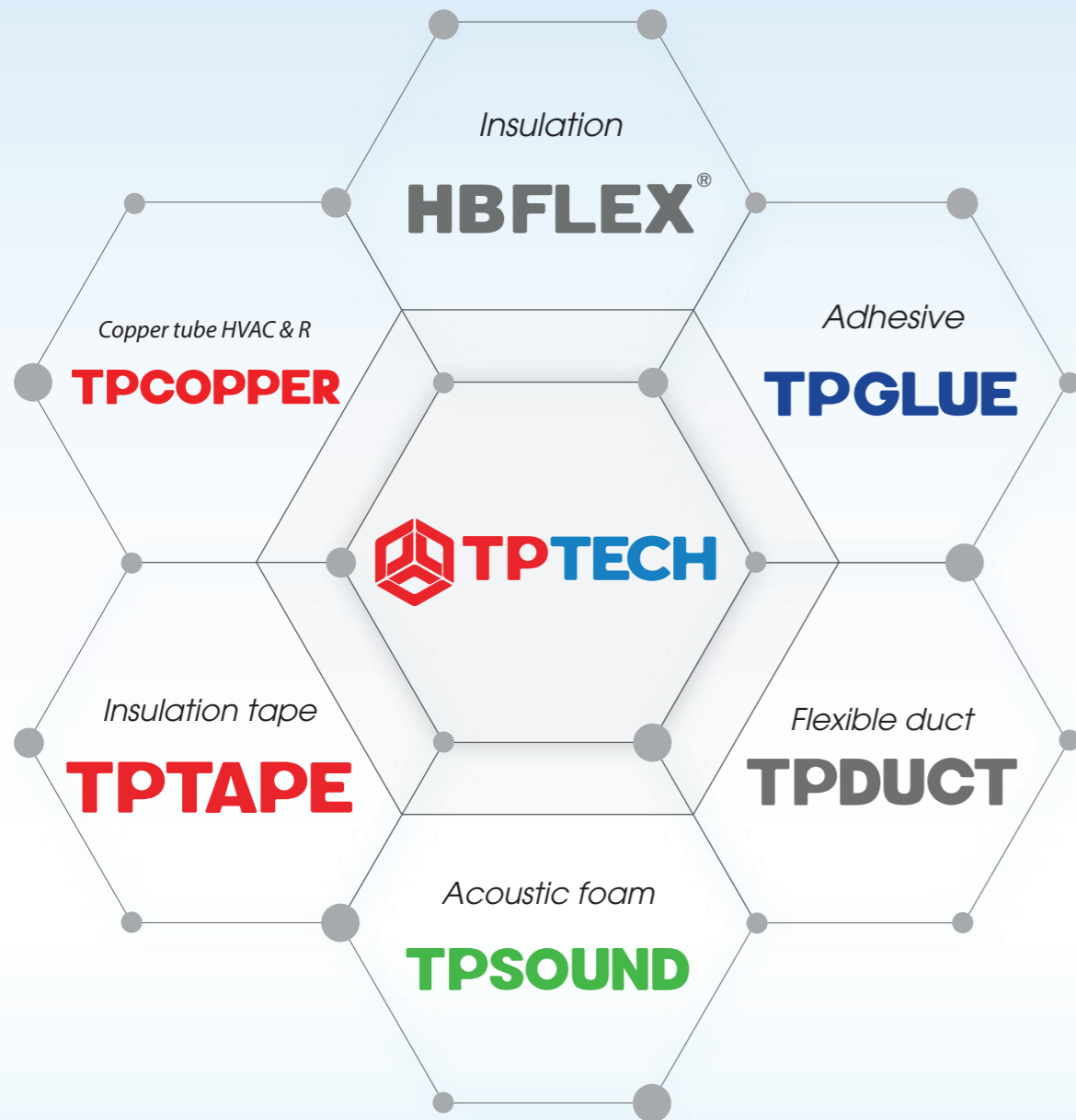




HBFLEX[®]



TOTAL INSULATION SOLUTION



TPTECH International Joint Stock Company

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☎ (+84) 886 99 5959

🌐 www.tptechgroup.com

✉ insulation@tptechgroup.com





MAIN ADVANTAGES

HBFLEX NBR elastomeric foam insulation

Closed cell structure | The closed cell structure of HBFLEX helps highly resist water vapor, low thermal conductivity and it is suitable for indoor applications without protection layer.

Low thermal conductivity | HBFLEX insulation has low and stable thermal conductivity while using to optimize heat loss in HVAC&R system.

Save energy | HBFLEX, closes cell NBR insulation with modern technology, produced for insulating cooling and heating water pipings in purpose of preventing condensation and saving energy while system is operating.

Fire performance | HBFLEX products have passed qualified certificates such as: Class V-0 following UL-94 ensuring to excellent fire resistance and highest international fire standards.

Flexible installation | With the high flexibility, HBFLEX very easy to install in most of places, even with the narrow areas and extraordinary - shaped tubes.

Sound absorption | Besides being insulation products, HBFLEX is good sound absorption material and reduces noise generated by equipment, air movement and water flow inside the duct.

