

STYROSUN[®]

WEATHERABLE POLYMERS

STYROSUN



Caravan Window Frame



Ventilation Grills

Satellite Antenna



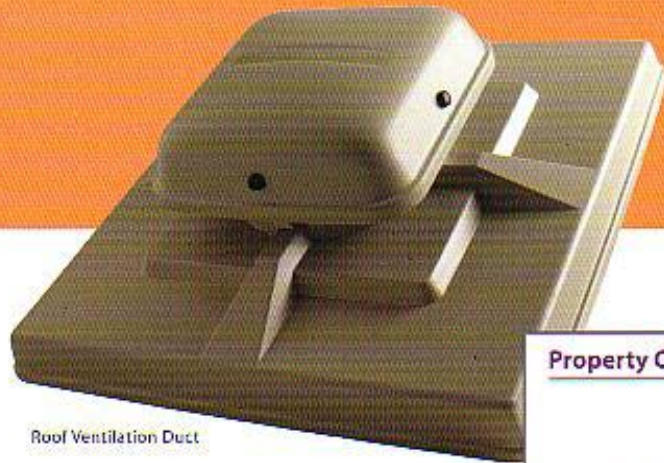
IN APPLICATIONS REQUIRING OUTDOOR PERFORMANCE, STYROSUN RESINS ARE AN ALTERNATIVE TO ACRYLONITRILE STYRENE ACRYLATE (ASA), UV-STABILIZED ACRYLONITRILE BUTADIENE STYRENE (ABS), POLYVINYL CHLORIDE (PVC) AND UV-STABILIZED HIGH-IMPACT POLYSTYRENE (HIPS).

The key advantage of NOVA Chemicals' STYROSUN resins is the retention of physical properties after outdoor exposure.

Applications using STYROSUN resins demonstrate five to ten years of functional product life. In contrast, the mechanical properties of UV-stabilized ABS and UV-stabilized HIPS deteriorate significantly and show severe discoloration after exposure to outdoor weathering.

STYROSUN — At-A-Glance

- » Weather resistant
- » Physical property retention after UV exposure
- » Color stability
- » Practical toughness and rigidity
- » Easily decorated
- » Dimensional stability
- » Recyclable
- » Resistant to common household cleaners
- » Low dielectric loss factor for satellite antennas

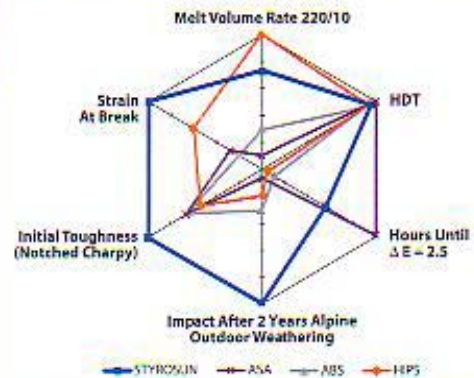


Roof Ventilation Duct

Potential Applications

- » Caravan parts and accessories
- » Inset window frames on doors
- » Recreation equipment
- » Roof ventilation ducts
- » Satellite housings and receiving dishes
- » Sprinklers and irrigation systems
- » Outdoor signs
- » Additive for synthetic wood trim
- » Gardening accessories
- » Interior decorating accessories
- » Rain gauges for weather stations
- » Solariums

Property Comparisons

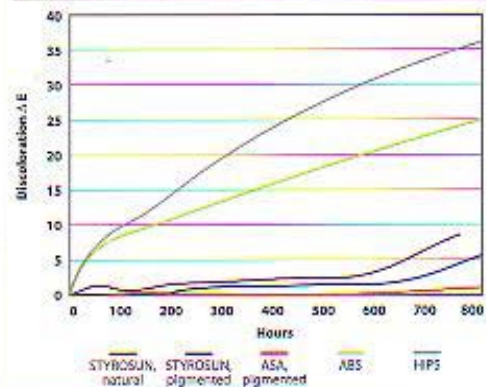


STYROSUN resins exhibit higher toughness in outdoor weathering studies and demonstrate improved processing properties compared to competitive weatherable materials.

