1001 – ACME – MAS – ACE – STR – 0002

LODHA BUILDING A BETTER LIFE	Lodha Sales Gallery, ACME Manpada, Thane	ACE GLOBAL AIRCON SERVICES LTD.	Work Order No.:
			Material Approval Submittal
			MAS No:

Contractor: ACE GLOBAL AIRCON SRVICES LTD

To LODHA Group: **Lodha Sales Gallery, Manpada, Thane** | Date: 02-03-2022

Discipline ☐ Architectural ☐ Structural ■ HVAC ☐ Electrical ☐ Plumbing ☐ Facade ☐ Others (.....)

MATERIAL DETAILS (One Item Only Per Form)

Item description : Insulation Drain pipe

Name of material : Insulation Drain pipe

Remarks ☐ As per specifications ☐ Alternate submission

- Attach all relevant technical literature marked to identify relevant descriptions, current test certificate, samples etc.
- Highlight any element of contractual non-compliance in this submittal

Drawing Ref: -	**Planned Date for applicable submittal for: -**	**Date:**
Specification Ref: -	1. O & M Manual	
BOQ Ref: -	2. Training Manual	
Indian/International Standards Ref: -	3. Specified /recommended spare parts	
	4. Warranties and Guarantees	

Manufacturer / Supplier

Company Name: - **K-FLEX INDIA PVT LTD**	Locally Manufactured
Address: 707-708 Sohrab Hall, G wing , 7th floor, 21	Production Period
Sason Road Pune-411 001	Delivery Ex-works
	Total Delivery Time
Local Agent:	Total Delivery Time

Programme: -

Date required on Site: -

Expected date of arrival on Site: -

Contractor's Authorized Signature

ACE GLOBAL AIRCON SERVICES LTD MUMBAI

LODHA Engineer's Comments ☐ Design ☐ Con. Mgmt (Civil). ☐ Con. Mgmt (MEP) ☐ Con. Mgmt (Facade) ☐ QA/QC

Insulation as per pipe sizes to be ensured in installation and Test certificates to be provided prio installations.
Approval subjected to above compliance.

Jangbahadur Sonkar

Digitally signed by Jangbahadur Sonkar
DN: C=IN, OU=Lodha Group, O=Lodha Group, CN=Jangbahadur Sonkar, E=jangbahadur.sonkar@lodhagroup.com
Reason: I am approving this document
Location: your signing location here
Date: 2022.03.05 11:20:49+05'30'
Foxit PDF Reader Version: 11.1.0

Signed (LODHA Engineer)

Consultant's Comments. ☐ Hafeez contractor ☐ Sterling ☐ ESKEYEM ☐ Others (.....)

Signed (Consultant's Engineer)

Status	**Code 1** Work may proceed	**Code 2** Conditionally approved. Work may proceed and resubmit incorporating comments indicated	**Code 3** Revise & Resubmit. Work may not proceed	**Code 4** For information and records only. Work may proceed.

Project Director	**Date: -**

CC: VP (QA/QC), VP (Purchase)

Code 1 – Work may proceed
Code 2 – Conditionally approved. Work may proceed and resubmit incorporating comments.
Code 3 – Revise & Resubmit. Work may not proceed
Code 4 – For information and records only. Work may proceed
Important: Permission to proceed does not relieve contractor from full compliance with contractual obligations

UT - MAS - CTI - SALES - GEN - ACEN - HVAC - 300 - 00

LODHA

LODHA UPPER THANE

ACE GLOBAL AIRCON SERVICES LTD

Contract Ref:
Material Approval Submittal
MAS No:

Contract: ACE GLOBAL AIRCON SERVICES LTD.

To LODHA Group: LODHA UPPER THANE SALES GALLERY

Date: 21-10-21

Discipline ☐ Architectural ☐ Structural ■ HVAC ☐ Electrical ☐ Plumbing ☐ Facade Others(.....)

