

### FUNCTIONAL V-113

#### VISCOSITY INDEX IMPROVER in BALE (BLOCK) FORM

#### APPLICATION:

**FUNCTIONAL V-113** is a viscosity index (V.I.) improver polymer in concentrated bale (block) form. It is dissolved in oil to prepare an economical additive for multi-grade engine oils or an aftermarket "oil treatment" additive. It may also be used as an inexpensive thickener for oil, to avoid blending with expensive oils like bright stocks. Plants not having grinders should use the same polymer in granulated "crumb" form, **FUNCTIONAL V-114**.

#### COMPOSITION:

**FUNCTIONAL V-113** is an olefin copolymer, derived from ethylene and propylene, which has been used as a V.I. improver by major oil companies. Its physical form is 55-lb (25-kg) polyethylene-wrapped "bales", which need to be ground before dissolving in oil.

#### Typical Properties

<b>Appearance</b>	Solid white rubber block
<b>Specific Gravity:</b>	0.87
<b>Thickening efficiency</b> (6.2% in 100 SUS paraffinic base oil)	400 - 900 cSt at 100°C

#### TREATMENT LEVEL:

Treatment levels of 0.5-2.0% are typical in industrial lubricants and greases. The detergent-inhibitors used in formulating modern motor oils contain significant but varying levels of polymeric additives. The V.I. improver treatment level therefore depends on the choice of detergent package. An "oil treatment" additive may be prepared using about 4.5% **FUNCTIONAL V-113** in ISO 32 oil, to give an additive with a viscosity of about 500 cSt at 100°C.

#### HANDLING:

**FUNCTIONAL V-113** is supplied as 55-lb plastic-wrapped "bales" in 2205-lb pallet boxes. It should be stored below about 140°F (60°C), as higher temperatures may cause the polyethylene wrap to stick. It is not necessary to remove the wrap before grinding if the polymer dissolves at 80°C (176°F) or at higher temperature. It is a non-hazardous material; see the current Material Safety Data Sheet. Dissolving is best accomplished by grinding into oil at a temperature of 180-230°F (85-110°C). (Higher temperatures will not affect **FUNCTIONAL V-113**, but may darken the diluent oil.)

This Technical Data Sheet and the Material Safety Data Sheet contain information believed to be accurate and reliable. No warranty is made, however, to information beyond the control of FUNCTIONAL PRODUCTS INC. The engineering and management personnel of the user are responsible for determining the suitability of this or any product for any specific application, and this information is offered to them for that purpose.

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