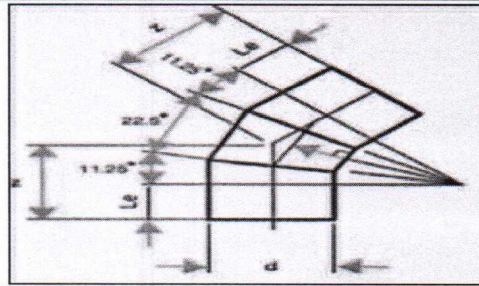




PARS ETHYLENE KISH Co.
Manufacturer of Polyethylene Pipe and Fitting
TESTING CERTIFICATE
HDPE FITTING



Raw Material Test Report

Sample Code: M0106011	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/06/24			
Company: Shazand Petrochemical Co.	Made In: Iran	Lot No.: 1401307	Grade: ARMCRP100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: M.Afraz Co.						
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Carbon Black Content (CBC)	2.16	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 ISO 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 ISO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 18553 ISO 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 ISO 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 ISO 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 ISO 7186-6
Volatile Content	217	PPM	less than or Equal to 350	OK	100	Temperature: (105±2) °C Time: (65±5) min Sample Weight: 25 gr	BS EN 12099 ISO 19441

Elbow Test Report

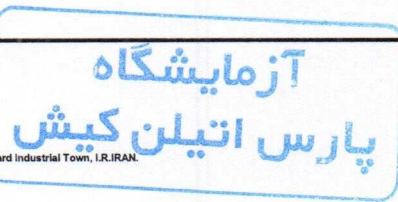
Sample Code: F0107002	Nominal OD (mm): 200	PN (Bar): 6	Safety Factor (SF): 1.25	SDR: 26	Application: Water Supply		
Fitting Nominal Angle: 45°	Reference Standard: DIN 16963, INSO 14427-3, Manufacturer Standard			Standard of Butt Fusion Jointing Procedure: INSO 18648			
Fitting Production Date: 1401/07/04	Fitting Test Date: 1401/07/06	Report Issue Date: 1401/7/23	Standard of Field Leak Testing Procedure: INSO 22591				
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter (d)	200.95	mm	$d_{min, min}$: 200.00 $d_{max, max}$: 201.20	OK	100	Temperature: (23±2) °C	ISO 3126 ISO 2412
Maximum Out of Roundness (Ovality)	2.59	mm	4.00	OK	100		
Minimum Wall Thickness (e_{min})	7.76	mm	7.70	OK	100		
Maximum Wall Thickness (e_{max})	8.20	mm	8.60	OK	100		
L_z	200	mm	Greater than or Equal to: 200	OK	100	Temperature: (23±2) °C	DIN 16963
Z	324	mm	Greater than or Equal to: 324	OK	100		
Angle	44.9	Degree	(45±2)°	OK	100	---	Without Magnification
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100		
Colour	Correspond	---	The Fitting shall be Black	OK	100		
Effect on Water Quality	Correspond	---	no Change in color, smell and taste	OK	100	---	ISO 4427-3 ISO 14427-3
Carbon Black Content (CBC)	2.16	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 ISO 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 ISO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Magnify: 100X Film Width: 4mm	ISO 18553 ISO 20059
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 ISO 7090-1
Melt Flow Rate (MFR)	Pipe	0.25	Gr/10min	Change of MFR by Processing ±20%	OK	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 ISO 6980-1
		8.91	Percent				
Bead	0.25	Gr/10min	OK		100		
	10.64	Percent					
Oxidation Induction Time (OIT)	Pipe	>20	min	Greater than or Equal to 20	OK	Type of dish: Al Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 ISO 7186-6
	Bead	>20	min		OK		
Hydrostatic Strength	9.64	Bar	No Failure During The Test Period of any Test Piece	OK	100	Temperature: 20 °C Time: 100 hr Type of Test: Water in Water	ISO 1167-1, 2 ISIRI 12181-1, 2
Hydrostatic Strength	4.34	Bar		OK	100	Temperature: 80 °C Time: 165 hr Type of Test: Water in Water	
Tensile Behavior (Straight Butt Fused Joint)	Ductile	---	Ductile Failure	OK	100	Type: A, Speed: (5±1) mm/min	ISO 13953 ISO 17304