MATERIAL DETAILS (One Item Only Per Form)

Item description : Insulation for Drain pipe

Name of material : Insulation for Drain pipe

Remarks		As perspecifications		Alternate submission

Attach all relevant technical literature marked to identify relevant descriptions, current test certificate, samples etc.
Highlight any element of contractual non-compliance in this submittal

Drawing Ref: -	**Planned Date for applicable submittal for: -**	**Date:**
Specification Ref: -2.5	1. O & M Manual	
BOQ Ref: - 1.5	2. Training Manual	
Indian/International Standards Ref: -	3. Specified recommended spare parts	
	4. Warranties and Guarantees	

Manufacturer / Supplier

Company Name: Armacell India PVT.LTD.
Address: Gat no 744/745, Village Lonikand,
Pune Nagar Road, Pune – 412 216

Local Agent:

Locally Manufactured :
Production Period :
Delivery Ex-works :
Total Delivery Time :
Total Delivery Time :

ACE GLOBAL AIRCON SERVICES LTD MUMBAI

Contractor's Authorised Signature

Programme: -
Date required on Site: -
Expected date of arrival on Site: -

LODHA Engineer'sComments	Design	Con. Mgmt(Civil)	Con. Mgmt(MEP)	Con. Mgmt (Facade)	QA/QC

Name/ Signature/ Date	Name/ Signature/ Date	Name/ Signature/Date	Name/ Signature/ Date	Name/ Signature/ Date
QE	CM	Commercial/Contracts	Store	Paresh 29/10/21 Co-Ordination

1. Rating of material as per din 4102 not found in catalogue same shall be mentioned, as per specification it shall be b1 class
2. Thickness of insulation shall be highlighted in catalogue
3. Clear catalogue shall be attached.

Name/ Signature/ Date	Name/ Signature/ Date
Architect	RCC Consultant

LODHA UPPER THANE 21 OCT 2021 RECEIVED BY.....

Status

Code 1 Work may proceed

Code 2 Conditionally approved. Work may proceed and resubmit incorporating comments indicated

Code 3 Revise & Resubmit. Work may not proceed

Code 4 For information and records only. Work may proceed

Project Director

Date: -

ACE GLOBAL AIRCON SERVICES LTD MUMBAI

CC: VP (QA/QC), VP (Purchase)

Code 1 – Work may proceed
Code2–Conditionally approved. Work may proceed and resubmit incorporating comments
Important: Permission to proceed does not relieve contractor from full compliance with contractual spec

Code 3 – Revise & Resubmit. Work may not proceed
Code 4 – For information and records only. Work may proceed

2.6 REFRIGERANT & CONDENSATE DRAIN PIPING INSULATION: - PRODUCT.

A. Nitrile Rubber (for Refrigerant & Condensate Drain Piping)

Material shall be insulated with flexible, closed cell, elastomeric, class 'O' nitrile rubber tubing or equivalent, of uniform density 60 to 70 kg/cu.mt with the following properties:

a. Thermal Conductivity:

Less than 0.037 w/m.K at 0 DEG C (as per BS 874 Part 2 1986 or DIN 52613).

b. Water vapour permeability **As per Din 52615**, shall not exceed **0.15ng/m.sec.pa**.

c. Water absorption: Less than 1% by volume.

d. Fire performance

a) Surface spread of flame: Class 1 (BS476 Part 7, 1987)
b) Fire propagation (Total index) Less than 12 (BS476 Part 6, 1989)

e. The material shall be rated as **class 1** as per **BS 476 part 7**, the rating as per **din 4102** shall be **b1**.

f. The **smoke density** of the material as per **AS-1530.3** shall not exceed **1**.

g. The material shall have a fire approval from CBRI/fire advisor (Govt Of India)/chief fire officer.

h. For providing UV protection the insulation shall be cladded with minimum 30 micron aluminium pe foil. The cladding shall be factory finished to avoid site work. The minimum thickness will be as per specs. The insulation material will be provided with self-adhesive covered peel off paper. (as an alternative).

i. Temperature Range: 0°C to 50°C

Comply.

B. Drain piping shall be insulated with 9 mm thick insulation applied in the same manner as specified for refrigerant.

C. All valves, fittings etc for refrigerant piping shall be insulated to the same thickness as specified for the main run of pipes and applied generally in the manner specified above. Valves, joints, yokes and spindles shall be insulated in such a manner as not to cause damage to the insulation when the valves are used or serviced.