Environment protection | Fibre-free, no formaldehyde and low VOCs, HBFLEX helps protect environment and maintain fresh air within system.

INTRODUCTION

TPTECH INTERNATIONAL JOINT STOCK COMPANY would like to send respectful greetings to Customers and Partners. TPTECH is the professional insulation manufacturer in Vietnam providing total solutions for insulation and sound absorption used in HVAC&R industry.

Located in Yen My II Industrial Park, Hung Yen Province with almost 33,000 square meters, TPTECH is integrated place of well-skilled leading experts and technicians, modern European technological machinery, professional production management process guaranteeing to produce products with international standards.

We are sincerely thankful and hope to cooperate with valued customers and partners.



CERTIFICATE

HBFLEX fully meets the following standards:

- ▶ UL 94 Certificate : American standard for Safety of flammability
- ▶ ISO 9001: 2015 : Quality management systems
- ▶ ISO 14001: 2015 : Environmental management systems
- ▶ GreenGuard Gold : Gold Standard for total VOC Emissions
- ▶ Singapore Green Building : Excellent (3 ticks)



THICKNESS RECOMMENDATION

Chiller, Refrigeration & Ducting System

Cool System		RH = 70%	RH = 80%	RH = 85%
Copper Pipe	t = 5°C	ID 6mm to 19mm: 13mm ID 19mm to 54mm: 19mm ≥ ID 55mm: 25mm	ID 6mm to 19mm: 19mm ID 19mm to 42mm: 25mm > ID 42mm: 25mm	ID 6mm to 22mm: 25mm ID 25mm to 54mm: 32mm ≥ ID 55mm: 32mm
Chiller	t = 7°C	DN15 to DN32: 13mm DN40 to DN80: 19mm DN100 to DN250: 25mm > DN250 mm: 32mm	DN15 to DN32: 19mm DN40 to DN80: 25mm DN100 to DN250: 32mm > DN250 mm: 38, 50mm	DN15 to DN32: 25mm DN40 to DN80: 32mm DN100 to DN250: 38mm > DN250 mm: 50mm
Ducting	t = 15°C	Thickness: 10mm	Thickness: 16mm	Thickness: 25mm

The table above is based on calculative condition:

t = 32°C - 35°C

K-value = 0.033 W/mK

h = 8 - 10 (Convection coefficient)

THICKNESS CALCULATION PROGRAM

Please use the program to calculate thickness by the following ways:

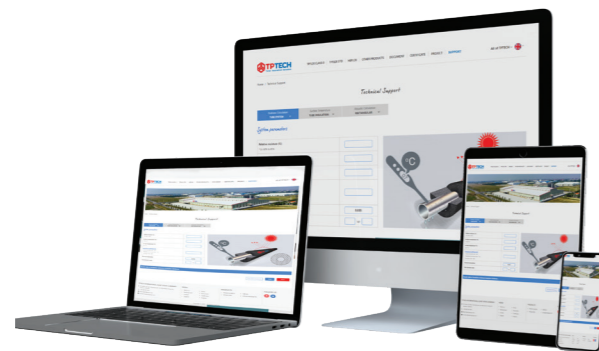
1. Scan QR code
2. Access website: <https://tptechgroup.com/en/technical-support/>



