



Manufacturing & Trading Co.

Excellence in  
Pipeline Coatings  
More than **15** years



Develop the Pipeline Without Corrosion



## History & Introduce



Manufacturing & Trading Co.

In 1996 our company, **NIASHIMI** trading & producing co, began to supply hot & cold applied In this regard, we have succeeded in manufacturing, supplying and performing many national & international projects such as 28" pipeline project of transferring gas from Iran to Armenia.

In 2007, due to increasing in customers demand, unbelievable development of our company regarding quality and quantity, fulfilling customer's satisfaction and collecting confirmation of gas & oil companies, international RWTUV certificates, ISO 9001:2008, ISO 17025 also, our production has increased from 5000 MT of wrapping tapes to 10000 MT and from 1800000 liters primer to 3000000 liters.

Moreover we have succeeded to install the production lines of co-extrude 3ply tapes and heat shrinkable sleeve, two component epoxy primer, repair patch, closure patch, mastic and other accessories.

By producing all these products and following global standards, we have became one of the most important manufacturers of pipeline coatings on gas, oil and petrochemical industry Also we honor this issue that we are founder of anticorrosion cold applied tapes in **IRAN**.

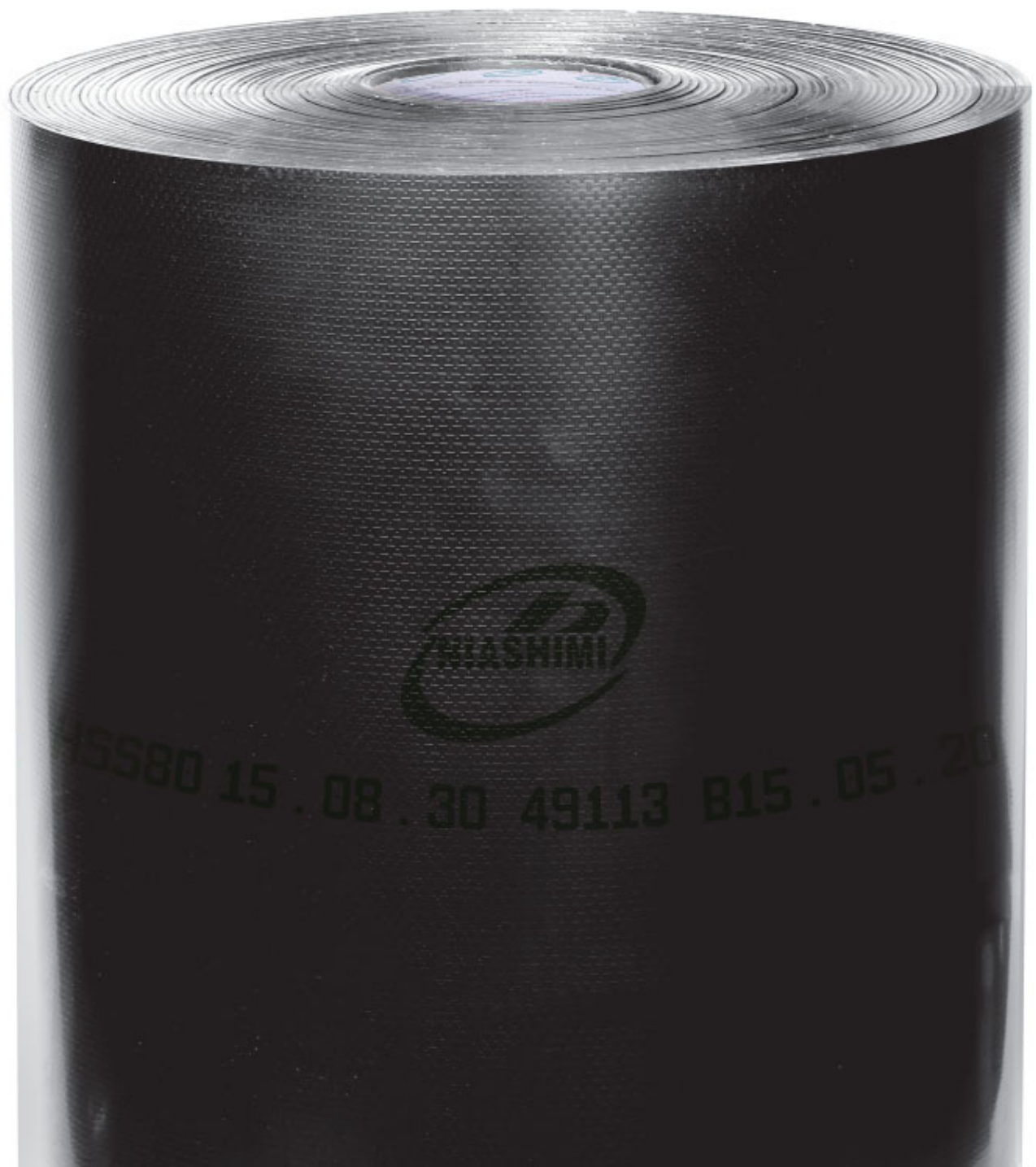
Moreover, we have changed our structure of industrial activities and based our planning on active, qualified human resource to increase our products quality and the continues of this plan is placed in our working structure.

