



PARS ETHYLENE KISH Co.
Manufacturer of Polyethylene Pipe and Fitting
TESTING CERTIFICATE
HDPE PIPE

Raw Material Test Report

Sample Code: M0105007	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/05/20			
Company: Shazand Petrochemical Co.	Made In: Iran	Lot No.: 1401241	Grade: ARMCRP100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: Hadi raah Iranian Co.						
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Carbon Black Content (CBC)	2.13	Percent	2.00-2.50	OK	100	Temperature:(550±50) °C & (900±25) °C (Time:5 min, Flow: (200±20) ml/min) (Time: 45min, Flow: (100±10) ml/min)	ISO 6964 INSO 19990 (Method A)
Carbon Black Degree of Dispersion	1.3	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg Thickness: (20±10)µm	ISO 18553 INSO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 18553 INSO 20059
Density	0.959	Gr/cm ³	Greater than or Equal to 0.941	OK	100	Test Method: A Immersion Fluid: Methanol (CH ₃ OH) Temperature: (23±2) °C	ISO 1183-1 INSO 7090-1
Melt Flow Rate (MFR)	0.23	Gr/10min	0.15-0.70	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 INSO 6980-1
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: Al Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 INSO 7186-6
Volatile Content	267	PPM	less than or Equal to 350	OK	100	Temperature: (105±2) °C Time: (65±5) min Sample Weight: 25 gr	BS EN 12099 INSO 19441

Pipe Test Report

Sample Code: P0106014	Nominal OD (mm): 110	PN (Bar): 16	Safety Factor (SF): 1.25	SDR: 11	Application: Water Supply		
Nominal Wall Thickness (mm): 10.00	Production Line: EX3	Reference Standard: INSO 14427-2	Standard of Butt Fusion Joining Procedure: INSO 18648				
Pipe Production Date: 1401/06/04	Pipe Test Date: 1401/06/05	Report Issue Date: 1401/6/6	Standard of Field Leak Testing Procedure: INSO 22591				
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter	110.15	mm	d _{em, min} : 110.00 d _{em, max} : 110.70	OK	100	Temperature: (23±2) °C	ISO 3126 INSO 2412
Maximum Out of Roundness (Ovality)	0.86	mm	2.20	OK	100		
Minimum Wall Thickness (e _{min})	10.08	mm	10.00	OK	100		
Maximum Wall Thickness (e _{max})	10.89	mm	11.10	OK	100		
Marking	Correspond	---	Perfect, Permanent and Legible	OK	100		
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100	Without Magnification	ISO 4427-2 INSO 14427-2
Colour	Correspond	---	The Pipes shall be Black	OK	100	---	---
Effect on Water Quality	Correspond	---	no Change in color, smell and taste	OK	100	---	---
Carbon Black Content (CBC)	2.13	Percent	2.00-2.50	OK	100	Temperature:(550±50) °C & (900±25) °C (Time:5 min, Flow: (200±20) ml/min) (Time: 45min, Flow: (100±10) ml/min)	ISO 6964 INSO 19990 (Method A)
Carbon Black Degree of Dispersion	1.3	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg Thickness: (20±10)µm	ISO 18553 INSO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 18553 INSO 20059
Hydrostatic Strength	24.18	Bar	No Failure During the test Period of any test Piece	Under Test	---	Temperature: 20 °C Time: 100 hr Type of Test: Water in Water	ISO 1167-1.2 ISIRI 12181-1.2
Hydrostatic Strength	10.88	Bar		Under Test	---	Temperature: 80 °C Time: 165 hr Type of Test: water in Water	
Hydrostatic Strength for butt fusion Joint (Pipe to Pipe)	10.88	Bar		Under Test	---	Temperature: 80 °C Time: 165 hr Type of Test: water in Water	
Density	0.958	Gr/cm ³	Greater than or Equal to 0.941	OK	100	Test Method: A Immersion Fluid: Methanol (CH ₃ OH) Temperature: (23±2) °C	ISO 1183-1 INSO 7090-1
Melt Flow Rate (MFR)	0.25 9.67	Gr/10min Percent	Change of MFR by Processing ±20%	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 INSO 6980-1
Longitudinal Reversion	0.95	Percent	less than or Equal to 3	OK	100	Time: 120 min, Temperature: (110±2) °C	ISO 2505 INSO 17614
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: Al Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 INSO 7186-6
Elongation at Break	>350	Percent	Greater than or Equal to 350	OK	100	Type: 1, Speed: 50 mm/min, Gauge Length: (50±1)mm	ISO 6259-1. 3 INSO 17140-1. 3
Tensile Strength for butt fusion Joint (Pipe to Pipe)	Ductile	---	Ductile Failure	OK	100	Type: A, Speed: (5±1) mm/min	ISO 13953 INSO 17304

Summary of Results:

All Results Conform to the Requirement of the Reference Standards (INSO 14427-1, 2)

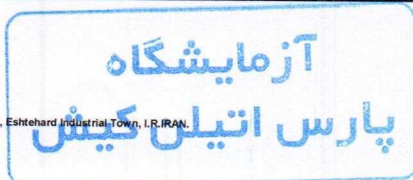
Remarks:

 Laboratory Expert M. Maei	 Laboratory Technical Manager M. Goshtasb	 Laboratory Manager H. Fazeli
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Notice:

- Uncertainties of Results will be reported upon customers request.
- These Results are Valid just for these samples.
- All rights are reserved for Pars Ethylene Kish Laboratory.
- the sampling is done by QC Department.

