

ARCEL[®] Resin – LD Technical Data Sheets

Resin Composition

Polyethylene/styrenic interpolymer, Expandable

Particle Diameter

98% between 0.9 – 2.0 mm

Color

White

Shape

Spherical

Average VOC Content

Pentane 7.5 %

Plasticizer 0.3 %

Safety

Provide adequate exhaust ventilation during resin and pre-puff storage and processing as recommended in the [ARCEL resin Safe Handling and Storage Guide](#) to avoid the hazardous accumulation of the pentane blowing agent. Keep product away from ignition sources.

Raw Bead Storage

Store unexpanded product below 4°C (40°F) until processed to avoid loss of expandability and potential hazardous accumulation of pentane vapor.

Expansion

ARCEL LD resin can be continuously or batch expanded using conventional EPS expansion equipment. Some minor material handling modifications may be required. For molded part densities below 19.2 g/L (1.2 pcf), double-pass or batch expansion will be required to attain desired bulk densities.

ARCEL LD resin has been expanded in continuous expanders ranging in size from 210 to 1,135 liters (55 to 300 gallons) as well as several sizes of batch expanders.

Minimum achievable density is expected to be:

Expansion Method	Pre-puff Density, pcf (g/l)	Foam Density, pcf (g/l)
Continuous – Single Pass	1.05 (16.8)	1.20 (19.2)
Continuous – Double Pass	0.80 (12.8)	0.95 (15.2)
Batch – Single Pass	0.94 (15.1)	1.10 (17.6)

Freshly expanded ARCEL resin is sensitive to the thermal/mechanical shock of an airveyor. Improper conveyance may significantly increase density. A minimum of 24 hours aging time is recommended before molding.

Molding

ARCEL LD is relatively easy to mold. Expanded particles have been molded after several months. Conventional EPS fill guns as small as 19 mm can be used for bulk pre-puff densities of 16g/L or less; larger 21-22 mm fill guns and 25 mm ID fill hoses are recommended. The minimum recommended wall thickness is 18 mm, depending on design complexity and fill gun placement. Refer to the [ARCEL Resin Tooling and Part Design Guide](#) for more detailed information.

Environmental

STYROPEK' ARCEL resins are biologically and chemically inert. ARCEL resins are typically able to be recycled where EPS recycling facilities exist. Where recycling of STYROPEK' ARCEL resins is not possible, disposal to landfill or incineration in accordance with all applicable government laws and regulations is recommended. Please contact STYROPEK Styrenics Technology Center for more information on recycling and disposal.

Foam Physical Properties

Property	Test Method	Units	ARCEL® LD Resin					
Density	ASTM-D3575	pcf	0.95	1.25	1.50	2.00	2.50	3.00
		g/l	15	20	24	32	40	48
Compressive Strength at 10% Strain	ASTM-D3575	psi	11	17	21	30	39	48
Compressive Strength at 25% Strain	ASTM-D3575	psi	13	19	24	35	45	55
Compressive Strength at 50% Strain	ASTM-D3575	psi	21	28	33	45	56	67
Compressive Strength at 75% Strain	ASTM-D3575	psi	46	60	71	94	116	139
Tensile Strength at Break	ASTM-D3575	psi	29	42	52	70	84	94
Tear Strength at Max Load	ASTM-D3575	lb/in	6.0	8.4	10.3	14.3	18.3	22.2
Flexural Strength at 5% Strain	ASTM-C203	psi	21	35	46	67	85	101
Flexural Stress at Max Load	ASTM-C203	psi	25	40	51	72	91	107
Flexural Strain at Max Load	ASTM-C203	%	11.5	11.1	10.7	9.9	9.2	8.4
Puncture, Max Load	ASTM-D3763	lbf	31	38	45	60	77	97
Burn Rate	FMVSS302	mm/min	186	141	117	88	70	58

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