

**HIPS**  
**ViSpec™ LT 5200**  
**Product Datasheet**

**Esform 4-400**  
Version 3 26/06/2013

**Description**

High Impact Polystyrene (HIPS) is a general-purpose opaque material that has a good balance of stiffness and toughness. It has very good impact strength and is an excellent all-purpose material. It is very easy to thermoform and fabricate.

The ViSpec ESCR 5200 grade has improved low temperature impact strength and environmental stress crack resistance. Particularly suited to the refrigeration and sanitary markets.

**Application**

Refrigeration, sanitary, bathroom units, shower units, construction, transit trays, containers.

**Key Features**

**Low Temperature Resistance**

Good impact resistance below 0°C.

**Chemical Resistance**

Good chemical resistance to many chemicals including weak acids and dairy produce. See back page for more details.

**Thermoforming**

Easy to thermoform. It has a broad visco-elastic range that gives good melt strength over a large temperature range.

**Product Availability**

**Colour**

Standard colours or customer matches.

**Finish**

Natural matt, embossed or gloss capped.

**Thickness**

1mm to 9mm

**Sheet Size Specifications**

Gauge	Width	
	Minimum	Maximum
1mm to 9mm	450	1500

NB: available sizes may vary depending on gauge, colours, embosses and order size, please ask confirmation to sales department.

**Alternative Solutions**

Many alternative solutions available, either for cost effective solutions (ECO 5400) or for more technical applications (Antistat HIPS 5150, chemical resistant Polypropylene (3000 series) and Polyethylene (2000 series).

**Disclaimer**

The information contained in this leaflet is based on our present technical knowledge and experience. In view of the large number of factors that may influence the processing and use of our products, the information does not relieve the processors and manufacturers of the need to carry out their own tests and experiments. Our information does not constitute a legally binding assurance of product availability, of particular properties or of a suitability for a particular use. Patent rights that may exist must be duly observed.

**Typical physical properties**

Properties	Unit	Standard	Method	Value
Density #	g/cm3	ISO 1133	-	1.06
Tensile Strength at Break	MPa	ISO 527	50mm/mim	21
Tensile Modulus	MPa	ISO 527	50mm/mim	1550
Elongation at Break	%	ISO 527	50mm/mim	45
Flexural Strength	MPa	ISO 178	2mm/min	32
Vicat Softening Point	°C	ISO 306	B50/oil	87
Flammability Rating	Rating	UL94	HB	1.6
Charpy Notched Impact Strength	KJ/M <sup>2</sup>	ISO179	1eA at 23°C	≥7

#The density quoted should be used as a guide. This value can change depending upon the type and quantity of pigments or additives used.

## Additional Information

### Thermoforming

Easy to thermoform. It has a broad visco-elastic range that gives good melt strength over a large temperature range. Typical forming temperatures are between 130°C to 180°C depending upon sheet thickness and mould detail required. Normally no pre-drying is required if the material is kept in dry conditions.

### Fabrication

**ADHESIVES:** When gluing, make optimum use of the good solubility of the polystyrene by using either a solvent or a solvent-based adhesive. Examples of solvent-based adhesives are as follows: toluol, methylene chloride, and tetrahydrofurane. The adhesion of polystyrene to other materials occurs by using either a permanent or two-component adhesive. It is recommended, however, to always seek advice from an adhesive specialist first.

**WELDING:** Ultrasonic welding is preferable, but hot gas, hot plate and heat impulse welding methods are also possible. High frequency welding, due to its small dielectric losses, is not suitable.

**CUTTING:** Semi-finished material made from polystyrene is easily cut and processed, i.e punched, sawn, drilled, milled, cut with rotary saw etc. Moreover, processing tools normally used for metal and woodwork can be utilised. Because of the poor heat conductivity and the relatively low softening temperature, it is recommended that the parts must be cooled with blown air or water.

**PRINTING/PAINTING:** Typical printing techniques used are silk-screen, offset litho and flexographic. In silk-screen printing, coordinated, solvent-based colours are used, which negate the need for a special surface treatment prior to application. In contrast, offset printing on polystyrene can sometimes require corona treatment of the semi-finished material to improve ink transfer and adhesion. When using solvent based paints it is always advisable to test for suitability, as significant levels of solvents may chemically attack the polystyrene.

### Certification/Approvals

The following approvals are only available on request:

ROHS: European Legislation 2002/95/EC. Food: European Legislation 2002/72/EC.

### UV Resistance

Natural HIPS when exposed to direct UV may discolour and become brittle in a matter of months. Black pigmented sheet will improve UV resistance. An addition of a UV stabiliser can further improve its longevity. For significantly higher protection then alternatives like ViSpec SS 5610, PMMA (Acrylic) capped ABS (ViSpec Sun 6700) and ASA capped ABS (ViSpec W 6610) should be considered. Ask sales for more details.

### Cleaning and Maintenance

Typical detergents and soaps dissolved in warm water can be used to effectively clean surface contamination from the surface.

## Chemical Resistance

Chemical resistance is influenced by many factors, including concentration, temperature, exposure time and material stress. Therefore the data below should only be used as a guide.

Reagent	Chemical resistance	Reagent	Chemical resistance
Acetone	Poor	Chloroform	Poor
Acid (Weak)	Very Good	Citric Acid Solution	Good
Acid (Strong)	Poor	Common Salt	Excellent
Apple Juice	Very Good	Detergents	Very Good
Beef Fat	Very Good	Dairy Products	Very Good
Butter	Very Good	Diesel	Poor
Base (Weak)	Excellent	Ethyl Alcohol	Good
Base (Strong)	Poor	Fertilisers	Good

### VitasheetGroup

Charta House  
30 - 38 Church Street  
Staines  
TW18 4EP  
United Kingdom  
[www.vitasheetgroup.com](http://www.vitasheetgroup.com)

### Esbjerg

Hyrassivej 12  
DK - 6862 Tistrup  
Denmark  
Tel: +45 75 29 19 00  
[www.vitasheetgroup.com](http://www.vitasheetgroup.com)

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