VN



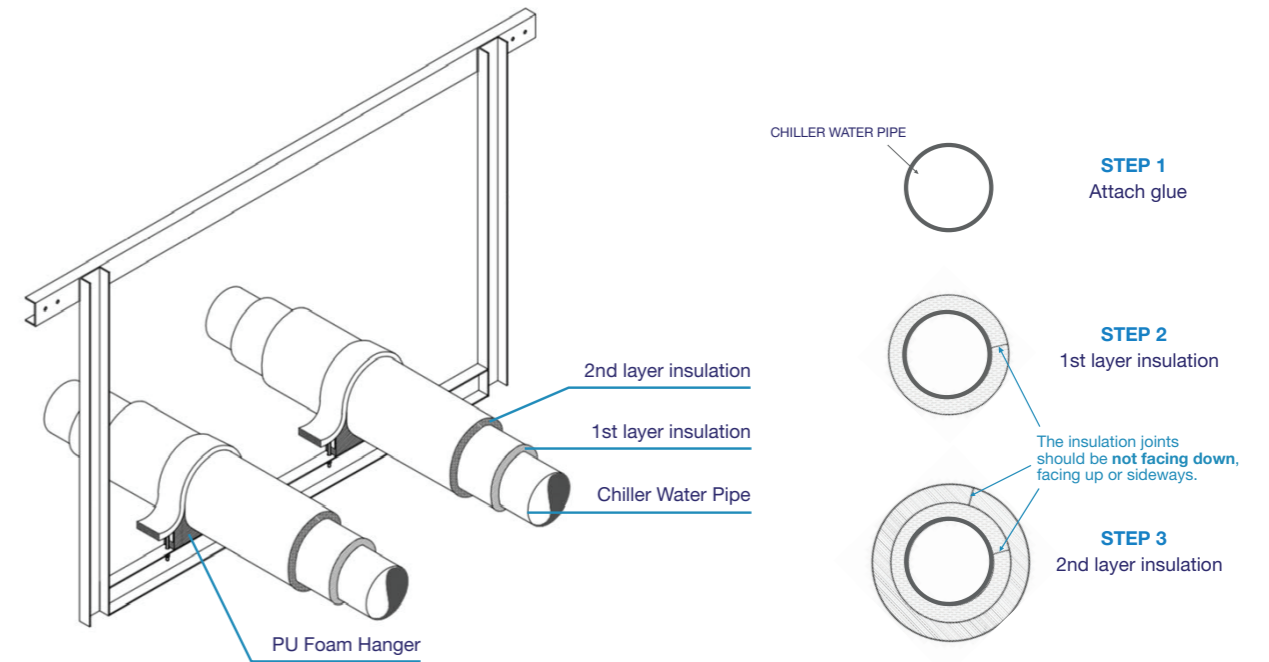
EN



INSTALLATION GUIDELINES

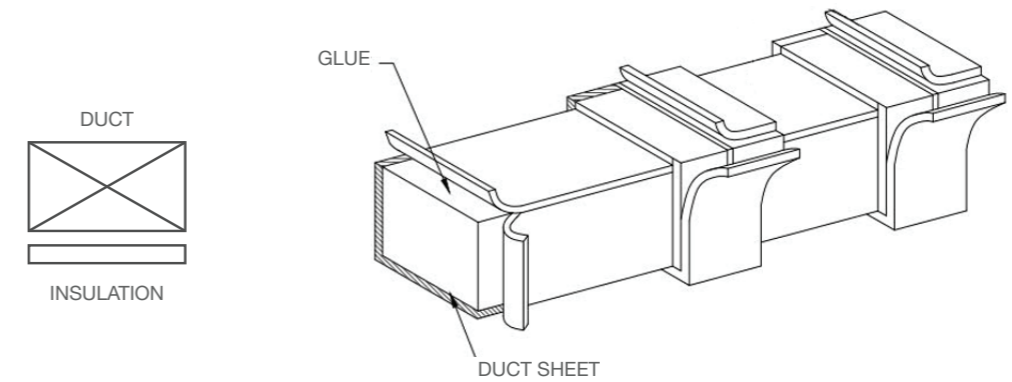
Chiller Installation Guideline

For a required insulation thickness of 50mm on the chiller pipe, using two layers 25mm is recommended.



Ducting Installation Guideline

Cut insulation for ducting into 4 pieces



CHILLER installation guideline

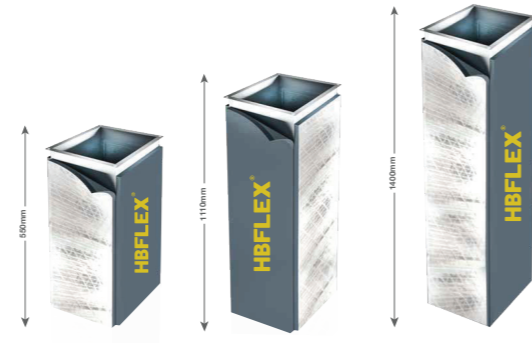


DUCTING installation guideline

PACKING

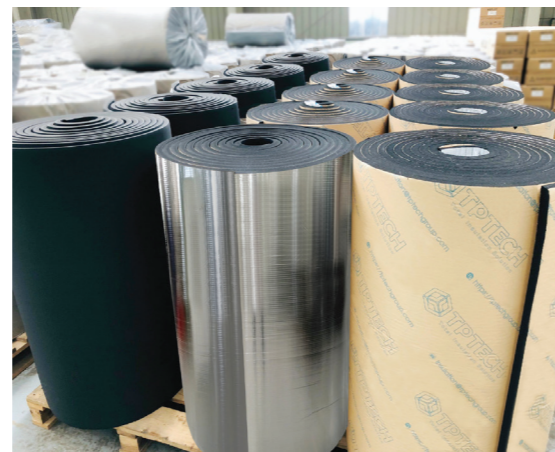
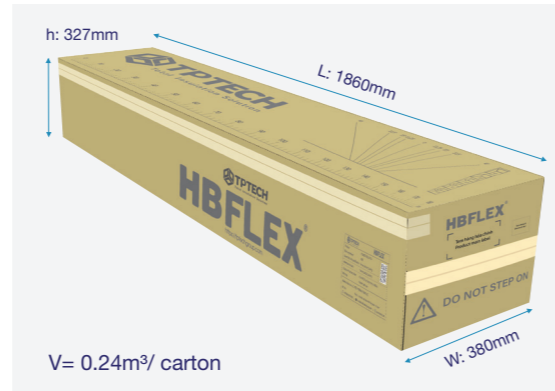
HBFLEX Sheet

Thickness (mm)	Length (m)	Area / Roll (m²)		
		1.11m Width	1.22m Width	1.40m Width
6	15	SV06111 (16.65)	SV06122 (18.3)	SV06140 (21)
10	10	SV10111 (11.1)	SV10122 (12.2)	SV10140 (14)
13	8	SV13111 (8.88)	SV13122 (9.76)	SV13140 (11.2)
16	7	SV16111 (7.77)	SV16122 (8.54)	SV16140 (9.8)
19	6	SV19111 (6.66)	SV19122 (7.32)	SV19140 (8.4)
25	6	SV25111 (6.66)	SV25122 (7.32)	SV25140 (8.4)
32	6	SV32111 (6.66)	SV32122 (7.32)	SV32140 (8.4)
38	5	SV38111 (5.55)	SV38122 (6.1)	SV38140 (7)
50	5	SV50111 (5.55)	SV50122 (6.1)	SV50140 (7)