The strategies for the future of **NIASHIMI** co. are relying on the high quality of our products, updating the process of production, concerning customer's satisfaction, training human resource by cooperation of wise managers and qualified experts, and this is how we place our Sleeve in the list of best manufacturers in this industry.

One of the most important factors for having good quality is to control consistently. So that we have done our best to keep the high quality of our products by installing equipped laboratory and following.



# HEAT-SHRINKABLE SLEEVES



## HEAT SHRINKABLE SLEEVES

### THE PRINCIPLES OF HEAT-SHRINKING:

**H**eat-shrinkable materials consist of an external backing made of extruded and cross-linked polyolefin and an internal adhesive made of thermoplastic material. The shrinkage of the backing instils a level of circumferential compression in the coating that supplements the bonding of the sleeve to the pipe surface.

**NIASHIMI** HSS-80 field-joint coating system is the toughest field applied coating systems available.

The coating system consisted of solvent free high performance epoxy, adhesive base copolymer and modified cross-linked polyethylene, is designed to replicate the structure and meet the performance of mill-applied three-layer PE coatings.

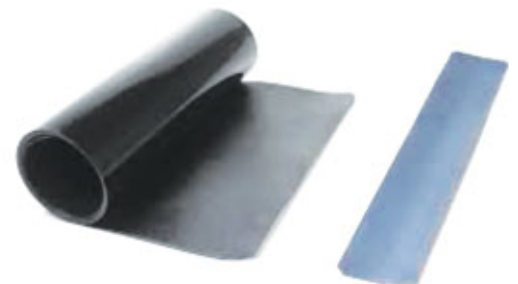
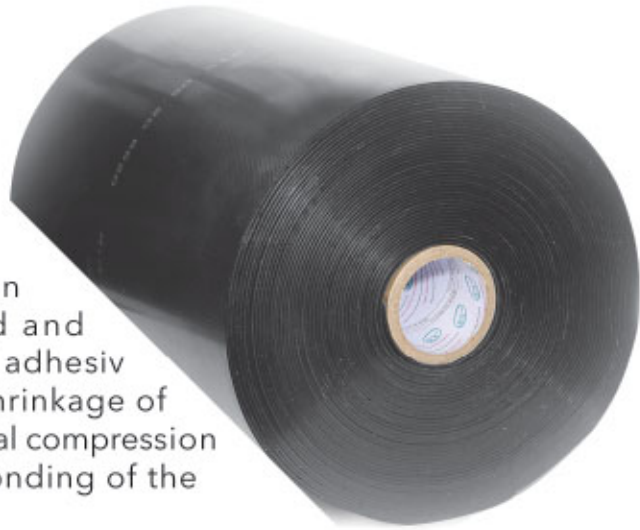
The coatings are compatible with all commonly used pipe coatings including Polyethylene, Coal tar enamel, and fusion-bonded epoxy.

The system is designed to be applied with minimum preheating of the pipe. By far the majority of the girth welds Worldwide on three-layer coated pipes, diameters up to 100" (DN2500), have been coated with HSS-80.

During installation, the epoxy is applied to the prepared pipe surface (Sa 2 1/2) and the heat-shrinkable sleeve is immediately wrapped around the joint over the wet epoxy.

Heat is then applied to the sleeve which shrinks to form a tight fit around the joint. While curing, the epoxy forms strong mechanical and chemical bonds to the pipe surface & to the copolymer adhesive layer.