Chimney Enclosure



Accelerated Weathering Simulation



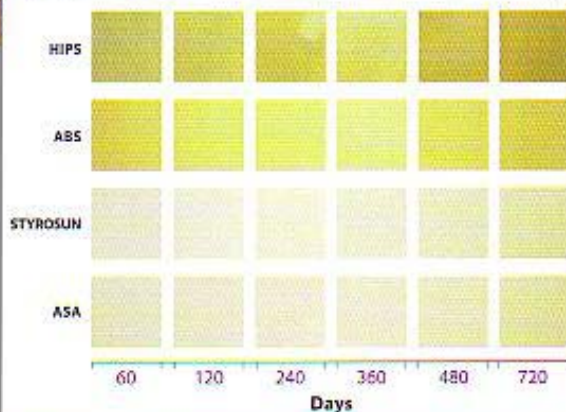
STYROSUN resins maintain a significantly lower color shift after 800 hours of QUV exposure.

Processing

Easy to process and color at the press, STYROSUN resins give designers an ideal alternative for applications that require outdoor performance. STYROSUN can be injection molded and extruded alone or as a UV-resistant cap layer

onto HIPS to produce a low-cost weatherable sheet. When adding color, appropriate masterbatch pigments and carrier resins must be used to maintain the UV performance of STYROSUN resins.

Yellowing Effect After Weathering



Processing Advantages

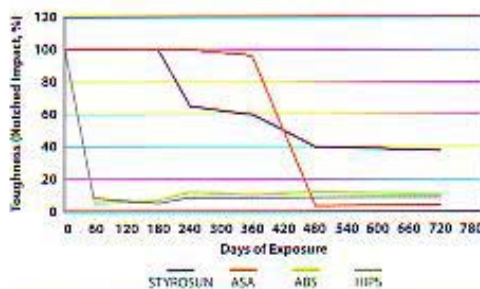
- Process on standard extrusion, thermoforming & injection molding equipment
- No drying required
- Low processing temperatures
- Easily colored at the press
- Compounding not required to integrate color
- Lower clamp tonnage
- Shrinkage similar to ASA, HIPS and filled PP

Recycling

STYROSUN resins reclaimed after molding or thermoforming are easily recycled. Reclaimed STYROSUN resins from a multi-layer system can be recycled back into the HIPS core layer.

In contrast, competitive multi-layer systems may be non-recyclable as post-industrial scrap and post-consumer waste.