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

Remarks: *از نظر*

Laboratory Expert M.Maie	Laboratory Technical Manager M.Goshtasb	Laboratory Manager H. Fazeli
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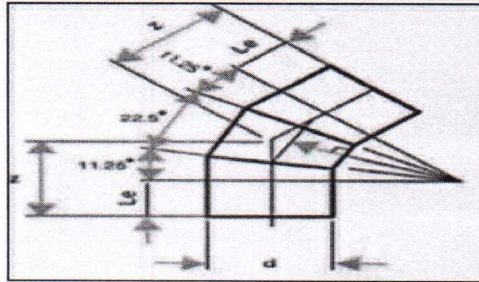
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Pars Ethylene Kish

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



Raw Material Test Report

Table with 8 columns: Characteristics, Value, Unit, Requirement, Test Status, Pro. Of Conformity (%), Conditions, Test Method. Rows include Carbon Black Content (CBC), Carbon Black Degree of Dispersion, Carbon Black Appearance of Dispersion, Density, Melt Flow Rate (MFR), Oxidation Induction Time (OIT), and Volatile Content.

Elbow Test Report

Table with 8 columns: Characteristics, Value, Unit, Requirement, Test Status, Pro. Of Conformity (%), Conditions, Test Method. Rows include Mean Outside Diameter (d), Maximum Out of Roundness (Ovality), Minimum Wall Thickness (e_min), Maximum Wall Thickness (e_max), L_s, Z, Angle, Appearance, Colour, Effect on Water Quality, Carbon Black Content (CBC), Carbon Black Degree of Dispersion, Carbon Black Appearance of Dispersion, Density, Melt Flow Rate (MFR), Oxidation Induction Time (OIT), Hydrostatic Strength, and Tensile Behavior.

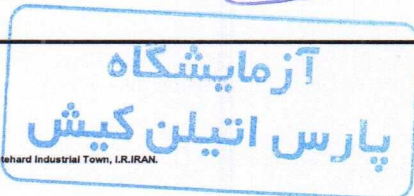
Summary of Results:
All Results Conform to the Requirement of the Reference Standards (Manufacturer Standard, DIN 16963, INSO 14427-1, 2, 3)

Remarks:

Handwritten signatures and names: Laboratory Expert M.Male, Laboratory Technical Manager M.Goshtasb, Laboratory Manager H. Fazeli.

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Form Code LMS-PP-19-21-01



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Pars Ethylene Kish

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

Raw Material Test Report

Table with 8 columns: Sample Code, Type of Raw Material, MRS, Production Date, Test Date, Company, Made In, Lot No., Grade, Color, Reference Standard, Applicant. Includes characteristics like Carbon Black Content, Density, Melt Flow Rate, etc.

Pipe Test Report

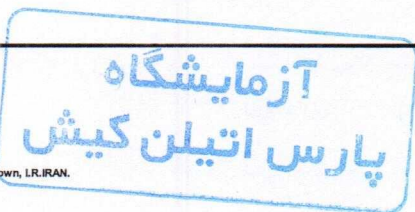
Table with 8 columns: Sample Code, Nominal OD, PN, Safety Factor, SDR, Application, Nominal Wall Thickness, Production Line, Reference Standard, Standard of Butt Fusion Jointing Procedure, Pipe Production Date, Pipe Test Date, Report Issue Date, Standard of Field Leak Testing Procedure. Includes characteristics like Mean Outside Diameter, Hydrostatic Strength, etc.

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

Remarks section with handwritten signatures and names: Laboratory Expert M. Mael, Laboratory Technical Manager M. Goshtasb, Laboratory Manager H. Fazeli.