- Sheet roll with adhesive side: add "AD" at the end of code
- Sheet roll with aluminum laminated: add "AL" at the end of code
- Sheet roll with aluminum and adhesive laminated: add "DL" at the end of code
- Providing all requirements in a variety of diameters, thicknesses and lengths

- 1 truck 3.5 tons : 75 cartons
- 1 truck 15 tons : 220 cartons
- 1 container 40ft : 290 cartons
- 1 container 20ft : 145 cartons



HBFLEX Tube: 1.83M length/pcs

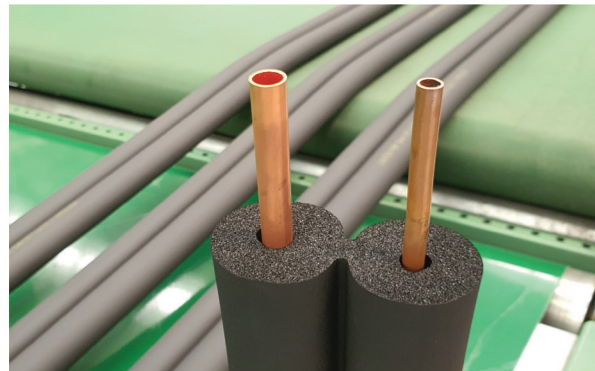
I.D SIZE		Code Number (Quantity: Pieces / Carton)						
MM	INCH	10mm wall	13mm wall	19mm wall	25mm wall	32mm wall	38mm wall	50mm wall
6	1/4"	TV10006 (169)	TV13006 (110)	TV19006 (51)	TV25006 (30)			
10	3/8"	TV10010 (132)	TV13010 (90)	TV19010 (49)	TV25010 (30)			
13	1/2"	TV10013 (100)	TV13013 (72)	TV19013 (39)	TV25013 (25)			
16	5/8"	TV10016 (90)	TV13016 (64)	TV19016 (37)	TV25016 (23)			
19	3/4"	TV10019 (81)	TV13019 (60)	TV19019 (32)	TV25019 (23)	TV32019 (16)		
22	7/8"	TV10022 (64)	TV13022 (48)	TV19022 (30)	TV25022 (18)	TV32022 (12)	TV38022 (9)	TV50022 (6)
25	1"	TV10025 (56)	TV13025 (42)	TV19025 (25)	TV25025 (18)	TV32025 (12)	TV38025 (9)	TV50025 (6)
28	1 - 1/8"	TV10028 (50)	TV13028 (39)	TV19028 (22)	TV25028 (16)	TV32028 (12)	TV38028 (8)	TV50028 (5)
32	1 - 1/4"	TV10032 (42)	TV13032 (33)	TV19032 (20)	TV25032 (16)	TV32032 (10)	TV38032 (8)	TV50032 (5)
35	1 - 3/8"	TV10035 (36)	TV13035 (30)	TV19035 (18)	TV25035 (15)	TV32035 (10)	TV38035 (8)	TV50035 (5)
38	1 - 1/2"	TV10038 (36)	TV13038 (28)	TV19038 (18)	TV25038 (12)	TV32038 (9)	TV38038 (8)	TV50038 (4)
42	1 - 5/8"	TV10042 (35)	TV13042 (26)	TV19042 (18)	TV25042 (12)	TV32042 (9)	TV38042 (6)	TV50042 (4)
48	1 - 7/8"	TV10048 (30)	TV13048 (24)	TV19048 (15)	TV25048 (12)	TV32048 (8)	TV38048 (6)	TV50048 (4)
51	2"	TV10051 (30)	TV13051 (22)	TV19051 (15)	TV25051 (11)	TV32051 (8)	TV38051 (6)	TV50051 (4)
54	2 - 1/8"	TV10054 (30)	TV13054 (22)	TV19054 (14)	TV25054 (10)	TV32054 (7)	TV38054 (6)	TV50054 (4)
60	2 - 3/8"	TV10060 (27)	TV13060 (19)	TV19060 (12)	TV25060 (9)	TV32060 (6)	TV38060 (6)	TV50060 (4)
64	2 - 1/2"		TV13064 (18)	TV19064 (12)	TV25064 (9)	TV32064 (6)	TV38064 (5)	TV50064 (4)
67	2 - 5/8"		TV13067 (18)	TV19067 (12)	TV25067 (8)	TV32067 (6)	TV38067 (5)	TV50067 (4)
76	3"		TV13076 (16)	TV19076 (12)	TV25076 (8)	TV32076 (6)	TV38076 (4)	TV50076 (3)
89	3 - 1/2"		TV13089 (14)	TV19089 (10)	TV25089 (6)	TV32089 (5)	TV38089 (4)	TV50089 (2)
108	4 - 1/4"		TV13108 (9)	TV19108 (8)	TV25108 (6)	TV32108 (4)	TV38108 (3)	TV50108 (2)
114	4 - 1/2"		TV13114 (9)	TV19114 (6)	TV25114 (5)	TV32114 (4)	TV38114 (3)	TV50114 (2)
140	5 - 1/2"			TV19140 (6)	TV25140 (4)	TV32140 (4)	TV38140 (3)	TV50140 (2)
165	6 - 1/2"				TV25165 (3)	TV32165 (3)	TV38165 (2)	TV50165 (2)
168	6 - 5/8"				TV25168 (3)	TV32168 (2)	TV38168 (2)	TV50168 (2)