D. All Refrigerant pipe work shall have minimum 19 mm thick insulation and higher sizes shall be as per the manufacturer's recommendations.

E. Vapour barrier coating shall be applied to insulated refrigerant pipework coming in contact with atmospheric conditions (i.e outside the air conditioned area).

F. 26 G Aluminum cladding shall be applied to exposed pipework insulation of LMR and other pipings exposed to sunlight —— Not Applicable.

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12	GI Sheet	ESSAR Jindal SAIL TATA
13	GI Factory Made Duct	Rollastar Zeco Ductofab Alpha duct
14	Air Inlet / out let	Caryaire Cosmos Ravistar Air master
15	Smoke / Fire Damper & Motorized Fire & Smoke Damper	Caryaire Ruskin GreenHeck Ravistar Betec CAD
16	Sound Attenuator	Ravistar Caryaire George Rao Uniflair
17	Anchor Fastener	Hilti Fischer Shakti
18	Filter Drier	Danfoss Sporlan Mueller Industries Safe A & T Technology
	Insulation	
19	Closed Cell Elastomeric nitrile rubber along with adhesive	Armacell-Armaflex Eurobatex- Union foam K-Flex A-Flex
20	Fiberglass (Foil Faced)	Owen Corning UP Twiga Sipla Solutions
21	Fiber Glass(Hard Board)	Owen Corning UP Twiga Sipla Solutions
22	Closed cell Nitrile Rubber	Armacell Armaflex K-Flex Superlon
23	Over deck Insulation	Isoboard Owens Corning Polybond Thermosheild
24	Protective Coating over Closed Cell Elastomeric – Fiber glass Woven Clothe	UP Twiga, Foster
25	UV Protective coating	Amicol Polybond Foster
26	Fire Sealant	Birla 3 M Hilti

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G. Drain piping shall be insulated with 9mm thick nitrile rubber insulation applied in the same manner as specified for refrigerant piping. Guaranteed absence of condensation in chilled water pipes at 5^0C in Mumbai ambient air conditions

H. Above thickness shall be followed while selecting material for different applications.

comply

2.6 REFRIGERANT & CONDENSATE DRAIN PIPING INSULATION :- EXECUTION.

A. Scope of this section comprises the supply, installation and testing of insulation as herein Specified and as per the requirements of Indian Standards.

Application of Refrigerant pipe insulation shall be as follows

a. No insulation shall be applied until the pipe is satisfactorily pressure tested

b. Pipe shall be thoroughly cleaned with wire brush and rendered free from all rust and grease.

c. Sleeve the insulation tube onto the pipes.

d. Seal all joints by proper adhesive.

e. For pipe insulation the material should be cut using a die /template to be provided by the manufacturer to ensure proper 45^0 angle is cut and the joiningoverlapping of the insulation does not cause any buldging, or stretching

f. All valves, fittings, etc. for refrigerant piping shall be insulated to the same thickness as specified for the main run of pipes and applied generally in the manner specified above. Valves, joints, yokes and spindles shall be insulated in such a manner as not to cause damage to the insulation when the valves are used or serviced.

g. Vapour barrier coating and aluminium cladding shall be applied to insulated refrigerant pipework coming in contact with atmospheric conditions (i.e. outside the air conditioned area).

h. All tests like pressure testing should be completed and recorded and all systems approved by the Owner/ Consultants before insulation is applied to the equipment, piping and ducting. Insulation material shall be manufactured by approved manufacturers and shall be of the type intended for the services specified.

i. Insulation materials and finishes shall be inherently proof against rotting, mould, fungal growth and attack by vermin, be non-hygroscopic and in all respects be suitable for continuous use throughout the range of operating temperatures and within the environment indicated.

j. Unless otherwise indicated, all thermal insulating materials used within the building shall, tested in accordance with ISHRAE. Alternatively, all thermal insulating materials used within the building shall be noncombustible with a facing of combustible material provided the facing is not more than 0.8 mm thick. Thermal insulating materials used within the building shall be free from substances which in the event of a fire would generate appreciable quantities of smoke, noxious or toxic fumes. When instructed by the Owner/ Consultants, evidence of fire classification, obtained from an approved testing laboratory, shall be provided by the Contractor in order to certify that materials comply with this clause.

