

ARCEL[®] Resin – ULV 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 5.5 %

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 lit smoking materials and open flames.

Raw Bead Storage

ARCEL ULV resin is a low volatile version of ARCEL resin which is not required to be kept in refrigerated storage. At ambient conditions, the shelf life will depend on the end-use density target. At 4°C (40°F) or lower, the shelf life is expected to be indefinite.

Expansion

ARCEL ULV resin can be continuously or batch expanded using conventional EPS expansion equipment. Some minor material handling modifications may be required. ARCEL ULV 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	1.45 (23.2)	1.65 (26.4)
Continuous – Double Pass	0.95 (15.2)	1.10 (17.6)
Batch – Single Pass	1.25 (21.0)	1.35 (21.6)

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

Molding

Expanded particles have been molded after several months. Compared to ARCEL 730, a lower molding steam pressure and shorter steam time should be used. Conventional EPS fill guns as small as 19 mm can be used; 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® ULV Resin							
Density	ASTM-D3575	pcf	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00
		g/l	20	24	28	32	40	48	56	64
Compressive Strength at 10% Strain	ASTM-D3575	psi	17	21	25	30	39	48	57	66
Compressive Strength at 25% Strain	ASTM-D3575	psi	19	24	29	35	45	55	65	76
Compressive Strength at 50% Strain	ASTM-D3575	psi	28	33	39	45	56	67	78	90
Compressive Strength at 75% Strain	ASTM-D3575	psi	60	71	82	94	116	139	161	184
Tensile Strength at Break	ASTM-D3575	psi	42	52	61	70	84	94	102	106
Tear Strength at Max Load	ASTM-D3575	lb/in	8.4	10.3	12.3	14.3	18.3	22.2	26.2	30.2
Flexural Strength at 5% Strain	ASTM-C203	psi	35	46	57	67	85	101	116	128
Flexural Stress at Max Load	ASTM-C203	psi	40	51	62	72	91	107	121	132
Flexural Strain at Max Load	ASTM-C203	%	11.1	10.7	10.3	9.9	9.2	8.4	7.7	6.9
Puncture, Max Load	ASTM-D3763	lbf(N)	38	45	60	60	77	97	119	144
Burn Rate	FMVSS302	mm/min	141	117	100	88	70	58	50	44

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