Providing all requirements in a variety of diameters, thicknesses and lengths

APPLICATIONS

HBFLEX is a NBR based insulation with superior design, energy saving for the Refrigerant, Chiller, cooling and heating water pipes in the HVAC&R industry. Besides, HBFLEX is the non-fibrous material, so it is the ideal products to use in food factories, pharmaceutical industry, electronic, server room...

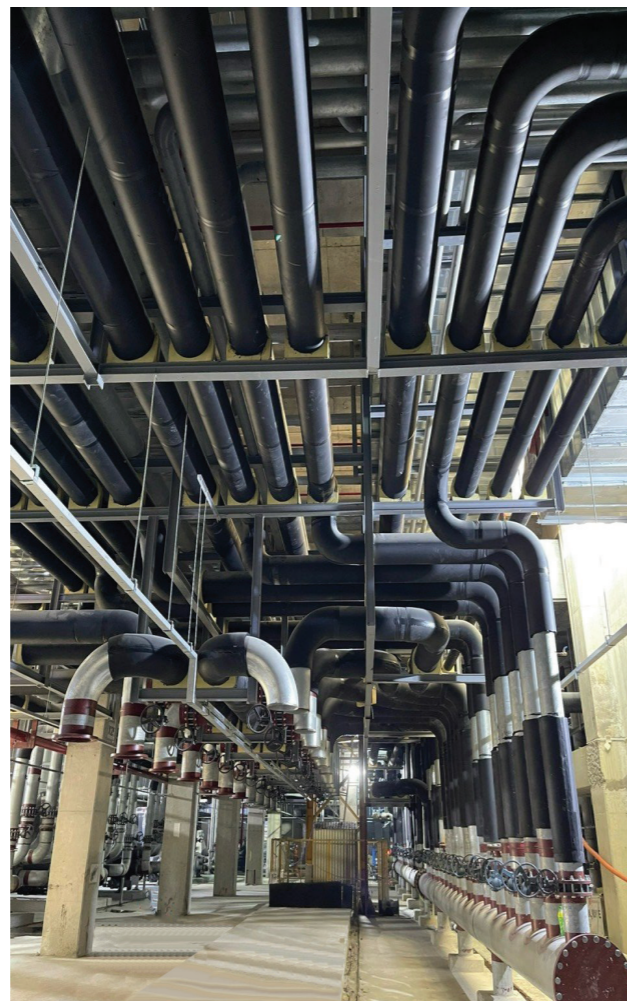
COPPER PIPING



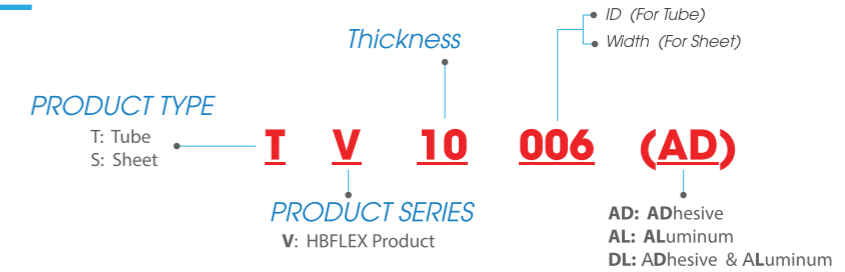
DUCTING



CHILLER SYSTEM



PRODUCTS



SPECIFICATIONS (Tube & Sheet)

