

ADMER™ Steel Pipe Coating Grade: AT1414 & NF458A

U General

ADMER™ AT1414 and NF458A are a modified polyethylene based with an anhydride group and designed for bonding to steel pipes with polyethylene.

NF458A is a standard grade and recommended to use epoxy coating between a steel pipe and ADMER™. (3 layer system)

AT1414 is an advanced grade and intended to eliminate epoxy coating process between them. (2 layer system)

Although it is certain that applying epoxy coating would improve adhesion to a steel pipe, beneficial cost saving can be achievable by using AT1414.

U Process

Proper surface preparation is important to obtain the best possible adhesion. The cleaner the surface is, the better adhesion obtained under same conditions.

Prior to blasting, the pipe should be degreased and remove rust and dust. After blasting, a chemical treatment may be used i.e. chromate or phosphate treatment to enhance the quality of adhesion.

Then preheat the pipe by gas oven or induction coil up to at least 150 C, typically 170-220 C.

In case of 3 layer system, epoxy powder is coated as primer continuously at the time.

ADMER™ can be processed in a co-extrude with polyethylene with circular die for middle or small diameter steel pipes, and with flat die for larger diameter steel pipes. (wrapping)

Following temperature profile for ADMER™ is recommendable;

C1	C2	C3	C4	AD	Die
180-200C	180-200C	200-230C	200-230C	200-230C	200-230C
(355-390F	355-390F	390-445F	390-445F	390-445F	390-445F)

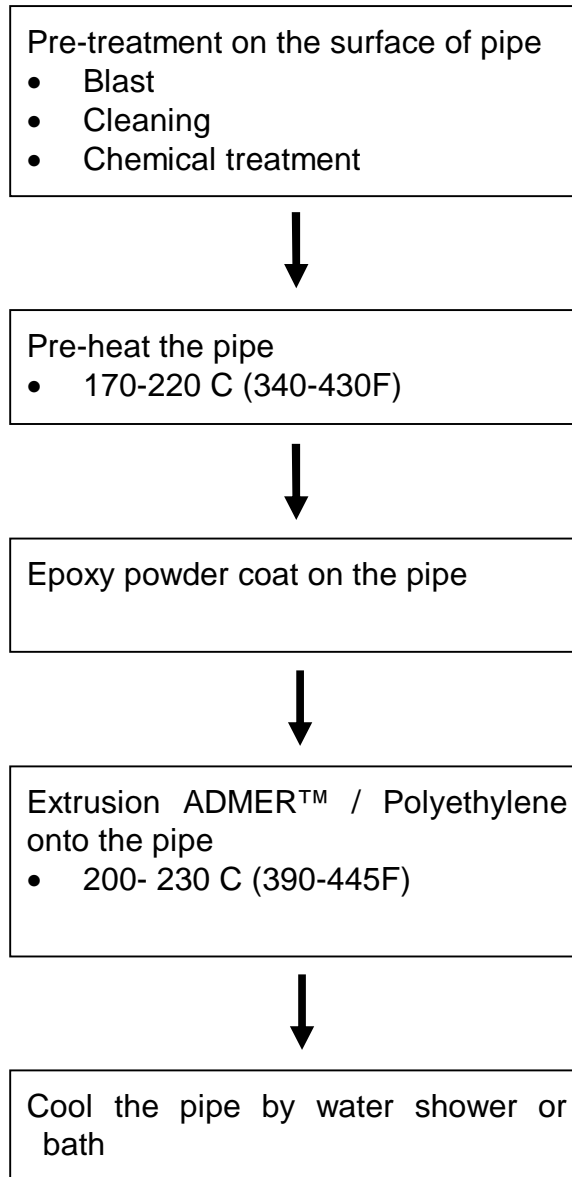
*Maximum temperature; 300C or 570F, Minimum temperature; 180C or 355F

To obtain sufficient adhesion level, 200 +/- 50 microns of thickness is recommendable.

Polyethylene is also extruded with ADMER™ by co-extrusion in circular die process or coated by flat die by side of ADMER™.

Then the pipe should be cooled down by water shower or bath to appropriate temperature.

u Process flow



u Adhesion performance

Steel pipe coating tests were carried out under the following conditions.
Table 2 & 3 show the adhesive performance with and without epoxy primer.

Steel pipe :SGP15A blasted
 Primer :Epikote 828/Epomate B002/Toluene=2/1/7
 Preheating :120C, 10min
 Construction :ADMER™/HDPE=0.3/1.7mm
 Coating speed :10 m/min
 Extrusion temperature (setting temperature)

Table 1

	C ₁	C ₂	C ₃	H	AD	D ₁	D ₂
60mm EXT(HDPE)	180	200	200	200	-		
						220	220
40mm EXT(AD)	180	200	220	-	220		

(1) Adhesion performance of primer coated pipe (with primer)

Table 2

	AT1414A	NF458A
Adhesive Strength *1) (N/cm)	270	160

*90° -peel method, peeling speed; 50mm/min

(2) Adhesive performance of coated pipe (without primer)

Table 3

	AT1414A	NF458A
Adhesive Strength *1) (N/cm)	120	50

*90° -peel method, peeling speed; 50mm/min

u Properties

ITEM	TESTING METHOD	UNIT	AT1414A	NF458A
MFR (190°C)	ASTM D1238	g/10min	0.6	1.0
Density	D1505	kg/m ³	929	921
Stress at yield point	D638	MPa	12	11
Tensile strength at break	D638	MPa	29	25
Elongation at break	D638	%	>500	>500
Izod impact strength	D256	J/m	No Break	No Break
Shore hardness	D2240	D-scale	51	51
Vicat softening point	D1525	°C	100	100

The information contained herein is, to the best of our knowledge, accurate and reliable. However, since the actual conditions of use(s) of our products are beyond our control, IT IS THE USER'S RESPONSIBILITY TO ASSUME ALL RISKS OF SUCH USE(S) FOR SPECIFIC APPLICATIONS. Mitsui Chemical America makes no guarantees of results and assumes no liability in connection with its recommendations or suggestions. Nothing contained herein shall be construed as a recommendation for use in violation of any patents or of applicable laws and regulations. SAMPLES ARE PROVIDED WITHOUT ANY WARRANTIES, EXPRESSED OR IMPLIED.

May 22, 2008