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2.
Technical Specification & Catalogue

Name of Manufacturers & Address
Armacell India Pvt. Ltd.

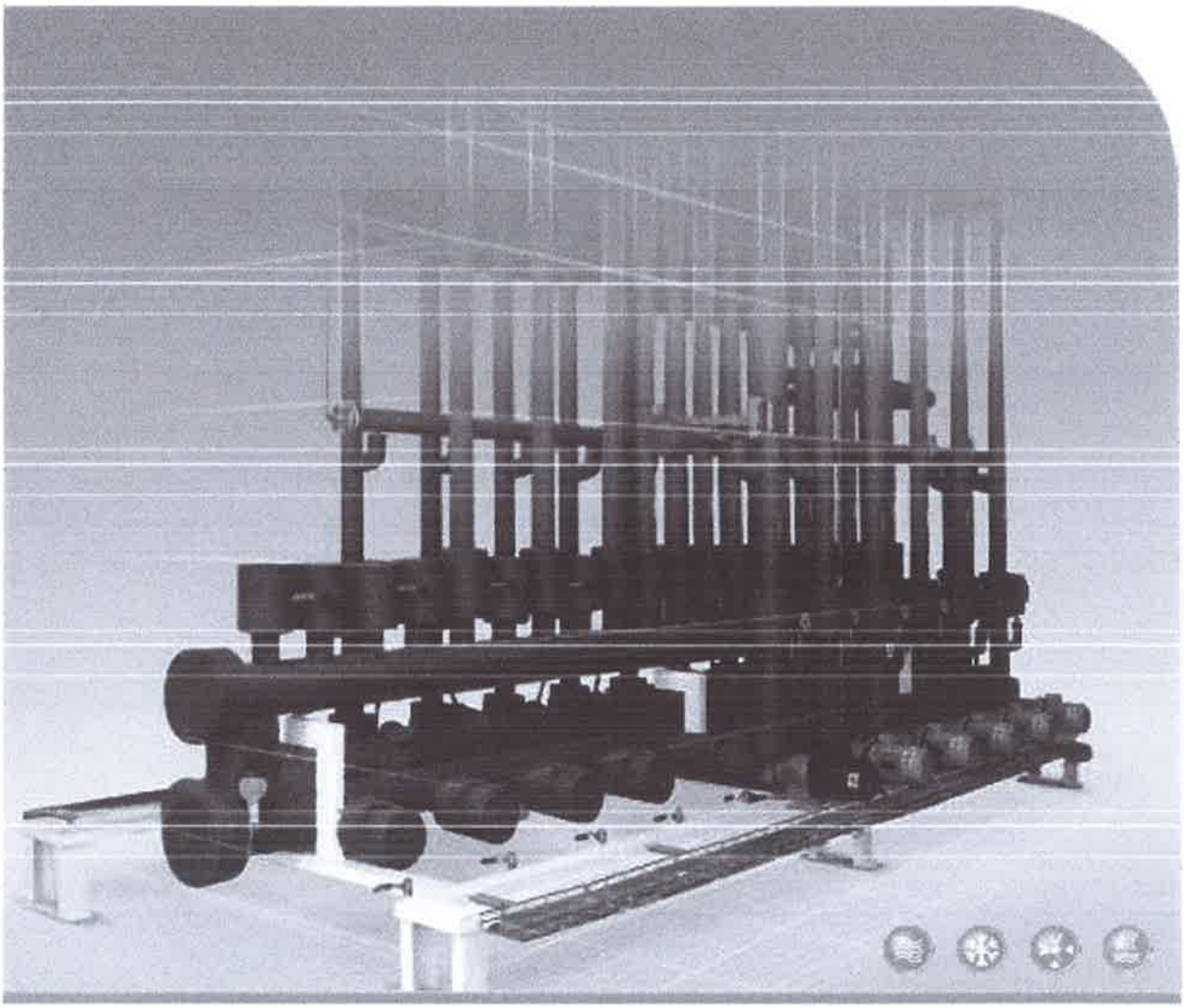
ADDRESS :- Gat No. 744/745, Village Lonikand, Pune Nagar Road, Pune – 412 216.

