

# insulflex®

High quality, flexible and reliable elastomeric closed cell nitrile rubber insulation for prevention of condensation in cooling lines, ductings and equipment of cooling systems

## Product & Technical Guide

Class 0 Fire Rating BS 476 Parts 6 & 7  
Fire Rated AS/NZ 1530.3 : 1999



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## Introduction

### INSULFLEX FLEXIBLE ELASTOMERIC CLOSED CELL NITRILE RUBBER INSULATION IS YOUR SOLUTIONS TO THE PREVENTION OF CONDENSATION IN COOLING LINES/SYSTEMS AND ENERGY CONSERVATION

Insulflex has been supplying to our customers with the highest quality and reliable flexible elastomeric closed cell nitrile rubber insulation since our inception almost 30 years ago.

We have tested our product under the BS 476 Part 6 & 7, the AS/NZ 1530.3 : 1999 and even under the FM Global. We have achieved Class 0, Australian FR and FM Approved for Insulflex products.

Insulflex flexible elastomeric nitrile rubber closed cell insulation comes with built in vapour barrier and the closed cell structure nature within each cell would ensure high water vapour transmission resistance and indirectly enable the product to be efficient in energy conservation.

Insulflex flexible elastomeric closed cell nitrile rubber insulation is dust and fibre free. It is very suitable for insulating of ducted air in clean room, pharmaceutical plant and/or operating theatre of hospitals whereby clean air free of dust and impurities are of great importance.

Apart from above, Insulflex elastomeric closed cell nitrile rubber insulation carries impressive technical certification. This technical certifications would be able to support you in your bidding for your projects. In the product specification sections Insulflex elastomeric closed cell nitrile rubber insulation would provide the ideal solutions to projects requirement.

### THE ADVANTAGES OF USING INSULFLEX ELASTOMERIC CLOSED CELL NITRILE RUBBER INSULATION

- ◆ ISO 9001:2015 AND ISO 14001:2015 registered company to ensure good quality product
- ◆ Insulflex produce a full range of tubing, paircoil, sheet and jumbo rolls for refrigeration piping, chilled water piping and chiller insulation. Sheets /rolls laminated with aluminium foil for ducting application.
- ◆ Lightweight, flexible and yet comes with a natural skins makes installation work faster and the product are more resilient against water vapour transmission
- ◆ Low thermal conductivity and high water vapour transmission resistance to effectively control condensation and also to retard heat loss or gain in heating or cooling pipes.
- ◆ Non corrosives and non toxic
- ◆ Do not encourage bacteria and fungi growth
- ◆ Class O Fire Rating, Fire Rated to Australian Standard and FM Approved
- ◆ Approved by Fire Department of Malaysia (Bomba)
- ◆ Approved by Hong Kong Fire Department
- ◆ Certified by Singapore Green Building Council
- ◆ Listed member of Australian Green Building Council



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## Product Characteristics And Features - Insulflex Class 1

- Type of Material** ➤ High quality flexible elastomeric closed cell nitrile rubber insulation
- Brief Description** ➤ Flexible elastomeric closed cell nitrile rubber insulation material with high resistance to water vapor, low Thermal Conductivity with good closed cell structure to optimize the prevention of condensation and energy loss over long period
- Color** ➤ Black ■
- Application** ➤ Insulation for pipes (copper, metal, pvc), air ducts, vessels (incl. elbows, fittings and flanges) in air-conditioning, refrigeration and process equipments to prevent condensation and reduce energy loss.
- Insulflex Features** ➤
  - Specially extruded with variable wall thickness of tubing to ensure that surface temperature of insulate pipe are maintained as pipe diameter increased
  - With a layer of well formed skin and good structured closed cell no additional vapor barrier required
  - Dust and fibre free. Non toxic.