The radiation cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.



## The Structure of Heat Shrinkable Sleeve (HSS-80 Field-Joint Coatings)

**Construction:** Three-layer system

**First layer:** Liquid epoxy, solvent-free two-component.

**Second layer:** High shear strength copolymer adhesive. ( hot melt base)

**Third layer:** Radiation cross-linked, high density polyethylene PCI  
(Permanent Change Indicator)

### Solvent Free Epoxy:

Epoxy primer is used in a HSS-80 coating system for superior corrosion protection of field welded joints of steel pipes.

### ADHESIVES:

Adhesive is a polymeric compound that applied to the sheet. The adhesive is the key to ultimate performance of the installed system, which is different adhesive types will be specified depending on the pipeline operation condition.

The adhesive has different task. it must be adheres to sleeve and steel in the cut back and mainline coating , it resist against shear forces imparted by soil pressure after the pipeline is buried and provides long term corrosion protection to the steel .

The choice of which adhesives to use, is based on the pipeline design and operation condition.

Coatings are cross-linked, heat-shrinkable materials based on polyethylene, applied without primer, which can be further subdivided into mastic-adhesive based, typically with a low design temperature of up to 50 °C, coatings cross-linked heat-shrinkable material based on polyethylene applied with a liquid epoxy primer, with a design temperature of up to 80 °C.



## BACKING:

The plastic material are composed of extremely long molecular chains in a random arrangement. Their strength depends upon the Distance crystalline natural between the molecular and the molecular structure. In fact, it is the crystal that contributes most of the strength.

As the thermoplastic is heated to above its crystalline melting point (120°C), the crystal disappears. The molecules can then easily slip past each other, so that material flows.

During the investigation of atomic energy , the important discovery was made that exposure of some plastic material to high energy penetrating radiation can cause permanent cross linked of adjacent molecular. This linking results in the chemical bonding of the plastic structure in to a new three dimension matrix.

Once a material has been cross linked, it will not melt or flow at any temperature. When heated, the crystals disappear as before, but no flow or shape change occurs because the cross linked act as ties between the molecules.

However, the structure remains elastic, when the crystal is melted; the material behaves like a rubber. Products that have been radiation cross linked exhibit perfect elastic memory. They can be supplied in a deformed or expanded condition.

When heated, they shrink, for example, to tightly enclose an object over which they have been placed. After extruding the thick sheet, it is taken on the beam where it is passed under a unit that subjects the sheet to electron irradiation.

The irradiation process cross-links the polyolefin. This improves the molecular structure such that the polyolefin will work as part of heat-shrinkable sleeve and provide the required level of mechanical protection while in-service.

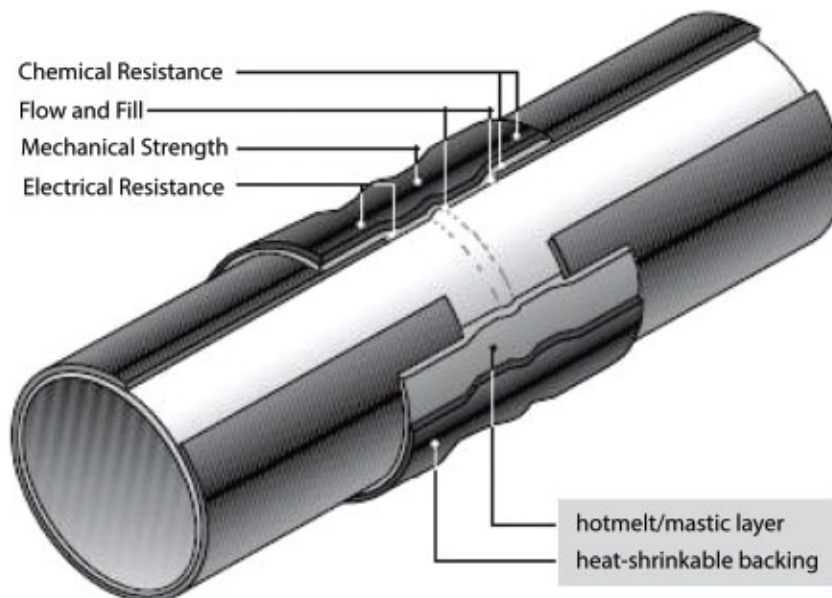
It makes the polyethylene perform more like a tough, heat-resistant, elastic material, than like a plastic material. After cross-linking, the sheet is stretched by feeding it in to a machine that heat it up, stretched it and cools it down. Because the sheet has been cross-linked, after stretching, it will want to recover to its original length when re-heated.

