

## Product Data Sheet

### HFI 5110

High Density Polyethylene

#### Product Description

HFI 5110 is a high molecular weight, high-density polyethylene with broad molecular weight distribution and 1-hexene as a co-monomer, specially developed for producing thin films with excellent strength and rigidity. This product is suitable for manufacturing of high strength grocery sacks, shopping bags and high quality thin films for uni/multi-wall packaging. Films produced with this grade can be readily treated and printed to give high quality graphics. HFI 5110 has been manufactured under Basell license.

#### General Information

<b>Status</b>	Commercial: Active
<b>Application</b>	Blown film extrusion- Uni/multi wall packaging- High quality thin films- Shopping bags- High strength grocery sacks.
<b>Form(s)</b>	Pellet
<b>Attribute</b>	High tear resistance High melt stability
<b>Additives</b>	Antioxidant: Yes Zinc Stearate: Yes
	High quality graphic printing
	Antiblock: No
	Slip Agent: No

Typical Properties	Typical Value <sup>1</sup>	Unit	Test Method
<b>Physical</b>			
High Load Melt Flow Index (190°C/ 21.6 kg)	10	g/10 min	ISO 1133
Density <sup>2</sup>	0.951	g/cm <sup>3</sup>	ISO 1183
<b>Mechanical <sup>3</sup></b>			
Tensile Modulus of Elasticity	1050	MPa	ISO 527-1,2
Tensile Strength (MD)	55	MPa	ISO 527-1,3
Tensile Strength (TD)	55	MPa	ISO 527-1,3
Tensile Strain at Break (MD)	580	%	ISO 527-1,3
Tensile Strain at Break (TD)	620	%	ISO 527-1,3
Tensile Stress at Yield	26	MPa	ISO 527-1,3

Tensile Strain at Yield	10	%	ISO 527-1,3
Elmendorf Tear Strength (MD)	250	mN	ISO 6383-2
Elmendorf Tear Strength (TD)	800	mN	ISO 6383-2
<b>Thermal</b>			
Melting Temperature	132	°C	ISO 3146
Vicat Softening Temperature (Method A/10N)	127	°C	ISO 306
<b>Recommended Process Conditions <sup>4</sup></b>			
Extruder temperature profile: 200-235 °C	Blow up ratio: 3-5		
Film thickness: 15-50 µm			

1. Typical values: these are not to be construed as specifications.
2. The density parameter was determined on compression-molded specimens, which were prepared in accordance with procedure C of ASTM D4703, Annex A1.
3. Properties are based on 20 µm blown film produced at a melt temperature of 220°C and 3 BUR using 100% HFI5110 resin. Modulus property is based on compression-molded specimens, which were prepared in accordance with procedure B of ASTM D4703, Annex A1.
4. Please note that, these processing conditions are recommended by manufacturer only for 100% HFI5110 resin (not in the case of blending with any other compatible material), therefore because of the many particular factors which are outside our current knowledge and control and may affect the use of product, no warranty is given for the foregoing data. Moreover, the specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

## Further Information

### Health and Safety

The resin is manufactured to the highest standards, but special requirements apply to certain applications such as food end-use contact and direct medical use. Specific information on regulatory compliance can be requested via customer.

Molten polymer may be degraded if it is exposed to air during any of the processing and off-line operations. The products of degradation may have an unpleasant odor. In higher concentrations they may cause irritation of the mucus membranes. Fabrication areas should be ventilated to carry away fumes or vapors. Legislation on the control of emissions and pollution prevention should be observed. Workers should be protected from the possibility of skin or eye contact with molten polymer.

The resin will burn when supplied with excess heat and oxygen. It should be handled and stored away from contact with direct flames and/or ignition sources. While burning, the resin contributes high heat and may generate a dense black smoke.

Recycled resins may have previously been used as packaging for, or may have otherwise been in contact with, hazardous goods. Converters are responsible for taking all necessary precautions to ensure that recycled resins are safe for continued use.

The detailed information about safety, handling, individual protection and waste disposal is provided in the relevant Safety Data Sheet. Additional specific information can be requested via customer.

### Conveying

Conveying equipment should be designed to prevent accumulation of fines and dust particles. These particles can, under certain conditions pose an explosion hazard. We recommend that the conveying system will be equipped with adequate filters and be operated and maintained in the way that ensure no leaks develop.

## Storage

Polyethylene resins should be protected from direct sunlight and/or heat during storage. The storage location should also be dry, dust free and the storage temperature should not exceed 50 °C. It is also advisable to process polyethylene resins (in pelletized or powder form) within 6 months after delivery, because excessive aging of polyethylene can lead to a deterioration in quality. Arya Sasol Polymer Company would not give any warranty to bad storage conditions which may lead to quality deterioration such as color change, bad smell and inadequate product performance.

The information provided in this Product Data Sheet has been based upon the current level of knowledge and experience. They are not to be interpreted as a warranty for specific product characteristics. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. Customer is responsible for determining whether the products and the information in this document are appropriate for customer's use and for ensuring that customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document.

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