### INSULFLEX CLASS 1 PRODUCT TECHNICAL SPECIFICATIONS

AVERAGE PHYSICAL PROPERTIES	RATING OF DENSITY	TEST METHODS
Density	60 kg/m <sup>3</sup> to 80 kg/m <sup>3</sup> (Tubing) 50 kg/m <sup>3</sup> to 80 kg/m <sup>3</sup> (Roll)	ASTM D 1667
Thermal Conductivity ("K" Value) @ 20 C mean temperature	0.035 W/mK	ASTM C 518
Service Temperature limit C	- 50 C to + 105 C	ASTM C 354 Type 2
Linear Shrinkage At - 50 Degree C Linear Shrinkage At 105 Degree C	0.20% 3.30%	ASTM C534 : 2016
Thermal Stability 7 Days 200 F (% Shrinkage) 7 Days 200 F	4.5 5.5	ASTM C548
Water Vapur Ermeability Per-in Max	0.012 Perm-inch	ASTM E96/E96M-16
Water Vapour DifussionResistance Factor	> 10,000	ASTM E96/E96M-16
Average Surface Spread Of Flame	Class 1	BS 476 PART 7
Flammability	V-0, 5VA, HF-1	UL 94
Reaction to Fire	Self Extinguishing, No Dripping	
Measurement of Antibacterial Activity Presence	ATCC 6538P and ATCC 8739 (>3.91 & 3.69) - Passed	ISO 22196 - 2011
Measure of Fungi Growth	Passed	ASTM G21-15
Test For Leachable Ion	Fluoride 0.8 ppm and Chloride 234 ppm - within limits	ASTM 871-95 (Reapproved 2000)

SIRIM QAS Malaysia Listed Product  
REACH and RoHS (SGS) Malaysia  
Listed under Singapore Green Building Product Council



Insulflex Corporation Sdn Bhd

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## Product Characteristics And Features - Insulflex FM Class 0

### Insulflex flexible elastomeric closed cell nitrile rubber insulation meeting the following requirements:

- ◆ Approved by Fire Department of Malaysia (Bomba) under BS 476 Class 0 Fire Rating
- ◆ Approved by Hong Kong Fire Department under BS 476 Class 0 Fire Rating
- ◆ Conformed to Singapore PSB/TUV requirements under BS 476 Class 0 Fire Rating
- ◆ FM Approved

**Type of Material** High quality flexible elastomeric closed cell nitrile rubber insulation

**Brief Description** Flexible elastomeric closed cell nitrile rubber insulation material with high resistance to water vapor, low Thermal Conductivity with good closed cell structure to optimize the prevention of condensation and energy loss over long period

**Color** Black ■

**Application** Insulation for pipes (copper, metal, pvc), air ducts, vessels (incl. elbows, fittings and flanges) in air-conditioning, refrigeration and process equipments to prevent condensation and reduce energy loss.

**Insulflex Features**

- Specially extruded with variable wall thickness of tubing to ensure that surface temperature of insulate pipe are maintained as pipe diameter increased
- With a layer of well formed skin and good structured closed cell no additional vapor barrier required
- With a layer of well formed skin and good structured closed cell NO additional vapor barrier required
- Dust and fibre free. Non toxic.

### INSULFLEX FM CLASS 0 PRODUCT TECHNICAL SPECIFICATIONS

AVERAGE PHYSICAL PROPERTIES	RATING OF DENSITY	TEST METHODS
Density	60 kg/m <sup>3</sup> to 80 kg/m <sup>3</sup> (Tubing) 50 kg/m <sup>3</sup> to 80 kg/m <sup>3</sup> (Roll)	ASTM D 1667
Thermal Conductivity ("K" Value) @ 20 C mean temperature	0.035 W/mK	ASTM C 518
Service Temperature limit C	- 50 C to + 105 C	ASTM C 354 Type 2
Linear Shrinkage At -50 Degree C	0.20%	ASTM C534 : 2016
Linear Shrinkage At 105 Degree C	3.30%	
Thermal Stability 7 Days 200 F (% Shrinkage) 7 Days 200 F	4.5 5.5	ASTM C548
Water Vapor Permeability Per-in Max	0.012 Perm-inch	ASTM E96/E96M-16
Water Vapor Resistance Factor	> 10,000	ASTM E96/E96M-16
Fire Propagation Sub Index less than 12	Class 0	BS 476 Part 6 and Part 7
Flammability	V-0, 5VA, HF-1	UL 94
Reaction to Fire	Self Extinguishing, No Dripping	
Fire, Heat and Smoke Release	0, 0, 0, 4 (Passed)	AS/NZ 1530.3:1999
FM Approved Certificate of Compliance	FM Approved Class 4924	FM Global USA
Measurement of Antibacterial Activity Presence	ATCC 6538P and ATCC 8739 (>3.91 & 3.69) - Passed	ISO 22196 - 2011
Measure of Fungi Growth	Passed	ASTM G21-15
Test For Leachable Ion	Fluoride 0.8 ppm and Chloride 234 ppm - within limits	ASTM 871-95 (Reapproved 2000)