## PRODUCT FEATURES:

- Fully resistant to shear forces induced by soil and thermal movements.
- Sleeve applied over wet epoxy, allowing fast installation and formation of strong mechanical & chemical bonds.
- Superior cathodic disbondment and hot water immersion resistance.
- Fully reconstructs 3-layer coating at all girth welds for continuous & homogeneous performance on Pipelines coated with 3-LPE
- Dimpled backing provides a "permanent change" indicator for application of heat.
- Low preheat requirements

## ADVANTAGES:

- The HSS-80 is tough & lasts as long as a 3-layer, factory applied coating.
- Allows fast application combined with high performance.
- Offers the optimum barrier protection against corrosion.
- HTLP systems allow three layer coated pipelines to have a virtually monolithic coating system.
- Dimpled backing allows easy post-heat inspection and offers a reliable inspect ability at any time.





# TECHNICAL SPECIFICATION

## HSS 80

<b>Properties</b>	<b>Unit</b>	<b>HSS 80</b>	<b>Test method</b>
<b>Total thickness ( min )</b>	mm	2.9 mm	ASTM D1000
<b>Hardness ( min ) / 23°C</b>	shore D	50	ASTM 2240
<b>Impact resistance ( min )</b>	J	15	EN 12068 Annex H
<b>Ring and ball softening point of adhesive , min</b>	°C	110	ASTM E 28
<b>Peel strength to pipe surface and factory coating min</b>	N/mm	5	EN 12068 Annex C
<b>23 °C</b>		0.2	
<b>80 °C</b>			
<b>Peel strength @ 10 mm/min to pipe surface and to factory coating after 28 days hot water soak test at 80 °C , min</b>	N/mm	2.7	ISO 21809-3 Annex I
<b>Cathodic disbondment resistance ( max )</b>	mm	7	EN 12068 Annex K
<b>23 °C</b>		19	
<b>80 °C</b>			
<b>Lap shear strength to pipe surface and factory coating at 80 °C ( min )</b>	N/mm <sup>2</sup>	0.07	EN 12068 Annex D
<b>Specific electrical insulation resistance ( min )</b>	ohm.m <sup>2</sup>	10 <sup>10</sup>	EN 12068 Annex J
<b>Ultimate elongation ( min )</b>	%	400	ASTM D 638
<b>Heat aging , 21 days at 150 °C ( min )</b>	%	200	ASTM D 638
<b>Heat shock , 4 hours at 225 °C</b>	Visual	No cracking , flow or dripping	ASTM D 2671
<b>Thermal aging 100 days at Tmax+20 °C followed by</b>	-	1.25≥E100/E0≥0.75, E100/E70≥0.8 A100/AT≥0.75 , A100/A70≥0.8	EN 12068 Annex E
<b>- elongation @ break</b>			
<b>- peel strength to pipe surface</b>			
<b>Indentation resistance pressure ( min )</b>	N/mm <sup>2</sup>	10	
<b>-at 23 °C</b>		10	
<b>-at 80 °C</b>		Pass	EN 12068 Annex G
<b>- holiday detection or residual thickness</b>	mm	0.6	
<b>Soil stress creep resistance , 24 hours at 80 OC , max</b>	mm	2.5	TP 206 (see Annex B)

# TECHNICAL SPECIFICATION

## EPOXY BASE & HARDENER



<b>Properties</b>		<b>Typical</b>
<b>Color</b>		BLACK
<b>Weight solids</b>		100%
<b>Flash point</b>	Part A	>140 °C
	Part B	>115 °C
<b>Density</b>	Part A	1.45
	Part B	1.00
<b>Pot life</b>	@20 °C	55 min
	@25 °C	30 min
	@30 °C	25 min
	@35 °C	15 min
	@40 °C	10 min
<b>Gel Time</b>	@20 °C	65 min
	@25 °C	60 min
	@30 °C	50 min
	@35 °C	45 min
	@40 °C	35 min
<b>Shelf life</b>	2 years out of direct sunlight. Shelf life will be lesser at higher temperatures	
<b>Flash point</b>	Part A	145°C
	Part B	118°C
<b>Typical coverage</b>	6.0 sq.m /lit or 23 sq.m /US gallon. this is coverage is based on 100-150 microns or 4-6 mils average thickness	
<b>Typical thickness</b>	100-150 micron ( 4-6 mils )	