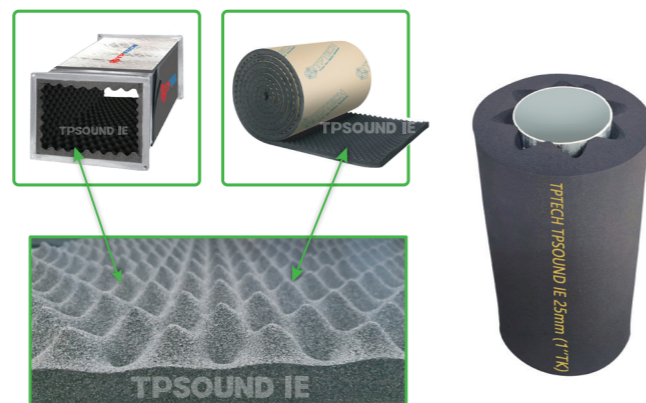
Key properties	Value / Assessment	Test method / Standard	
General			
Material	Elastomeric Foam, NBR based		
Color	Black (basic) & others	For other color, please contact with technical department	
Cell structure	Completely closed cell	-	
Density (kg/m ³)	40 to 80	ASTM D1667	
Service	-50°C to +105°C	For other temperature, please contact with technical department	
Thermal conductivity			
K - value (W/m.K)	0°C	ASTM C518	
	24°C		
	0.032	0.033	0.036
Water vapour Permeability			
Water Vapour Permeability	≤ 2.5 x 10 ⁻¹¹ g/(m.s.Pa)	EN 12086-13	
Water Vapour Resistance	μ ≥ 10,000	EN 12086-13	
Water Absorption	≤ 0.1% (by volume)	ASTM C209	
Fire behavior			
Fire performance	Class V-0, 5-VA (Self - extinguishing, no dripping)	UL 94 Certificate	
	Class 1	BS 476 part 7	
	Class B1	GB8624	
Health			
	Low TVOCs	ISO 16000	
	REACH		
	RoHS II	IEC 62321	
	Anti - Microbial	ASTM E 2180	
	Fungal resistance	ASTM G21	
	Free of Dust, Fibre and Formaldehyde		
Environment			
Singapore Green Building	Excellent (✓✓✓)		
Greenguard	Gold		
UV resistance	For UV protection, covering system is required		
Ecological	Without CFCs, HCFCs		
Ozone Resistance	Good	ASTM D1171	
Other technical data			
Sound reduction	NRC = 0.3 (19mm)	ASTM C423-17	
Flexibility	Excellent		
Heat stability (%shrinkage) at 104°C in 7 days	≤ 7%	ASTM C534	

SPECIFICATIONS

Key Properties	Specifications
Applications	Ventilation duct Waste water pipes
Fire Performance	UL 94 Class V-0 BS 476 part 6,7 Class 0
Material	Elastomeric Foam, NBR
Color	Black colour, built-in adhesive
Cell structure	Semi-open cell
Density	40 - 80 kg/m ³
K-Value	0.035 W/m.K at 20oC
The Noise Reduction Coefficient (NRC)	min 0.4 (25mm)
Surface Temperature	-50°C -> 105°C
Health	Dust & fibre free Low TVOCs REACH RoHS II Anti - Microbial Fungal resistance

PACKING

Thickness (mm)	Length (mm)	Area / Roll (m ²)	
		1.11m Width	1.22m Width
25	5	IE25111 (5.55)	IE25122 (6.1)

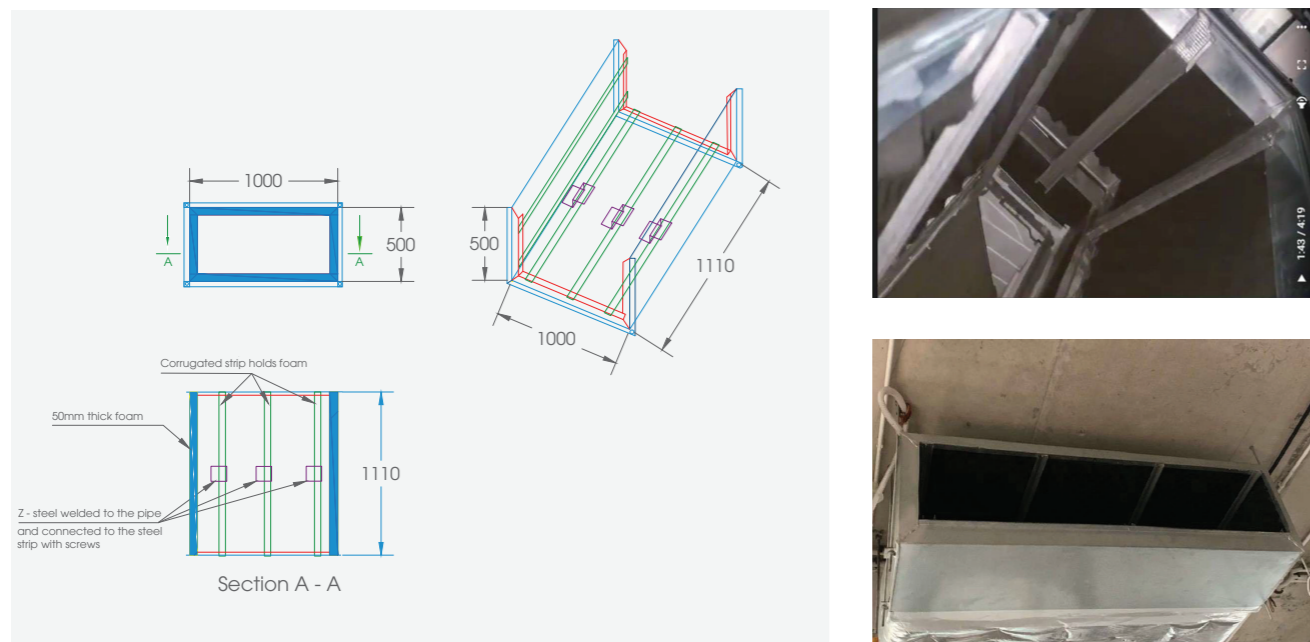


- Sheet roll with adhesive side: add "AD" at the end of code
- Sheet roll with aluminum laminated: add "AL" at the end of code
- Providing all requirements in a variety of diameters, thicknesses and lengths

APPLICATION MANUAL

TPSOUND IE insulation has a high density, from 40 - 80 kg/m³. When installing, it is compulsory to use an iron bar besides adhesive TPGlue to avoid that insulation will peel off the ducting.