Factory Mutual (FM) Approved, USA  
SIRIM QAS Malaysia Listed Product under Class 0 Category  
Singapore Certificate of Conformity (TUV/PSB) under Class 0 Category  
Fire & Rescue Department of Malaysia Approval (Bomba) under Class 0 Category  
Hong Kong Fire Services Department Approval under Class 0 Category  
Listed under Singapore Green Building Product Council  
Member of Green Building Council of Australia  
REACH and ROHs SGS MALAYSIA

Mechanical piping and ducting systems used in heating, ventilating, air conditioning or refrigeration at temperature not exceeding +105 C (220 F) need to be insulated for maximum operational efficiency. Insulflex flexible elastomeric closed cell nitrile rubber tubing and sheet insulation with low thermal conductivity and high water vapour transmission resistance are the most suitable insulation materials for these applications.

## Insulflex Thickness Recommendations To Control Condensation in Cooling Lines

DESIGN CONDITIONS	PIPE SIZE	PIPELINE TEMPERATURE			
		14.4 C (58 F)	7 C (44.6 F)	2.5 C (36 F)	- 18 C (0 F)
NORMAL CONDITIONS 29.4 C (85 F) 70% RH	10 mm ID TO 76 IPS	9 mm	13 mm	13 mm	25 mm
	Above 76 mm IPS to 127 mm IPS	13 mm	13 mm	13 mm	32 mm
	Above 127 mm IPS to 254 mm IPS	13 mm	13 mm	19 mm	32 mm
SEVERE CONDITIONS 32.2 C (90 F) 80% RH	10 mm ID TO 76 IPS	13 mm	19 mm	19 mm	38 mm
	Above 76 mm IPS to 127 mm IPS	13 mm	25 mm	25 mm	38 mm
	Above 127 mm IPS to 254 mm IPS	13 mm	25 mm	32 mm	50 mm
VERY SEVERE CONDITIONS 32.2 C (90 F) 85% RH	10 mm ID TO 76 IPS	13 mm	25 mm	25 mm	38 mm
	Above 76 mm IPS to 127 mm IPS	19 mm	32 mm	32 mm	50 mm
	Above 127 mm IPS to 254 mm IPS	25 mm	32 mm	38 mm	50 mm
EXTREMELY SEVERE CONDITIONS 34 C (93.2 F) 90% RH	10 mm ID TO 76 IPS	25 mm	25 mm	38 mm	50 mm
	Above 76 mm IPS to 127 mm IPS	32 mm	38 mm	50 mm	75 mm
	Above 127 mm IPS to 254 mm IPS	32 mm	50 mm	75 mm	75 mm

- ◆ Insulation for pipes of 10 mm ID to 76 IPS (89 mm ID) are available in tubing form with wall thickness of 9 mm, 13 mm, 19 mm, 25 mm, 32 mm and 38 mm
- ◆ Insulation above 76 mm IPS are in jumbo roll or pre-cut sheet and available up to 50 mm tk
- ◆ Insulflex thickness recommended within the specified temperature ranges will control condensation on indoor piping under design conditions defined as below:-

### NORMAL

Maximum severity of most indoor conditions seldom exceed 29.4C to 30 C and 70% relative humidity (RH)

### SEVERE AND VERY SEVERE

Conditions of very high humidity and/or poorly ventilated area whereby temperature may be depressed below the ambient. Under conditions of high humidity, additional thickness of insulation is required.

### EXTREMELY SEVERE

Conditions of very high temperature and extremely high relative humidity and very poorly ventilated area in particular near the seaside in tropical and sub-tropical countries

## Thickness Recommendation for Insulation Of Ductings. Tanks and Equipment of Cooling Systems

DESIGN CONDITIONS	METAL SURFACE TEMPERATURE				
	15 C (59 F)	12 C (53.6 F)	7 C (44.6 F)	2.5 C (36.5 F)	- 18 C (0 F)
26.7 C (80 F) 50% RH	9 mm	9 mm	13 mm	19 mm	25 mm
29.4 C (85 F) 70% RH	13 mm	13 mm	19 mm	25 mm	32 mm
32.2 C (90 F) 80% RH	13 mm	19 mm	25 mm	32 mm	50 mm
32.2 C (90 F) 85% RH	25 mm	25 mm	32 mm	38 mm	50 mm

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## Product Range

Product : Insulflex Tubing  
Unit Length : 6 Feet (1.82m)