Form Code: LMS-FP-19-19-03

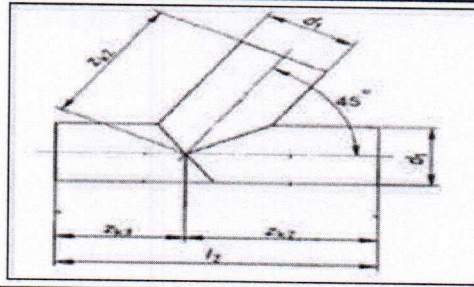


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TESTING CERTIFICATE
HDPE FITTING



Raw Material Test Report

Sample Code: M0105007	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/05/20
Company: Shazand Petrochemical Co.	Made In: Iran	Lot No.: 1401241	Grade: ARMCRP100B	Color: Black
Reference Standard: INSO 14427-1	Applicant: Hadi Raah Iranian Co.			

Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Carbon Black Content (CBC)	2.13	Percent	2.00-2.50	OK	100	Temperature: (550±50) °C & (900±25) °C (Time: 5 min, Flow: (200±20) ml/min) (Time: 45min, Flow: (100±10) ml/min)	ISO 6964 INSO 19990 (Method A)
Carbon Black Degree of Dispersion	1.3	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg Thickness: (20±10)µm	ISO 18553 INSO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 1183-1 INSO 7090-1
Density	0.959	Gr/cm ³	Greater than or Equal to 0.941	OK	100	Test Method: A Immersion Fluid: Methanol (CH ₃ OH) Temperature: (23±2) °C	ISO 1133-1 INSO 6980-1
Melt Flow Rate (MFR)	0.23	Gr/10min	0.15-0.70	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 INSO 6980-1
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: Al Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 INSO 7186-6
Volatile Content	267	PPM	less than or Equal to 350	OK	100	Temperature: (105±2) °C Time: (65±5) min Sample Weight: 25 gr	BS EN 12099 INSO 19441

Tee Equal Test Report

Sample Code: F0106016	Nominal OD (mm): 110	PN (Bar): 16	Safety Factor (SF): 1.25	SDR: 11	Application: Water Supply
Fitting Nominal Angle: 45°	Reference Standard: DIN 16963, INSO 14427-3, Manufacturer Standard			Standard of Butt Fusion Joining Procedure: INSO 18648	
Fitting Production Date: 1401/06/02	Fitting Test Date: 1401/06/03	Report Issue Date: 1401/6/6	Standard of Field Leak Testing Procedure: INSO 22591		

Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter (d)	110.28	mm	d _{min} : 110.00 d _{max} : 110.70	OK	100	Temperature: (23±2) °C	ISO 3126 INSO 2412
Maximum Out of Roundness (Ovality)	1.22	mm	2.20	OK	100		
Minimum Wall Thickness (e _{min})	10.09	mm	10.00	OK	100		
Maximum Wall Thickness (e _{max})	10.81	mm	11.10	OK	100		
L	520	mm	Greater than or Equal to: 520	OK	100	Temperature: (23±2) °C	DIN 16963
Z ₃₂	375	mm	Greater than or Equal to: 375	OK	100		
Z ₄₃	145	mm	Greater than or Equal to: 145	OK	100		
Angle	44.6	Degree	(45±2)°	OK	100	---	---
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100	Without Magnification	ISO 4427-3 INSO 14427-3
Colour	Correspond	---	The Fitting shall be Black	OK	100	---	---
Effect on Water Quality	Correspond	---	no Change in color, smell and taste	OK	100	---	---
Carbon Black Content (CBC)	2.13	Percent	2.00-2.50	OK	100	Temperature: (550±50) °C & (900±25) °C (Time: 5 min, Flow: (200±20) ml/min) (Time: 45min, Flow: (100±10) ml/min)	ISO 6964 INSO 19990 (Method A)
Carbon Black Degree of Dispersion	1.3	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg Thickness: (20±10)µm	ISO 18553 INSO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 1183-1 INSO 7090-1
Density	0.958	Gr/cm ³	Greater than or Equal to 0.941	OK	100	Test Method: A Immersion Fluid: Methanol (CH ₃ OH) Temperature: (23±2) °C	ISO 1133-1 INSO 6980-1
Melt Flow Rate (MFR)	Pipe	0.24	Gr/10min	Change of MFR by Processing ±20%	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s
	Bead	5.39	Percent				
Oxidation Induction Time (OIT)	Pipe	>20	min	Greater than or Equal to 20	OK	100	Type of dish: Al Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen
	Bead	6.42	Percent				
Hydrostatic Strength	24.17	Bar	No Failure During The Test Period of any Test Piece	Under Test	---	Temperature: 20 °C Time: 100 hr	ISO 1167-1, 2 ISIRI 12181-1, 2
Hydrostatic Strength	10.88	Bar		Under Test	---	Temperature: 80 °C Time: 165 hr	
Tensile Behavior (Straight Butt Fused Joint)	Ductile	---	Ductile Failure	OK	100	Type of Test: Water in Water	ISO 13953 INSO 17304

Summary of Results:

All Results Conform to the Requirement of the Reference Standards (Manufacturer Standard, DIN 16963, INSO 14427-1, 2, 3)

Remarks:

Laboratory Expert
M. Maei

Laboratory Technical Manager
M. Goshnasb

Laboratory Manager
H. Fazeli

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