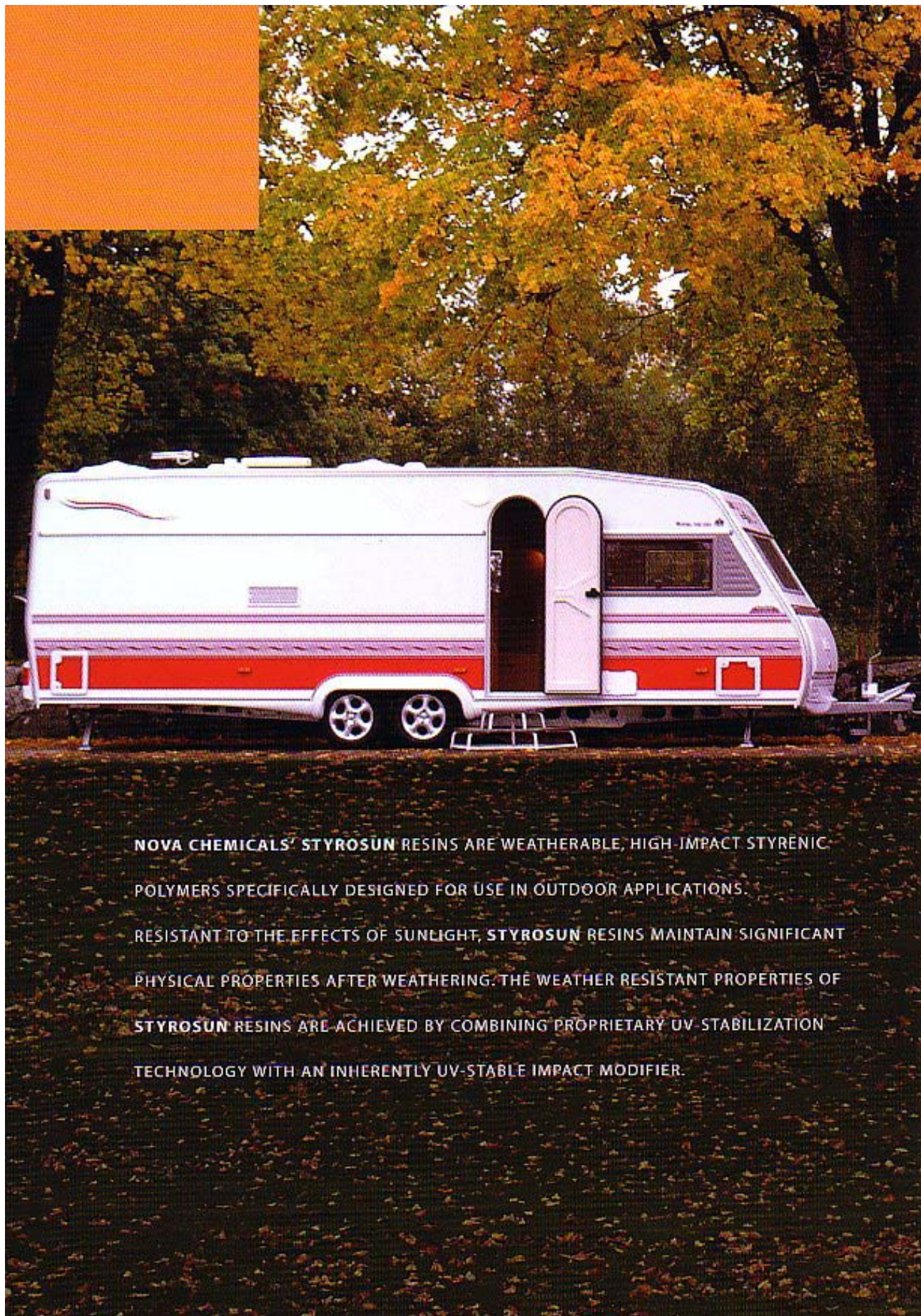
Alpine Outdoor Weathering



The impact strength of STYROSUN resins outperforms competitive weatherable materials after 720 days of outdoor exposure.

Skylight Frame





NOVA CHEMICALS' STYROSUN RESINS ARE WEATHERABLE, HIGH-IMPACT STYRENIC POLYMERS SPECIFICALLY DESIGNED FOR USE IN OUTDOOR APPLICATIONS. RESISTANT TO THE EFFECTS OF SUNLIGHT, **STYROSUN** RESINS MAINTAIN SIGNIFICANT PHYSICAL PROPERTIES AFTER WEATHERING. THE WEATHER RESISTANT PROPERTIES OF **STYROSUN** RESINS ARE ACHIEVED BY COMBINING PROPRIETARY UV STABILIZATION TECHNOLOGY WITH AN INHERENTLY UV-STABLE IMPACT MODIFIER.

STYROSUN Applications



Outdoor Lighting



Synthetic Wood



Motion Detector



Interior Trim

STYROSUN Performance

TYPICAL VALUES					
Properties ⁽¹⁾	S.I. Units	ISO Standard	STYROSUN 3600	STYROSUN 5400	STYROSUN 6600
MVR (200,5)	ccm/10min	1133 H	5.5	2.5	1.7
MFR (200,5)	g/10min	1133 H	6	2.6	1.7
Vicat (B/50)	C	305 B50	83	89	84
HDT (A 1.8 MPa)	C	75 -1 & -2Af	74	76	75
Charpy Unnotched at 23°C	kJ/m	179/1eU	No Break	120	No Break
Charpy Notched at 23°C	kJ/m	179/1eA	18	14	23
Flexural Modulus	MPa	178	2050	2200	2000
Flexural Strength	MPa	178	38	45	39
Tensile Modulus	MPa	527 -1 & -2/1A/1	1950	2100	1900
Tensile Stress at Yield	MPa	527 -1 & -2/1A/50	28	35	29
Tensile Strain at Yield	%	527 -1 & -2/1A/50	1.8	2.3	2.1
Tensile Stress at Break	MPa	527 -1 & -2/1A/50	40	35	50
Tensile Strain at Break	%	527 -1 & -2/1A/50	21	27	23
Density at 23°C	kg/m	1183	1.02	1.02	1.01
Molding Shrinkage	%	294-4	0.3	0.4	0.3

(1) Property values may vary with the addition of colorants and enhancement additives.

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