Insulation Id		Tubing Thickness						
mm	Inch	Pcs/ctn 6 Mm	Pcs/ctn 10 Mm	Pcs/ctn 13 Mm	Pcs/ctn 19 Mm	Pcs/ctn 25 Mm	Pcs/ctn 32 Mm	Pcs/ctn 38 Mm
6	1/4	250	168	100	48			
10	3/8	200	120	90	36	30		
13	1/2	150	100	70	30	28		
16	5/8	120	90	63	30	24		
19	3/4	100	72	56	26	20		
22	7/8	90	65	42	24	20	14	9
25	1	80	49	36	20	18	12	9
29	1 1/8		49	36	20	18	12	9
32	1 1/4		42	30	20	16	12	9
35	1 3/8	50	36	30	18	15	12	9
38	1 1/2		36					
42	1 5/8		30	25	16	12	10	7
48	1 7/8		28	20	12	10	9	6
51	2		24	20	12	9	8	6
54	2 1/8		20	18	12	9	6	6
60	2 3/8		20	18	9	9	6	6
67	2 5/8		18	13	8	8	6	6
73	2 7/8		18	13	8	8	6	5
76	3		18	12	8	8	6	5
79	3 1/8		15	12	6	6	5	5
89	3 1/2		15	12	6	6	5	5
100	4		13	12	6	5	5	4
114	4 1/2		13	10	6	5	5	4

Product : Insulflex Roll  
Roll Width : 1.22 ( 4 Ft ) For All  
Thk Except 2" Tk



Product : Insulflex Sheet  
sheet Size : 1.22 M X 0.914 M ( 4 Ft X 3 Ft)



Thickness	Roll Size		
	mm	Inch	
3	1/8	1.22 X 9.14	Single Skin
6	1/4	1.22 X 9.14	Db/single Skin
10	3/8	1.22 X 9.14	Db/single Skin
13	1/2	1.22 X 9.14	Db/single Skin
15	5/8	1.22 X 9.14	Double Skin
19	3/4	1.22 X 9.14	Double Skin
25	1	1.22 X 9.14	Double Skin
32	1 1/4	1.22 X 9.14	Double Skin
38	1 1/2	1.22 X 9.14	Double Skin
38	1 1/2	1.22 X 2.50	Double Skin
38	1 1/2	1.22 X 4.00	Double Skin
50	2	1.00 X 2.50	Double Skin
50	2	1.00 X 4.60	Double Skin

Thickness	Pcs/ctn	Sheet Size	
		mm	Inch
3	80	1.22 X 0.914	Single Skin
6	40	1.22 X 0.914	Db/single Skin
10	26	1.22 X 0.914	Db/single Skin
13	20	1.22 X 0.914	Db/single Skin
15	16	1.22 X 0.914	Double Skin
19	14	1.22 X 0.914	Double Skin
25	10	1.22 X 0.914	Double Skin
32	8	1.22 X 0.914	Double Skin
38	7	1.22 X 0.914	Double Skin
50	5	1.22 X 0.914	Double Skin

### Remark:-

- 1) Class 1 Covers All Tubing, Sheet, Roll, Rolls Laminated With Aluminium Foil, Foam Tape And Pipe Support
- 2) Fm Class 0 For Tubing, And Roll Bare Only.

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## Accessories

Insulflex insulation foam tape is a self adhesive CFC free synthetic rubber based insulating tape for strong bonding and longer durability and yet retaining its insulating properties. Insulflex insulation foam tape adhere firmly to rubber, metal and plastic surface.

Product	Insulflex Insulation Foam Tape
Temperature Range	- 20 C to + 80 C
Adhesive Surface	Double Side Tissue Tape (Acrylic based)
Adhesion Strength	1000g/25 mm area
Thermal conductivity	0.035 W/mK
Fire Rating (Tape)	Class 1
Size	3 mm x 24 mm x 9.14 m & 3 mm x 48 mm x 9.14 m
Ozone Resistance	ASTM D 1711 - Good
Oil & Grease Resistance	Good



Insulflex self adhesive insulation cork tape is applicable for insulation of air-conditioning and refrigeration copper piping, valves and joints in home, commercial and industrial buildings. It seals tightly to effectively prevent condensation in the cooling pipe system. Insulflex cork tape adheres firmly to all types of metal, copper and plastic pipes. It will not delaminate easily as the adhesive side is made of very high quality synthetic rubber based material