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ACE GLOBAL AIRCON SERVICES

armacell
engineered foams

THE MAKERS OF Armaflex®



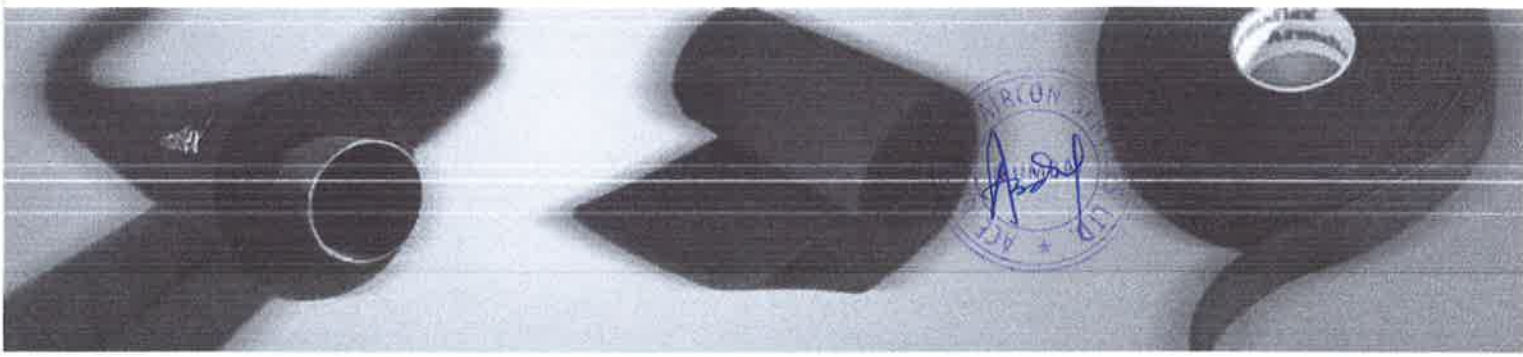
Class 0 Armaflex®

Professional insulation that Prevents Condensation and Energy Losses

- Built-in Vapour Barrier Prevents Condensation
- Reduces Energy Losses
- Easy to Apply

DUST & FIBRE FREE

Now FM APPROVED



Class O Armaflex®

The competitive advantages of specifying Class O Armaflex®

- Lightweight and flexible means easy and speedy installation with low maintenance, resulting in time and cost savings
- Wide range of tube and sheet sizes available
- The low thermal conductivity, λ0.035 W/(m.k) at 0°C and good acoustic performance provide double benefits with one insulation system
- Closed Cell structure provides a very efficient built-in vapour barrier
- A high, μ7000, resistance to water vapour transmission and water ingress, gives long term insulation efficiency for condensation control
- Class O fire category means low fire propagation index, producing minimal contribution to overall heat release, and a zero surface spread of flame for a high degree of fire protection and safety
- Excellent resistance to the effects of ozone, oil, chemicals
- Dust, fibre, CFC and HCFC free with an ODP of zero



Fire performance



Condensation control



Energy conservation

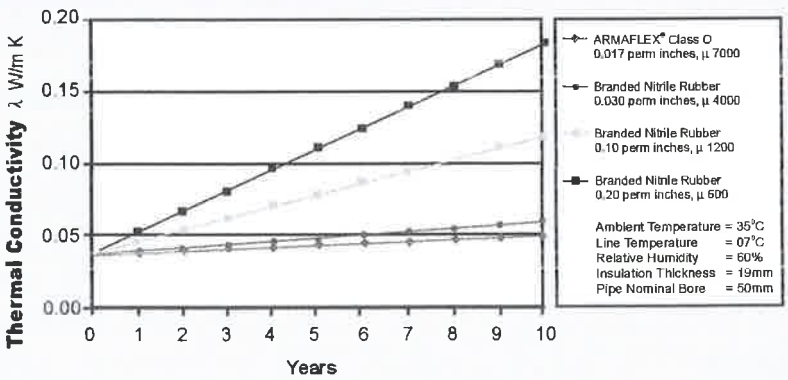


Frost protection

Water Vapour Permeability

The moisture diffusion resistance factor, μ **factor,** is a dimensionless number describing how many times better a material is at resisting the diffusion of water vapour, compared with an equivalent thickness of air. A high μ factor as with Class O Armaflex demonstrates a superior long term performance of the insulation to resist the diffusion of water vapour.

