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Enriching lives through innovation

Polymer Modification (Hydrophobic)

INTRODUCTION

Thermoplastic polymers such as Polyamides (Nylon), Polyimide, and Polyolefins find use in a variety of applications, ranging from fibers to films or membranes, to engineering plastics. These polymers generally have good properties, which make them suitable for these applications. However, several characteristics such as flexibility, low temperature properties, and elasticity can be improved through modification with ELASTAMINE® Polyetheramines. ELASTAMINE® Polyetheramines are a new and unique product range of specialty amines.

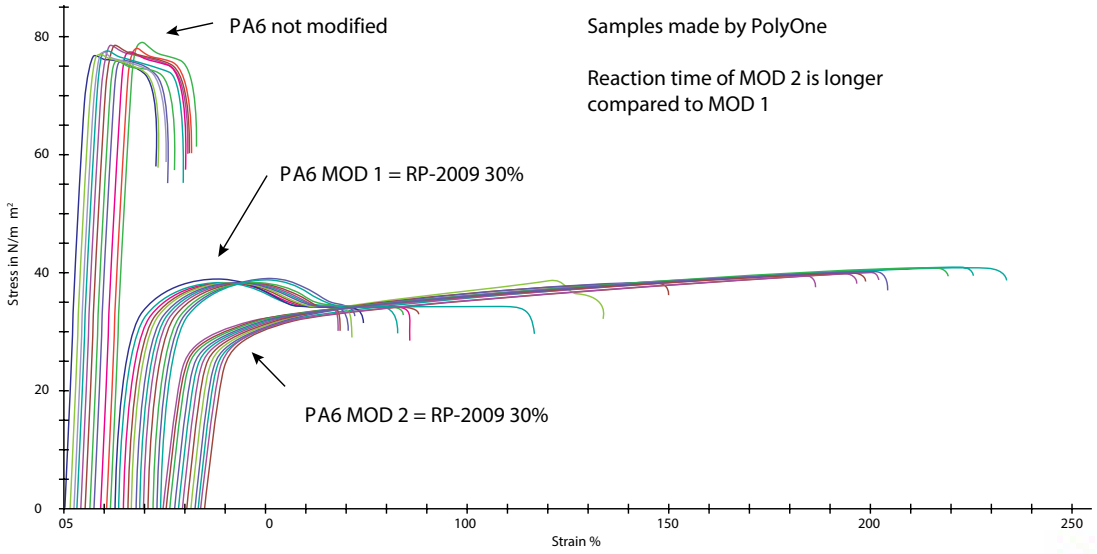
FEATURES

- Flexible polyether backbone
- Mono-, di-, or tri- functionality amines
- Low viscosity, essentially colorless, low vapor pressure
- High alcohol to amine conversion
- ELASTAMINE® Polyetheramines chosen for such application are made hydrophobic with (PPG, PTMEG) backbone.
- ELASTAMINE® Polyetheramines can be highly reactive as a result of the presence of unhindered amine end groups. Benefits are shorter polymer production cycles, improved color and mechanical properties.