Solution: Using iron bars and screwing as the below drawing:



1. POLYESTER FLEXIBLE DUCT - TDI

Specifications

Key Properties	Specifications
Material	Aluminum Foil / Steel Wire / Polyester Insulation
Core	1 layer 23 µm thick
Vapor Barrier (Jacket)	1 layer 12 µm thick
Density	12kg/m ³
Length	8m
Thickness	25mm
Used Temperature	-30°C to +140°C
Used Pressure	300mm WG
Used Wind Speed	30m/s
Size	Ø 100mm to Ø 450mm x 8m

Packing

Code Number	ID size (mm)	Length (m)
TDI100	100	8
TDI125	125	8
TDI150	150	8
TDI200	200	8
TDI250	250	8
TDI300	300	8
TDI350	350	8
TDI400	400	8

Providing all requirements in a variety of diameters, thicknesses and lengths

Layer 1:

The 23 µm thick aluminum layer, combined with a high-elasticity stainless steel core, enhances rigidity and prevents deformation

Layer 3:

The 12 µm thick aluminum layer protects the polyester insulation, enhances aesthetics, and increases the product's durability

Layer 2: Polyester insulation

Advantages:

- Polyester fiber is dust-free, waterproof, non-hygroscopic, and resistant to microorganisms like bacteria and mold.
- The product is safe for users' health.
- Polyester fiber is age-resistant, and TPDUCT insulation is highly durable.



2. FLEXIBLE DUCT - TDN

Packing

Code Number	ID size (mm)	Length (m)
TDN100	100	8
TDN125	125	8
TDN150	150	8
TDN200	200	8
TDN250	250	8
TDN300	300	8
TDN350	350	8
TDN400	400	8

Specifications

- Material : Aluminum foil / Steel Wire
- Thickness : 23 Micron
- Length : 8m
- Used Temperature : -30°C to +140°C
- Used Pressure : 300mm WG
- Used Wind Speed : 30 m/s



Providing all requirements in a variety of diameters, thicknesses and lengths

TPADT

TPADT adopts black color PVC film as backing, combined with a high performance solvent acrylic adhesive, it is mainly used for rubber foam packaging and sealing.

PROPERTIES	METRIC	TEST METHOD
Backing Thickness	110 Microns	PSTC - 133 / ASTM D 3652
Adhesion to Steel	20 N/25mm	PSTC - 133 / ASTM D 3652
Rolling Tack	10mm	PSTC - 101 / ASTM D 3330
Service Temperature	-20 ~ +60°C	PSTC - 6 / ASTM D 3121
Applying Temperature	+10 ~ +40°C	PSTC - 131 / ASTM D 3759



THICKNESS	WIDTH	LENGTH	ROLL / CARTON
0.11mm	50mm	50m	24
0.11mm	75mm	50m	16

TPALU

TPALU - P50: Aluminum Foil Polyester Tape

A laminated foil PET polyester backing, with a 20-micron aluminum foil thickness, offering excellent durability, strength, and superior adhesion.

PROPERTIES	METRIC	ENGLISH	TEST METHOD
Backing Thickness	20 Micron	0.8 Mil	PSTC-133 / ASTM D 3652
Total Thickness	55 Micron	2.2 Mil	PSTC-133 / ASTM D 3652
Adhesion to Steel	15 N/25mm	54 Oz./In.	PSTC-101 / ASTM D 3330
Tack Rolling Ball	5 cm	2.0 In.	PSTC-6 / ASTM D 3121
Tensile Strength	40 N/25mm	9.07 Lb/in	PSTC-131 / ASTM D 3759
Elongation	20.0%	20.0%	PSTC-131 / ASTM D 3759
Service Temperature	-30 ~ +100°C	-22 ~ +212°F	-----
Applying Temperature	+10 ~ 40°C	+50 ~ +105°F	-----

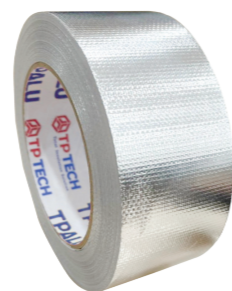


CODE	THICKNESS	WIDTH	LENGTH	ROLL / CARTON
TPALU-P50	20 Micron	48mm	50m	36

TPALU - G25: Aluminum Glass Cloth Tape

Aluminum - Glass Cloth backing (7u Foil / FR Glue / 12x12 Mesh Glass Cloth), combined with a high performance synthetic rubber-resin adhesive, protected by an easy-release silicone release paper.