Effect of Water Vapour Permeability on Thermal Conductivity



High μ factor ensures minimum long term heat gain
Low μ factor leads to a rapid increase in λ value

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Class O Armaflex®

Technical Data

Material	Foamed nitrile rubber	
Temperature Range	Max. Surface Temperature +105° C Max. Temperature for Flat Surface +85° C Min. Surface Temperature -40° C*	* Please consult our Technical Department for low temperatures down to -200° C
Thermal Conductivity at 0°C **Thermal Conductivity at +20°C** **Thermal Conductivity at +40°C**	0.035 W/m K 0.037 W/m K 0.039 W/m K	Testing according to DIN EN ISO 8497
Water Vapour Permeability	Moisture Resistance Factor μ > 7,000 2.48×10^{-14} kg/(m.s.Pa) 8.91×10^{-11} kg/ (m.hr.Pa)	Testing according to EN 12086 for Sheets Testing according to DIN EN 13469 for Tubes
Water Absorption	0.9% average volume after 28 days 1.5% maximum volume after 28 days	Testing according to ASTM D 1056
Fire Propagation	Total Index Performance (I) Less than or equal to 12 Sub Index (i_1), Less than or equal to 6	Surface Spread of Flame according to BS 476 Part 7: 1997 Fire Propagation according to BS 476 Part 6: 1997
Fire Performance	**CLASS O**	As per building regulations (England & Wales) for Class O fire category
Reaction to fire	Self-extinguishing, does not drip	
Noise Reduction	Acoustic level upto 30dB (A)	
Resistance to	Ozone Very Good Building Materials Very Good	Testing according to DIN 53509
Health Aspects	**Dust & Fibre Free**	

Outdoor applications should be painted with Armafinish FR paint to the recommended thickness. Two or more coats may be required.

All data and technical information are based on results achieved under typical application conditions. Recipients of this information should, in their own interest and responsibility clarify with us whether or not the data & information apply to the intended application area.

Tube Size Range Length 2m ± 0.03m

Copper Tube			Iron & Steel Pipe		Minimum ID Armaflex*	Nominal Thickness 9 mm*	Nominal Thickness 13mm*	Nominal Thickness 19mm*	Nominal Thickness 25mm*	Nominal Thickness 32mm*
NB in	Nom OD in	Nom OD mm	NB in	Nom OD mm	Min ID mm	Ref.	Ref.	Ref.	Ref.	Ref.
	1/4	6			6.5	9 x 006*	13 x 006*	19 x 006*		
	3/8	10			10.5	9 x 010*	13 x 010*	19 x 010*		
3/8	1/2	12			12.5	9 x 012*	13 x 012*	19 x 012*	25 x 012	
1/2	5/8	15			16	9 x 015	13 x 015	19 x 015	25 x 015	
		18				9 x 018*				
			3/8	17	20	9 x 020*	13 x 020*	19 x 020*	25 x 020*	32 x 020*
3/4	7/8	22	1/2	21.3	22.5	9 x 022	13 x 022	19 x 022	25 x 022	32 x 022
	1	25			25	9 x 025*	13 x 025*	19 x 025*	25 x 025*	32 x 025*
1	1 1/8	28	3/4	26.9	29	9 x 028	13 x 028	19 x 028	25 x 028	32 x 028
		32				9 x 032*				
1 1/4	1 3/8	35	1	33.7	35.5	9 x 035*	13 x 035	19 x 035	25 x 035	32 x 035
		38				9 x 038*				
11/2	1 5/8	42	1 1/4	42.4	43.5	9 x 042	13 x 042	19 x 042	25 x 042	32 x 042
	1 3/4	45			45	9 x 045*	13 x 045*	19 x 045*	25 x 045*	32 x 045*
			1 1/2	48.3	49	9 x 048	13 x 048	19 x 048	25 x 048	32 x 048
2	2 1/8	54			55	9 x 054*	13 x 054	19 x 054	25 x 054	32 x 054
			2	60.3	61	9 x 060*	13 x 060	19 x 060	25 x 060	32 x 060
2 1/2	2 5/8	67			65		13 x 067*	19 x 067*	25 x 067*	32 x 067*
2 13/16	3	76.1	2 1/2	76.1	77		13 x 076*	19 x 076*	25 x 076*	32 x 076*
3	3 1/8	80			81		13 x 080*	19 x 080*	25 x 080*	32 x 080*
			3	88.9	90		13 x 089*	19 x 089*	25 x 089*	32 x 089*
			3 1/2	101.6	103.5		13 x 102*	19 x 102*	25 x 102*	
4	4 1/4	108			109		13 x 108*	19 x 108*	25 x 108*	
			4	114.3	115.5		13 x 114*	19 x 114*	25 x 114*	32 x 114*