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

Raw Material Test Report							
Sample Code: M0106011	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/06/24			
Company: Shazand Petrochemical Co.	Made In: Iran	Lot No.: 1401307	Grade: ARMCRP100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: M.Afraz Co						
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Carbon Black Content (CBC)	2.16	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 6984 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	
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	217	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: P0107007	Nominal OD (mm): 110	PN (Bar): 6	Safety Factor (SF): 1.25	SDR: 26	Application: Water Supply			
Nominal Wall Thickness (mm): 4.20	Production Line: EX3	Reference Standard: INSO 14427-2	Standard of Butt Fusion Jointing Procedure: INSO 18648					
Pipe Production Date: 1401/07/02	Pipe Test Date: 1401/07/04	Report Issue Date: 1401/7/23	Standard of Field Leak Testing Procedure: INSO 22591					
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method	
Mean Outside Diameter	110.40	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)	1.08	mm	2.20	OK	100			
Minimum Wall Thickness (e _{min})	4.29	mm	4.20	OK	100			
Maximum Wall Thickness (e _{max})	4.59	mm	4.80	OK	100			
Marking	Correspond	---	Perfect, Permanent and Legible	OK	100	Without Magnification	ISO 4427-2 INSO 14427-2	
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100			
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)	2.16	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 6984 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		
Hydrostatic Strength	9.72	Bar	No Failure During the test Period of any test Piece	OK	100	Temperature: 20 °C Time: 100 hr Type of Test: Water in Water	ISO 1167-1,2 ISIRI 12181-1,2	
Hydrostatic Strength	4.37	Bar		OK	100	Temperature: 80 °C		
Hydrostatic Strength for butt fusion Joint (Pipe to Pipe)	4.37	Bar		OK	100	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	Gr/10min	Change of MFR by Processing ±20%	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 INSO 6980-1	
	6.77	Percent						
Longitudinal Reversion	Correspond	---	No effect on Surface	OK	100	Time: 60min, Temperature: (110±2) °C	ISO 2505 INSO 17614	
	1.16	Percent	less than or Equal to 3					
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: 2, Speed: 100mm/min, Gauge Length: (25±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	

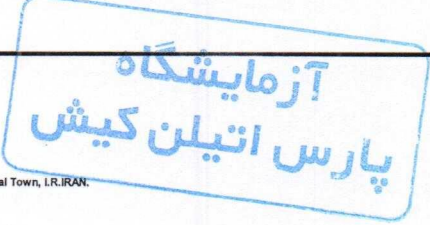
Summary of Results:
 All Results Conform to the Requirement of the Reference Standards (INSO 14427-1, 2)

Remarks:

 Laboratory Expert M. Mael	 Laboratory Technical Manager M. Goshtasb	 Laboratory Manager H. Fazeli
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PARS ETHYLENE KISH Co.
Manufacturer of Polyethylene Pipe and Fitting
TESTING CERTIFICATE
HDPE PIPE

Raw Material Test Report

Sample Code: M0107005	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/07/02			
Company: Jam Petrochemical Co.	Made In: Iran	Lot No.: 000604	Grade: HMCPR100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: M.Afraz 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	1.4	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	
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)	0.20	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: A1 Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 INSO 7186-6
Volatile Content	240	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: P0107051	Nominal OD (mm): 315	PN (Bar): 6	Safety Factor (SF): 1.25	SDR: 26	Application: Water Supply		
Nominal Wall Thickness (mm): 12.10	Production Line: EX1	Reference Standard: INSO 14427-2	Standard of Butt Fusion Jointing Procedure: INSO 18648				
Pipe Production Date: 1401/07/19	Pipe Test Date: 1401/07/20	Report Issue Date: 1401/7/23	Standard of Field Leak Testing Procedure: INSO 22591				
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter	315.55	mm	d _{em,min} : 315.00 d _{em,max} : 316.90	OK	100	Temperature: (23±2) °C	ISO 3126 INSO 2412
Maximum Out of Roundness (Ovality)	6.14	mm	11.10	OK	100		
Minimum Wall Thickness (e _{min})	12.17	mm	12.10	OK	100		
Maximum Wall Thickness (e _{max})	12.85	mm	13.50	OK	100		
Marking	Correspond	---	Perfect, Permanent and Legible	OK	100	Without Magnification	ISO 4427-2 INSO 14427-2
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100		
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	1.4	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	
Hydrostatic Strength	9.63	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	4.33	Bar		Under Test	---	Temperature: 80 °C	
Hydrostatic Strength for butt fusion Joint (Pipe to Pipe)	4.33	Bar		Under Test	---	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)	0.22	Gr/10min	Change of MFR by Processing ±20%	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 INSO 6980-1
	7.83	Percent					
Longitudinal Reversion	Correspond	---	No effect on Surface	OK	100	Time: 120 min, Temperature: (110±2) °C	ISO 2505 INSO17614
	1.30	Percent	less than or Equal to 3				
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: A1 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: 25 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

