Technical Data Sheet

Alathon L4904

High Density Polyethylene

Product Description

Alathon L4904 is a bimodal, high molecular weight, high density polyethylene resin with excellent processing characteristics. L4904 is selected by customers for pressure pipe applications including gas distribution, industrial piping, mining, oil & gas gathering, municipal water service lines and sewers. Customers typically use L4904 in applications requiring high resistance to pipe failure by rapid crack propagation and slow crack growth mechanisms. Please contact your LyondellBasell Technical Service Engineer or Sales Manager for an approved color and black masterbatch list. When L4904 is combined with a LyondellBasell approved color or black masterbatch at the correct use level, this compound may meet the following standards or requirements:

- ASTM D2513-18a for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fitting, Category C per Table 5
- ASTM D3350 Cell Classifications: **PE445574C, PE445574E, PE445576C,** and **PE445576E.** For Oxidative Resistance Classification Categorization values (CC), please contact your LyondellBasell Technical Service Engineer or Sales Manager.
- CSA B137.1 for Pipe, Tubing, and Fittings for Cold-Water Pressure Services
- CSA B137.4 for Polyethylene Piping Systems for Gas Services: PE4710 PLUS & PE 100
- NSF Standard 14 and Standard 61 for Potable Water Pipe and Fittings
- NSF Standard 14 for Gas Distribution Applications
- NSF Standard 358-1 for PE Pipe and Fittings for "Geothermal" Heat Pump Systems
- Plastics Pipe Institute (PPI) PE4710 and PE 100 per PPI TR-3

Regulatory Status

For regulatory compliance information, see *Alathon* L4904 Product Stewardship Bulletin (PSB) and Safety Data Sheet (SDS).

Status	Commercial
Availability	North America; South & Central America
Application	Drainage Pipe; Drinking Water Pipe; Gas Pipe; Industrial; Soil & Waste Pipe
Market	Industrial, Building & Construction; Pipe
Processing Method	Pipe

Typical Properties	Nominal Value	English Units	Nominal Value	SI Units	Test Method
Physical					
Melt Flow Rate					
(190 °C/5.0 kg)	0.18	g/10 min	0.18	g/10 min	ISO 1133-1
(190 °C/5.0 kg)	0.18	g/10 min	0.18	g/10 min	ASTM D1238
(190 °C/21.6 kg)	7.5	g/10 min	7.5	g/10 min	ISO 1133-1
(190 °C/21.6 kg)	7.5	g/10 min	7.5	g/10 min	ASTM D1238
Density					
(23 °C)	0.949	g/cm³	0.949	g/cm³	ASTM D1505
(23 °C)	0.949	g/cm³	0.949	g/cm³	ISO 1183-1
Mechanical					
Flexural Modulus					
(1% Secant)			1030	MPa	ISO 178
(2% Secant)	146000	psi	1006	MPa	ASTM D790
Tensile Modulus, (23 °C, 1 mm/min, Chord)			1020	MPa	ISO 527-1, -2

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Tensile Stress at Break	5100	psi	35.2	MPa	ASTM D638
(23 °C)			30	MPa	ISO 527-1, -2
Tensile Stress at Yield	3580	psi	24.7	MPa	ASTM D638
(23 °C)			24.5	MPa	ISO 527-1, -2
Tensile Elongation at Break	605	%	605	%	ASTM D638
(23 °C)	605	%	605	%	ISO 527-1, -2
PENT on Natural Resin, (2.4 MPa, 80 °C, Air)	10000	hr	10000	hr	ASTM F1473
Values were determined on natural L4904 resin.					
Thermal					
Low Temperature Brittleness, F_{50}	<-105	°F	<-76	°C	ASTM D746
DSC Induction Temperature	500	°F	260	°C	ASTM D3350
Oxidation Induction Time, (210 °C)	>30	min	>30	min	ISO 11357-6
Oxidative-Induction Time, (200 °C)	100	min	100	min	ASTM D3895
Values were determined on L4904 compounded with an approved masterbatch.					
Conformance Testing					
Hydrostatic Design Basis					
(73 °F)	1600	psi			ASTM D2837
(140 °F)	1000	psi			ASTM D2837
Minimum Required Strength, (20 °C)			10	MPa	ISO 12162
Creep Rupture Strength					
(20 °C, 12.4 MPa)	>200	hr	>200	hr	ISO 1167-1, -2
(20 °C, 12.4 MPa)	>200	hr	>200	hr	ASTM D1598
Resistance to Rapid Crack Propagation, Pc @ 32 °F	>12	bar	>12	bar	ISO 13477
Values were obtained on 8" SDR11 pipe made with L4904 and an approved masterbatch.					
Resistance to Rapid Crack Propagation, Tc @ 5 bar	<10	°F	<-12	°C	ISO 13477
Values were obtained on 4" SDR11 pipe made with L4904 and an approved masterbatch.					
Notched Pipe Test, (80 °C, 9.2 bar)	>3000	hr	>3000	hr	ISO 13479
Values were obtained on 4" SDR11 pipe made with L4904 and an approved masterbatch.					

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Notes

Typical Property values were determined on natural L4904 resin, unless otherwise noted. Conformance Test values were determined from L4904 compounded with an approved masterbatch.

These are typical property values not to be construed as specification limits.

Processing Techniques

Specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

Caution

If an approved masterbatch is not used in the manufacture of pipe or fittings, the customer assumes all responsibility for determining that the final article meets the applicable material and pipe or fittings standards.

Certifications

Certified as meeting requirements of Plastics Pipe Institute and NSF International, as stated above.

Company Information

For further information regarding the LyondellBasell company, please visit http://www.lyb.com/.

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