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# FILLER MASTIC



# FILLER MASTIC

**M**astics, is base of rubber extended semi crystalline adhesive. It dues to their permanently visco- elastic qualities, is particularly suited for long-term corrosion protection as a filler for cavities in metallic structures.



## The filler mastic physical properties as following:

Peel strength at 23 °C, min: 3 N/mm (EN 12068 Annex C)

Lap shear strength at 23 0C, min: 0.25 N/mm<sup>2</sup> (EN 12068 Annex D)

Softening point, min: 100 0C (ASTM E 28)

Performance	EN 12068 CLASS 30- ISO 21809-3
<b>Soil stress restriction</b>	None
<b>Max operation temperature</b>	30 °C (86 °f)
<b>Max preheat temperature</b>	50 °C (122 °f)
<b>Recommended pipe preparation</b>	St 2.0 - St 3.0

## BENEFIT:

- Central adhesive never dried, cover the welded steel surface and overlap adjacent part to seal and construct the effective corrosion protection.
- Mastic adhesive covered on both sides of pipeline coating and sealing corrosion to proof water and other corrosive into the steel surface. Meanwhile, high-performance mastic adhesive supply the coating with excellent property such as lap shear strength and peel strength.
- The whole coating system is anti-puncture & self-healing, ignore the damage of cathodic disbandment in service life.

## SHELF LIFE:

### 2 years, under correct storage condition as follow:

- To ensure maximum performance, store products in a dry, ventilated area.
- Keep products sealed in original cartons and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements.
- Avoid prolonged storage at temperature above 40°C or below -20°C.
- Product installation should be done in accordance with local health and safety regulation.

# REPAIR PATCH MELTING STICK





# REPAIR PATCH MELTING STICK



**T**he repair patch shall be an irradiated (electron beam) cross linked high density Polyethylene backing coated internally with a high temperature, high melting point Semi crystalline thermoplastic adhesive, which is applied over the filler mastic covering the damaged area. The backing layer of repair patch shall be thermally stabilized and ultra violet resistance.

- **FIRST LAYER:** copolymer hot melting adhesive
- **SECOND LAYER:** radiation cross link, high density polyethylene
- **MELTING STICK:** is made of hot melt adhesive same with first layer of CRP\*