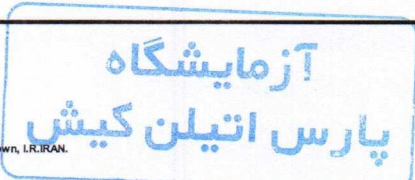
Summary of Results:
 All Results Conform to the Requirement of the Reference Standards (INSO 14427-1, 2)

Remarks:

 Laboratory Expert M. Maei	 Laboratory Technical Manager M. Goshtasb	 Laboratory Manager H. Fazeli
---	--	--

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 Email: Lab@Parsethylene-Kish.com





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

Raw Material Test Report

Sample Code: M0011011	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1400	Test Date: 1400/11/03			
Company: Jam Petrochemical Co.	Made In: Iran	Lot No.: 000603	Grade: HMCRP100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: M.Afraz Co						
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Carbon Black Content (CBC)	2.10	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	1.4	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	
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)	0.19	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: A1 Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 INSO 7186-6
Volatile Content	250	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: P0107058	Nominal OD (mm): 355	PN (Bar): 6	Safety Factor (SF): 1.25	SDR: 26	Application: Water Supply		
Nominal Wall Thickness (mm): 13.60	Production Line: EX1	Reference Standard: INSO 14427-2	Standard of Butt Fusion Jointing Procedure: INSO 18648				
Pipe Production Date: 1401/07/20	Pipe Test Date: 1401/07/21	Report Issue Date: 1401/7/23	Standard of Field Leak Testing Procedure: INSO 22591				
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter	355.10	mm	d _{em,min} : 355.00 d _{em,max} : 357.20	OK	100	Temperature: (23±2) °C	ISO 3126 INSO 2412
Maximum Out of Roundness (Ovality)	7.95	mm	12.50	OK	100		
Minimum Wall Thickness (e _{min})	13.68	mm	13.60	OK	100		
Maximum Wall Thickness (e _{max})	14.77	mm	15.10	OK	100		
Marking	Correspond	---	Perfect, Permanent and Legible	OK	100	Without Magnification	ISO 4427-2 INSO 14427-2
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100		
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)	2.10	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	1.4	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	
Hydrostatic Strength	9.61	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	4.33	Bar		Under Test	---	Temperature: 80 °C Time: 165 hr Type of Test: water in Water	
Hydrostatic Strength for butt fusion Joint (Pipe to Pipe)	4.33	Bar		Under Test	---		
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)	0.20 5.17	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	Correspond 0.83	--- Percent	No effect on Surface less than or Equal to 3	OK	100 100	Time: 120 min, Temperature: (110±2) °C	ISO 2505 INSO17614
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: A1 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: 25 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

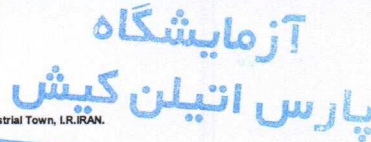
Summary of Results:
 All Results Conform to the Requirement of the Reference Standards (INSO 14427-1, 2)

Remarks:

 Laboratory Expert M. Maafi	 Laboratory Technical Manager M. Goshtasb	 Laboratory Manager H. Fazeli
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Form Code: LMS-FP-19-19-03