Product	Insulflex Insulation Cork Tape
Temperature Range	- 29 C to 93 C
Colour	Black
Penetration	200-240 mm @ 30 C (150gm, 30 Sec)
Chemical Resistance	Good resistance to oil, acid and alkaline
Size	3 mm x 50 mm x 7.62 m
Adhesion	Good adhesion to steel, copper, plastic, wood, masonry



Insulflex synthetic rubber based adhesive are specially formulated for use on Insulflex flexible elastomeric closed cell rubber insulation. The adhesive is specially formulated for joining of rubber to rubber surface. In using Insulflex adhesive, extra care must be take to ensure both surface are dust and grease free and both rubber joint together after waiting for 3 minutes to 5 minutes for the solvent to evaporate to ensure a good adhesion.

Product	Insulflex Adhesive
Adhesion Strength	Excellent
Colour	Black
Water Resistant	Good (After drying)
Consumption	3 sqm per liter (smooth surface )



Insulflex Insulfix is PU/PIR Thermal insulating pipe support for HVACR piping support. Insulfix consist of a high density compression resistance rigid PU/PIR foam section with protective polymeric strip to prevent slippage during installation.

Product	Insulfix PU/PIR Pipe Support
Insulflex Density	up to 300 Kg/m <sup>3</sup>
Thermal Conductivity	0.038 W/mK
Fire Certification	Class 1
Compression Strength	4228 Kpa
Colour	Black
Low Water Permeability	> 2%
Durability	High load bearing and durable
Tongue & Grip	To provide firm grip and prevent slipping



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## Product: Roll/Sheet Laminate with Aluminium Foil & Double Side Release Tape

Insulflex flexible elastomeric closed cell sheet roll insulation laminated with fire retardant aluminium foil to provide resistance to water vapour transmission. The low thermal conductivity of Insulflex sheet roll together with a layer of aluminium foil would enhance the insulation sheet roll resistance to water vapour transmission.

Insulflex flexible elastomeric closed cell sheet insulation laminated with fire retardant aluminium foil is suitable for application for ducting insulation for clean room manufacturing plant, pharmaceutical plants and operating theatres in hospitals.



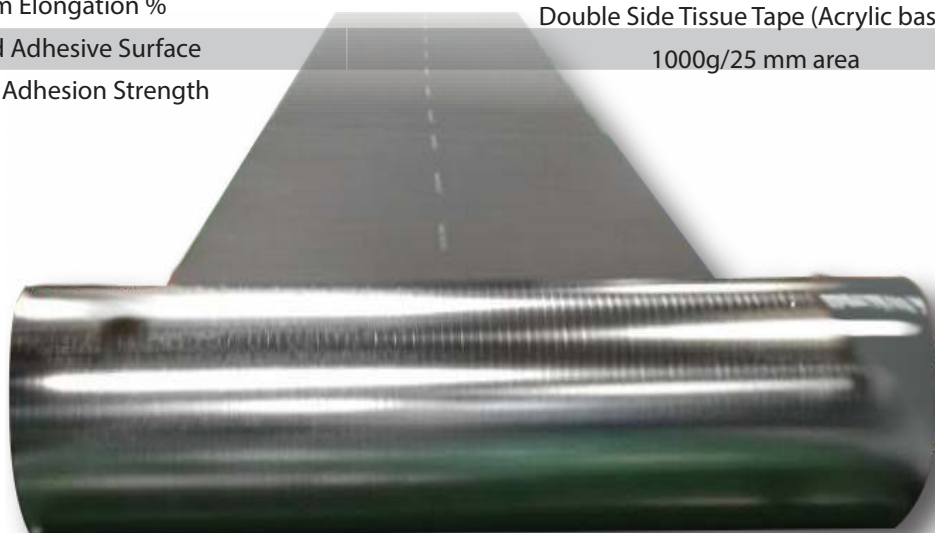
### Roll with one side laminated with Aluminium Foil

Product	50 Kg/m <sup>3</sup> to 80 Kg/m <sup>3</sup>
Insulflex Density	0.035 W/mK
NBR Thermal Conductivity	FM Approved Class 0 or Class 1
Insulation Fire Rating	25/50 Class 0
Aluminium Foil Fire Rating	170 Micron
Aluminium Foil Total Thickness	120 N/25 mm
Aluminium Foil Tensile Strength	25/50 Class 0
Aluminium Foil Fire Rating	1%
Aluminium Elongation %	

Insulflex elastomeric closed cell sheet roll insulation lamination on one side with fire retardant aluminium foil can also come with self adhesive double side release tape upon request.