* Thickness Tolerance : 9mm ± 5mm, 13-25mm ±1mm, 32 mm ± 1.5mm

* Delivery quoted on request and minimum order quantity required for manufacturing

Sheet in Jumbo Rolls 1000 mm ±20 mm wide	
Nominal Sheet Thickness mm*	Length per Roll ±1 %
6	34
9	23.5
13	17
16	15
19	12
25	9
32	7

ARMAFLEX® SELF-ADHESIVE TAPE

Width : 50 mm
Thickness : 5 mm
Length : 15 m

ARMAFLEX® ADHESIVE 520

Supplied in cans of
2.5 litrs / can
8 cans / carton

Sheets also available with self adhesive backing

ALE GLOBAL SERVICES LTD. MUMBAI

Vendor Appointment	
Dear All The following Contract has been finalized for-	
Project	ACME Ozone Sales Gallery
Vendor for	SITC of HVAC work
Vendor Details as follows Name of the Company	M/s. Ace Global Aircon Services Ltd.
Contact Person	Mr. Ajay Ubale ajav@aceglobal.co.in Contact No - 9619699955

Dear Sir,

Please start coordinating with our Project Team and submit the required drawing, loca samples immediately for approval to our Design team. We have a very tight schedule for the subject work, requesting you to immediately start the work. We are in process of releasing the orders which will follow shortly.

The Contact detail of our site representatives are as follows

Mr. Santosh Rahate (9930416386)

ACE GLOBAL AIRCON SERVICES LTD. MUMBAI

Fwd: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery

Mukesh Mahajan

---------- Forwarded message ---------
From: **Santosh Rahate**
Date: Mon, 14 Feb 2022, 12:55
Subject: Fwd: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery
To: Mukesh Mahajan

---------- Forwarded message ---------
From: **Rajesh Parab**
Date: Mon, 14 Feb 2022, 10:50 am
Subject: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery
To: Ajay Utekar, Rashmi Singh Chauhan
Cc: Suraj Pancha, Rakesh Mahadik, Prashant Desai, Santosh Rahate, Rajesh Kumar, Nilesh Palande, Bhagwan Bavisker, Dushant Ranavare

Vendor Appointment
Dear Sir, The following Contract has been finalized for- Project : ACME Ozone Sales Gallery

Vendor Appointment	
Dear All The following Contract has been finalized for-	
Project	ACME Ozone Sales Gallery
Vendor for	SITC of HVAC work
Vendor Details as follows Name of the Company	M/s. Ace Global Aircon Services Ltd.
Contact Person	Mr. Ajay Ubale [illegible] Contact No - 9619899955

Dear Sir

Please start coordinating with our Project Team and submit the required drawing, face samples immediately for approval to our Design team. We have a very tight schedule for the subject work, requesting you to immediatel, start the work. We are in process of releasing the orders which will follow shortly.
The Contact detail of our site representatives are as follows

Mr. Santosh Rahate ([illegible])

Rajesh Parab
Sr. Executive (Procurement)
[illegible]

Please do not print this email unless it is absolutely necessary

ACE GLOBAL AIRCON SERVICES LTD.