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

Raw Material Test Report

Sample Code: M0107005	Type of Raw Material: PE100	MRS: 10 MPa	Production Date: 1401	Test Date: 1401/07/02			
Company: Jam Petrochemical Co.	Made In: Iran	Lot No.: 000604	Grade: HMCRP100B	Color: Black			
Reference Standard: INSO 14427-1	Applicant: M.Afraz 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 ISO 19990 (Method A)
Carbon Black Degree of Dispersion	1.4	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg	ISO 18553 ISO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Thickness: (20±10)µm Magnify: 100X Film Width: 4mm	
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 ISO 7090-1
Melt Flow Rate (MFR)	0.20	Gr/10min	0.15-0.70	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 ISO 6980-1
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: A1 Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 ISO 7186-6
Volatile Content	240	PPM	less than or Equal to 350	OK	100	Temperature: (105±2) °C Time: (65±5) min Sample Weight: 25 gr	BS EN 12099 ISO 19441

Pipe Test Report

Sample Code: P0107052	Nominal OD (mm): 110	PN (Bar): 6	Safety Factor (SF): 1.25	SDR: 26	Application: Water Supply		
Nominal Wall Thickness (mm): 4.20	Production Line: EX3	Reference Standard: INSO 14427-2	Standard of Butt Fusion Jointing Procedure: INSO 18648				
Pipe Production Date: 1401/07/19	Pipe Test Date: 1401/07/20	Report Issue Date: 1401/7/23	Standard of Field Leak Testing Procedure: INSO 22591				
Characteristics	Value	Unit	Requirement	Test Status	Pro. Of Conformity (%)	Conditions	Test Method
Mean Outside Diameter	110.46	mm	$d_{em, min}$: 110.00 $d_{em, max}$: 110.70	OK	100	Temperature: (23±2) °C	ISO 3126 ISO 2412
Maximum Out of Roundness (Ovality)	0.83	mm	2.20	OK	100		
Minimum Wall Thickness (e_{min})	4.26	mm	4.20	OK	100		
Maximum Wall Thickness (e_{max})	4.53	mm	4.80	OK	100		
Marking	Correspond	---	Perfect, Permanent and Legible	OK	100	Without Magnification	ISO 4427-2 ISO 14427-2
Appearance	Correspond	---	Flawless on inner and outer Surface	OK	100		
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 ISO 19990 (Method A)
Carbon Black Degree of Dispersion	1.4	Grade	less than or Equal to 3.0	OK	100	Sample Weight: (0.2±0.1) mg	ISO 18553 ISO 20059
Carbon Black Appearance of Dispersion	A2	---	A1, A2, A3 or B	OK	100	Thickness: (20±10)µm Magnify: 100X Film Width: 4mm	
Hydrostatic Strength	9.63	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	4.33	Bar		Under Test	---	Temperature: 80 °C Time: 165 hr	
Hydrostatic Strength for butt fusion Joint (Pipe to Pipe)	4.33	Bar		Under Test	---	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 ISO 7090-1
Melt Flow Rate (MFR)	0.21 5.32	Gr/10min Percent	Change of MFR by Processing ±20%	OK	100	Weight: 5Kg Temperature: 190 °C Cut Time: 120 s	ISO 1133-1 ISO 6980-1
Longitudinal Reversion	Correspond 1.18	---	No effect on Surface less than or Equal to 3	OK	100	Time: 60min, Temperature: (110±2) °C	ISO 2505 ISO 17614
Oxidation Induction Time (OIT)	>20	min	Greater than or Equal to 20	OK	100	Type of dish: A1 Temperature: 200 °C Sample Weight: (15±2) mg Test Environment: Oxygen	ISO 11357-6 ISO 7186-6
Elongation at Break	>350	Percent	Greater than or Equal to 350	OK	100	Type: 2, Speed: 100mm/min, Gauge Length: (25±1)mm	ISO 6259-1, 3 ISO 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 ISO 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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