### Roll with one side laminate with Aluminium Foil and double sided release tape on other side

Product	50 Kg/m <sup>3</sup> to 80 Kg/m <sup>3</sup>
Insulflex Density	0.035 W/mK
NBR Thermal Conductivity	FM Approved Class 0 or Class 1
Insulation Fire Rating	25/50 and Class 0
Aluminium Foil Fire Rating	170 Micron
Aluminium Foil Total Thickness	120 N/25 mm
Aluminium Foil Tensile Strength	1%
Aluminium Elongation %	Double Side Tissue Tape (Acrylic based)
Double Sided Adhesive Surface	1000g/25 mm area
Double Sided Adhesion Strength	



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## Project Reference

### Malaysia



Pavilion



KLCC



ONE KLCC

### Indonesia



GRAND INDONESIA



PACIFIC PLACE



SENAYAN CITY



MAYAPADA HOSPITAL

### Vietnam



SHISEIDO



SAMSUNG



SAMSUNG

### Singapore



THOMPSON MEDICAL CENTRE



MINISTRY OF DEFENCE

### Hong Kong, Philippines & India



HK International  
Airport Terminal



Manila Diamond  
Hotel



ITC Sheraton  
Hotel Mumbai



HK Gynnasium

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## **Certification**

Insulflex flexible elastomeric closed cell insulation has been independently tested by various accredited laboratories in Malaysia, Singapore and Australia. Insulflex product comply to the following standards as listed below which are internationally recognized certification.

### **FIRE TEST REPORT:**

- ◆ FM Approved
- ◆ PSB/TUV Report (BS 476 Part 6)
- ◆ PSB/TUV Report (BS 476 Part 7)
- ◆ Warrington Fire Research (BS 476 Part 7)
- ◆ AWTA Australia (AS/NZS 1530.3 - 1999)
- ◆ SIRIM (BS 476 Part 6 & Part 7)- Class 0
- ◆ TUV Certificate of Conformity (COC)-Class 0
- ◆ SIRIM License - Class 0
- ◆ Bomba Malaysia - Class 0
- ◆ Hong Kong Fire Dept - Class 0
- ◆ Underwriters Laboratory - UL 94 V-0

### **TOXICITY TEST AND COMPLIANCE**

- ◆ Reach and Rohs compliance

### **GREEN PRODUCT Certification**

- ◆ Singapore Green Building Council
- ◆ Green Building Council Australia

### **ISO Certification**

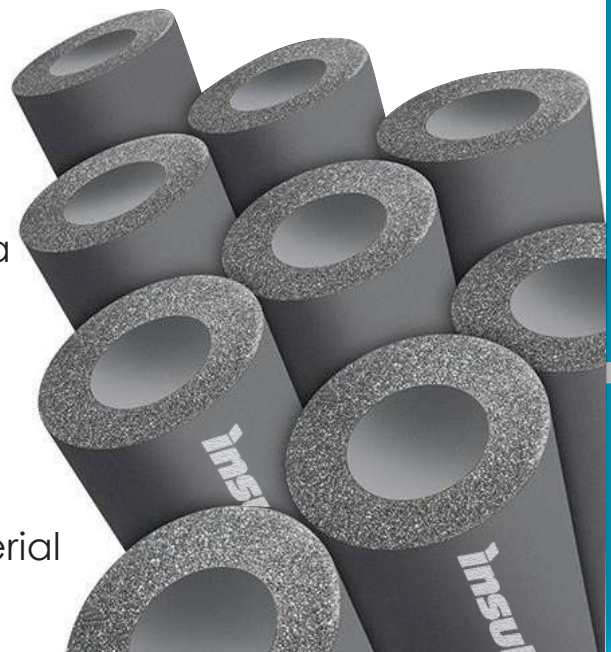
- ◆ ISO 14001 : 2015
- ◆ ISO 9001: 2015

### **SOUND ABSORPTION TESTS:**

- ◆ SIRIM Acoustic Test
- ◆ RMIT Australia Acoustic test

### **OTHER TESTS:**

- ◆ Rubber Research Institute of Malaysia under ASTM Stds
- ◆ SIRIM water vapour Permeability test under ASTM Stds
- ◆ SIRIM Water Absorption Test under ASTM Stds
- ◆ Korean Institute of Construction Material (Moisture Resistance Factor)





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