

INEOS Styrolution Transparent Specialties Line Card

Product Families		NAS [®]				Lustran [®]			
Description		Styrene Acrylic Copolymer (SMMA)				Styrene Acrylonitrile (SAN)			
Property	Units	21	30	90	XC	29	31	51	Sparkle
Specific Gravity	ASTM D 792	1.08	1.09	1.07	1.11	1.07	1.07	1.07	1.07
Melt Flow Rate 200 °C/5 kg	(g/10 min)	1.9	2.2	1.5	1.6	n/a	n/a	n/a	n/a
Melt Flow Rate 220 °C/10kg	(g/10 min)	22	27	14	22	14	19	16	30
Heat Distortion (DTUL)	°F @ 264 psi	200	200	176	207	205	205	205	200
Vicat Softening Temp (A120)	°F	222	220	207	221	232	230	230	226
Notched Izod	ft-lbs/in	0.40	0.40	0.40	0.40	0.40	0.40	0.45	0.40
Tensile Strength @ Yield	psi	8,400	8,800	8,100	9,300	10,800	10,500	11,000	9,000
Tensile Elongation	%	2.1	2.3	2.1	3.0	2.1	2.2	1.8	2.2
Tensile Modulus	psi	470,000	470,000	490,000	470,000	480,000	475,000	475,000	470,000
Flexural Modulus at Break	psi	450,000	460,000	490,000	460,000	500,000	520,000	500,000	500,000
Flexural Strength	psi	14,100	14,600	14,500	14,900	18,900	16,700	19,000	14,000
Rockwell Hardness	M Scale	70	75	65	70	83	83	83	75
Light Transmission	%	91	91	92	93	88	88	88	90
Haze	%	0.3	0.3	0.3	0.3	0.8	0.7	2.0	0.7

Resin Number	Product Description	Typical Applications
NAS 21	General purpose grade with good SBC compatibility	Housewares, drinkware, SBC blends
NAS 30	Sparkling clarity, rigid , good flow	Heavy walled parts, packaging jars and containers, lenses and optical components
NAS 90	High molecular weight , good toughness	SBC blends, housewares, office accessories
NAS XC	Exceptional clarity, ultra low haze, available with additional UV package	Indoor & Outdoor lighting, Bathroom parts, Furniture parts, Sneeze Guards & Retail Barriers
Sparkle	Low AN, high flow, chemical resistance, ease of processing.	Housewares, cosmetic packaging and personal care devices
Lustran 29	Highest impact, high chemical resistance, ease of processing	Tumblers, water pitchers, blender jars, water filter housings, battery cases
Lustran 31	Injection molding grade with good clarity, heat and chemical resistance	Tumblers, mugs, tableware, dinnerware, blender jars, medical and personal care
Lustran 51	Best grade for chemical resistance and toughness*	Industrial battery cases, disposable lighters (not approved for food contact or medical)*

NAS	NAS from Styrolution is the clear choice for applications that demand a strong, stiff, water-clear plastic. Sparkling clarity in combination with stiffness and strength make this an ideal resin for a variety of Houseware and product packaging applications.
Lustran	Lustran is the Styrolution brand for Styrene-Acrylonitrile-Copolymer (SAN). Characteristics of Lustran SAN are outstanding transparency, easy coloring, high gloss, high rigidity, high heat resistance and good chemical resistance. It has good processability and is lower density compared to PMMA. Medical service package (DMF, all Pharmacopeia certifications and cytotoxicity tests) available where relevant.

All INEOS Styrolution Transparent Specialty products are approved for food contact and medical applications except where noted*

INEOS Styrolution America LLC
4245 Meridian Parkway, Suite 151
Aurora, IL 60504
www.ineos-styrolution.com

Customer Service Phone Number:
Customer Service Fax Number:
Product Information/Technical Assistance:

866-890-6353
866-890-6362
866-890-6354



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Product Families		Zylar®			Clearblend®		Terlux® (Imported)		
Description		Impact Modified SMMA			Impact Modified SMMA Blend		Transparent ABS		
Property	Units	650	631	960	145	165	2802	2812	2822
Specific Gravity	ASTM D 792	1.05	1.05	1.05	1.04	1.04	1.08	1.08	1.08
Melt Flow Rate 200 °C/5 kg	(g/10 min)	4	5	6	3.5	5	n/a	n/a	n/a
Melt Flow Rate 220 °C/10 kg	(g/10 min)	n/a	n/a	n/a	n/a	n/a	2	8	2
Heat Distortion (DTUL)	°F @ 264 psi	197	189	187	198	172	205	188	205
Vicat Softening Temp.	°F	210	211	201	208	201	206	201	206
Notched Izod	ft-lbs/in	3	2.2	11	1	5	1.4	1.2	1.4
Tensile Strength @ Yield	psi	3,800	5,200	3,400	4,000	3,000	4,600	4,200	4,600
Tensile Elongation	%	40	40	70	40	50	13	16	13
Tensile Modulus	psi	310,000	310,000	250,000	325,000	220,000	272,000	262,000	272,000
Flexural Modulus	psi	280,000	300,000	250,000	330,000	225,000	277,000	268,000	277,000
Rockwell Hardness	Scale as Noted	84R	70R	62 R	80 R	70 R	107	100	107
Light Transmission	%	90	91	91	90	90	90	90	90
Haze	%	1.8	1.5	1.8	1.8	1.8	<3.0	<3.0	<3.0

