

## 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

<b>Application</b>	Drainage Pipe; Drinking Water Pipe; Gas Pipe; Industrial; Soil & Waste Pipe
<b>Market</b>	Industrial, Building & Construction; Pipe
<b>Processing Method</b>	Pipe

Typical Properties	Nominal Value	English Units	Nominal Value	SI Units	Test Method
<b>Physical</b>					
Melt Flow Rate					
(190 °C/2.16 kg)	0.04	g/10 min	0.04	g/10 min	ASTM D1238
(190 °C/5.0 kg)	0.18	g/10 min	0.18	g/10 min	ASTM D1238
(190 °C/21.6 kg)	7.0	g/10 min	7.0	g/10 min	ASTM D1238
Density, (23 °C)	0.949	g/cm <sup>3</sup>	0.949	g/cm <sup>3</sup>	ASTM D1505
<b>Mechanical</b>					
Flexural Modulus, (2% Secant)	146000	psi	1006	MPa	ASTM D790
Tensile Stress at Break	5100	psi	35.2	MPa	ASTM D638
Tensile Stress at Yield	3500	psi	24.1	MPa	ASTM D638
Tensile Elongation at Break	615	%	615	%	ASTM D638
PENT on Natural Resin, (2.4 MPa, 80 °C, Air)	10000	hr	10000	hr	ASTM F1473
Values were determined on natural L4904 resin.					
<b>Thermal</b>					

Low Temperature Brittleness, F <sub>50</sub>	<-105 °F	<-76 °C	ASTM D746
DSC Induction Temperature	500 °F	260 °C	ASTM D3350
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	10 MPa	ISO 12162
Creep Rupture Strength, (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, 4.6 MPa)	>2500 hr	>2500 hr	ISO 13479
Values were obtained on 4" SDR11 pipe made with L4904 and an approved masterbatch.			