PROPERTIES	METRIC	ENGLISH	TEST METHOD
Backing Thickness	120 Micron	4.8 Mil	PSTC-133 / ASTM D 3652
Total Thickness	160 Micron	6.4 Mil	PSTC-133 / ASTM D 3652
Adhesion to Steel	18 N/25mm	64.8 Oz./In.	PSTC-101 / ASTM D 3330
Tack Rolling Ball	20 cm	8 In.	PSTC-6 / ASTM D 3121
Tensile Strength	255 N/25mm	58.0 Lb/in	PSTC-131 / ASTM D 3759
Elongation	3.0%	3.0%	PSTC-131 / ASTM D 3759
Service Temperature	-20 ~ +80°C	-4 ~ +176°F	-----
Applying Temperature	+10 ~ 40°C	+50 ~ +105°F	-----



CODE	THICKNESS	WIDTH	LENGTH	ROLL / CARTON
TPALU-G25	120 Micron	50mm	25m	36

TPGLUE

Key Properties	Specifications
Material	Polychloroprene
Appearance	Black viscous liquid
Viscosity	2,000 - 3,000 cPs.
Solid content	24.00 - 26.00 %
High heat resistance	Approx. over 100°C
Open tack time	Short
Application temp	Room temp
Coverage (apply adhesive both surfaces)	200 - 220 g/m ²

Cautions

- Keep away from inflammable
- Use only in well ventilated areas
- Keep container tightly capped when not in use

ACCESSORIES

CODE	SIZE	PACKING
TPGLUE 700	700 GR / Can	12 Cans / Carton
TPGLUE 3500	3500 GR / Gallon	6 Gallon / Carton



- Keep in a cool, dry place
- Avoid contact with eyes, skin and clothing wash thoroughly after handling

TPTAPE

Key Properties	Specifications
Material	Closed cell foam NBR
Color	Black
Density	40 - 60 kg/m ³
Hardness	40 - 60 shore C2
Water absorption	< 2% by Volume
Compression Deflection	6 - 8 PSI
Tensile strength	More than 60 PSI (4.2 kg / cm ²)
Elongation at break	More than 200%
Service Temperature	- 40°C to 105°C
Thermal Conductivity	0.04 W/mK at 20°C
Flammability	UL 94 Class V-0
Adhesive type	Acrylic Pressure Sensitive adhesive
Initial tack	3.0 cm

CODE	THICKNESS	WIDTH	LENGTH	PACKING
TPTAPE 525	5mm	25mm	10m	25
TPTAPE 532	5mm	32mm	10m	16
TPTAPE 325	3mm	25mm	10m	30
TPTAPE 350	3mm	50mm	10m	15



TYPICAL PROJECTS



Lotte Mall - Ha Noi



115 Hospital - Nghe An



HT Pearl - Binh Duong



JYT - Ha Nam



Ngoi Sao Ha Noi School - Ha Noi



LG DISPLAY - Hai Phong



NIPRO - Thu Duc



SAMSUNG R&D - Ha Noi

TYPICAL PROJECTS

PROJECTS: COMMERCIAL CENTERS, SHOPPING MALLS, RESIDENCE, HIGH BUILDINGS.

Lotte Mall	Ha Noi
Samsung R&D	Ha Noi
Handico Building	Cau Giay, Ha Noi
Intracom Building	Nhat Tan, Ha Noi
Berriver N02	Long Bien, Ha Noi
Vkist Science Institute	Hoa Lac Hi-tech Park, Ha Noi
Van Cat Tower	Vinh Yen, Vinh Phuc
VCI Mountain View	Vinh Yen, Vinh Phuc
Thai Nguyen Tower	Thai Nguyen
TTTM Cua Dong	Nghe An
Akari city Nam Long Building	Binh Tan, Ho Chi Minh
Ecolife Riverside	Binh Dinh
Sanctuary Ho Tram	Vung Tau
Angle Island	Dong Nai
Ecohome Nhon Binh	Binh Dinh
Unico Thang Long	Binh Duong
Xuan Lan Skincare Clinic	Can Tho
Bac Hai Wedding Center	Lam Dong

FACTORY PROJECT

Phenikaa Factory	Hoa Lac Hi-tech Park, Ha Noi
ACT Factory	Ba Thien, Vinh Phuc
Cooler Master	Bac Ninh
Hyosung Financial System	Bac Ninh
ITM V3; ITMV5	Bac Ninh
Value Factory	VSIP Bac Ninh
S&T Factory	VSIP Bac Ninh
Vinatech Vina Factory	Bac Ninh
Samsung Electronic	Bac Ninh
Samsung SEMV, SEVT	Thai Nguyen
Quanta	Nam Dinh
Top Textiles	Nam Dinh
Rozer	Hai Phong
Kyocera C	Hai Phong
08 - BW Factory	Cam Giang, Hai Duong
Led Ilsung Factory	Nhan Quyen, Hai Duong
SD Factory	Hai Duong
LG Display, Inotek	Trang Due, Hai Phong
Dong Do Electronic Factory	Hai Phong
Qisda Electronic Factory	Ha Nam
JYT	Ha Nam
Seoul Factory	Ha Nam
Nipro	9 District, Ho Chi Minh
Nidec Tosok	7 District, Ho Chi Minh
Nikkiso Factory	Quang Ngai, Ho Chi Minh
ACECOOK	Vinh Long
Takesho Food	Can Tho
Long Son Petrochemicals Factory	Vung Tau
Quoc Quang Petrochemicals Factory	Quang Nam
Semba Tohka Vietnam	Dong Nai



Hilton Hai Phong - BRG