\*CRP: repair patch construction 2-layer

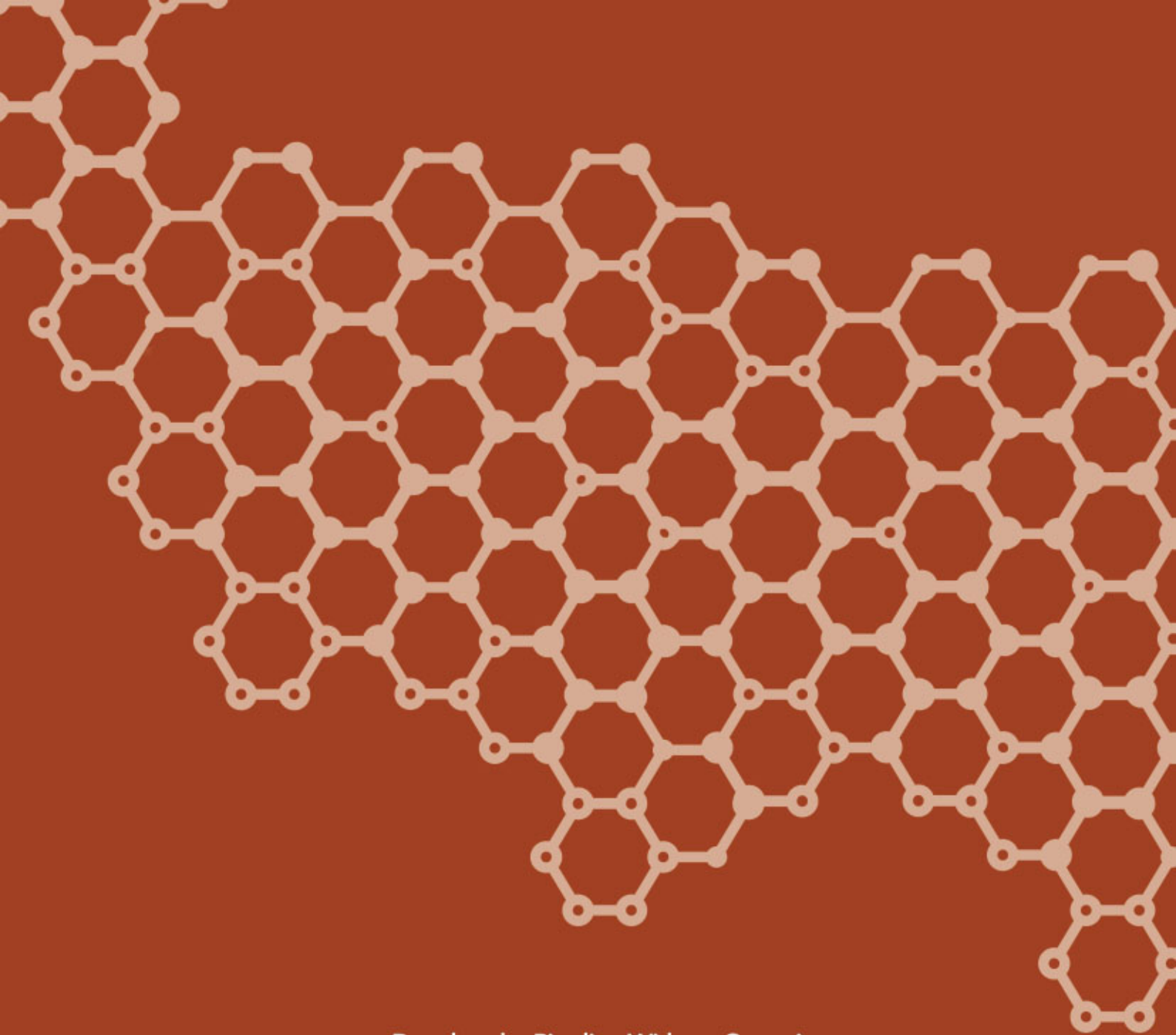
## PHYSICAL PROPERTIES OF REPAIR PATCH MATERIAL:

	<b>Properties</b>	<b>Requirements</b>	<b>Units</b>	<b>Test method</b>
<b>Adhesive</b>	Thickness	0.65	Mm	ASTM D 1000
	Softening point	100	°C	ASTM E 28
	Lap shear at 80	0.07	N/mm	EN 12068 ANNEX D
<b>Backing</b>	Thickness	0.75	Mm	ASTM D 1000
	Tensile strength	17	Mpa	ASTM D 638
	Elongation at break	400	%	ASTM D 638
	Hardness	50	Shore D	ASTM D 2240
	Abrasion resistance	50	Mg	ASTM D 1044
	Impact resistance at 23 °C	15	J	EN 12068 ANNEX H
	Indentation resistance at 80 °C	10	N/mm <sup>2</sup>	EN 12068 ANNEX G
<b>Patch</b>	Peel strength to pipe surface	4 0.2	N/mm	EN 12068 ANNEX C
	Water absorption	0.05	%	ASTM D 570
	Peel strength 28 days	2.5	N/mm	ISO 21809-3 ANNEX I
	Heat shock on the backing ,225 °C ,4 hours	No dripping, flowing or cracking	Visual	ASTM D 2671

# STORAGE OF COATING MATERIAL

- The material shall be stored under a covered, good circulated shelter.
- The optimum coating storage temperature shall be between 5°C to 35°C continuously. The store those coating directly under sunshine strictly should be avoided.
- Maximum 4 cartons (coating tape roll) are allowed to be placed in one column.
- The same condition shall be considered for **NIASHIMI** primers.
- The primer shall be kept strictly far from any open flames or extensive heat source.





Develop the Pipeline Without Corrosion



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**NIASHIMI** trading & manufacturing  
Co has established as the first manufacturer  
of cold & hot applied tapes in middle east

Since 1996



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