Resin Number	Product Description	Typical Applications
Zylar 650	High clarity, high impact	Floorcare parts, water and detergent tanks, medical devices
Zylar 631	Good balance of toughness and stiffness with good clarity	Household appliances, pens, office Products, industrial tools
Zylar 960	Clear, super high impact	Medical devices, personal care, tools, industrial covers and housings.
Clearblend 145	Clear, impact modified dry blend	Rigid packaging, caps and closures, office accessories
Clearblend 165	Clear, very high impact dry blend	Housewares, dispenser housings, office products, toys & leisure
Terlux 2802	Transparency, good impact and chemical resistance	Cosmetic packaging - Imported grade with long lead time
Terlux HD 2812	Medical grade with high impact and good chemical resistance	Medical devices with full HD Service package - Imported grade
Terlux HD 2822	Medical grade with high impact and excellent transparency	Medical devices with full HD Service package- Imported grade

Zylar	Zylar grades are impact modified styrene acrylic copolymers that offer low density, low moisture retention, and processing advantages over alternative resins. Zylar 960 sets the bar for toughness with Notched Izod impact performance in the range of some grades of polycarbonate. All Zylar grades meet USP XXIII specifications for Class VI plastics for safe use in medical applications.
Clearblend	Clearblend SMMA-SBC blends from Styrolution provide good clarity and practical toughness in a cost effective dry blend resin. They also provide ease of processing, low density and low moisture retention.
Terlux	Terlux is the Styrolution brand for Methyl methacrylate - Acrylonitrile - Butadiene - Styrene polymer. It is a transparent ABS, with good gloss, brilliance, transparency and high chemical resistance. It also has a good stiffness and high impact strength. It is low density with easy processability. The medical version comes with a service package (DMF, all Pharmacopeia certifications available, cytotoxicity tests).

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Product Families		Styrolux®						Styoflex®		K-Resin®						
Description		Styrene Butadiene Block Copolymer (SBC)						Thermoplastic elastomer S-TPE		Styrene Butadiene Copolymer (SBC)						
Property	Units	684D	3G55	3G46	656C	S	T	2G66	4G80	KR01	KR03 ^E	KR05 ^E	DK11 ^E	KR40	KR52	KR53
Specific Gravity	ASTM	1.01	1.01	1.02	1.02	1.02	1.02	1.02	0.98	1.01	1.01	1.01	1.01	1.02	1.01	1.02
Melt Flow Rate 200 °C/5 kg	(g/10 min)	10	13	11	15	10	10	11	15	8	7.5	7.5	7.5	10	9	10
Heat Distortion (DTUL)	°F @ 264 psi	158	114	140	152	n/a	n/a	n/a	n/a	148	144	144	n/a	117	n/a	117
Vicat Softening Temp.	°F	186	161	190	194	161	152	118	103	194	185	185	185	145	142	145
Notched Izod	ft-lbs/in	0.8	NB	0.6	0.3	0.2	0.5	NB	14	0.4	0.7	0.7	n/a	n/a	n/a	n/a
Tensile Strength @ Yield	psi	3800	2300	3700	4100	6200	2600	450	350	4900	3800	3800	3,100	2,240	4,400	2,240
Tensile Elongation	%	250	310	220	40	n/a	n/a	>500	>500	30	230	230	n/a	339	n/a	339
Tensile Modulus	kpsi	191,000	170,000	238,000	244,000	470,000	132,000	19,000	10,000	260,000	240,000	240,000	n/a	n/a	n/a	n/a
Flexural Modulus	kpsi	170,000	110,000	193,000	217,000	380,000	125,000	12,000	n/a	260,000	260,000	260,000	n/a	123,000	n/a	123,000
Shore Hardness	scale as noted	68 D	59 D	75 D	74 D	74 D	60 D	36 D	85 A	69 D	63 D	63 D	n/a	60	n/a	60
Light Transmission	%	90	90	91	90	91	90	93	77	93	92	92	92	92	n/a	92
Haze	%	1.5	6	1	1.5	n/a	n/a	n/a	n/a	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9

Resin Number	Product Description	Typical Applications
Styrolux 684D	Injection molding and sheet extrusion in blends with GPPS for thermoforming, blown film	Medical devices, food packaging, extruded sheets & film, blow molding, injection molded goods
Styrolux 3G55	Sheet extrusion in blends with GPPS for thermoforming, highly efficient with GPPS blends	Film, food packaging, drinking cups, in-line thermoforming
Styrolux 3G46	Cast and film extrusion, outstanding transparency	Film, bottles, toys, displays, household products and compounding with SMMA
Styrolux 656C	Clear and semi rigid, injection molding applications	Medical devices, food packaging
Styrolux 'S'	Clarity, high stiffness, low gel content	Shrink sleeve applications
Styrolux 'T'	Clarity, toughness, low gel content	Shrink sleeve applications
Styoflex 2G66	High flow, high transparency, high impact, toughness, elasticity	STPE for Impact modification, film, compounding, food packaging, adhesives, soft touch grips for tools
Styoflex 4G80	Tubing grade	STPE for medical tubing
KR01	Injection Molding, clarity, stiffness, warpage resistant, hinge properties	Hinged applications, medical devices, displays and toys
KR03^E	Injection Molding, clarity, surface gloss, toughness, stiffness	Hinged applications, medical devices, displays and toys
KR05^E	Sheet and Blow Molding, clarity, surface gloss, good formability, stiffness and toughness	Bottles, blister Packaging, portion packaging, molded containers, sheet extrusion
DK11^E	Film, clarity, sealability, stiffness	Medical packaging, twist wrap, lidstock film
KR40	Sheet. Good combination of clarity and toughness, high gloss	Cups and lids, portion packages, thermoformed blister packs
KR52	Film, high gloss, high permeation, good heat sealability	Shrink sleeve applications, tamper proof bands
KR53	Specialty film extrusion grade with low gels, toughness and ductility	Multilayer film, twist wrap, lidstock film

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^E Grades available Lubed (KR03E, KR05E, DK11E) and Non-Lubed

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