APPLICATIONS

(A) Use In Polyamide Plastics And Fibers

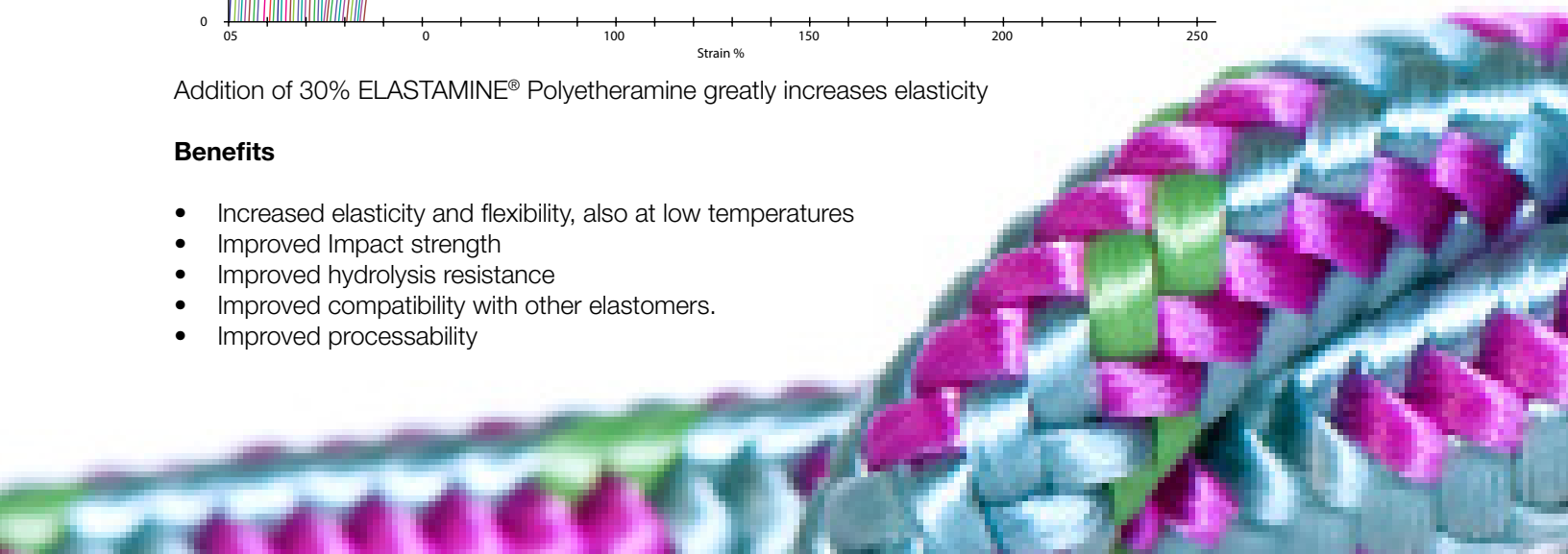
ELASTAMINE® Polyetheramines with PPG/PTMEG backbone can be used to improve mechanical properties of polyamide. One of the typical applications in which ELASTAMINE® Polyetheramines react with diacid, lactam to increase flexibility and elasticity of Polyamide for improving the low temperature properties and Impact strength due to the incorporation of PPG/PTMEG blocks.



Addition of 30% ELASTAMINE® Polyetheramine greatly increases elasticity

Benefits

- Increased elasticity and flexibility, also at low temperatures
- Improved Impact strength
- Improved hydrolysis resistance
- Improved compatibility with other elastomers.
- Improved processability



(B) Polyimide Plastics And Films

There are various applications and inventions available where ELASTAMINE® Polyetheramines are used alone or in combination with aromatic ether diamine or other diamines in copolymerization with dianhydride to improve the flexibility and processability of Polyimide due to the presence of polyether backbone.

Benefits

- Increased elasticity and flexibility

PRODUCT RANGE

Product Name	Backbone	Typical Properties*				
		Approx molecular weight	Colour, Pt-Co	Water, wt%	Viscosity, cSt	AHEW (Amine Hydrogen Equivalent Weight)
RP-409	PPG-based diamines	400	25 max	0.25 max	22 (25°C)	110
RP-2009	PPG-based diamines	2,000	30 max	0.25 max	248 (25°C)	500
RT-1000	PTMEG (mostly) / PPG-based diamines	1,000	40 max	0.40 max	121 (40°C)	260
HT-1700	PTMEG-based diamines / triamines	1,700	20 max	0.25 max	936 (38°C)	380
RP3-500	PPG-based triamines	5,000	75 max	0.25 max	819 (25°C)	950

* Properties are for reference only. Please approach Huntsman Corporation for actual specifications.

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Sales Offices

Australia
61 Market Road, Brooklyn,
Victoria 3012,
Australia
Tel : +61-3-9933-6696
Fax : +61-3-9933-6656

China
49F Maxdo Centre,
8 Xing Yi Road
Shanghai 200336,
P. R. China
Tel : +86-21-2325-7888
Fax : +86-21-2325-7908

India
B - Wing, Light Hall building,
Hiranandani Business Park,
Opp. Linkway Honda Showroom,
Saki Vihar Road, Chandivali,
Mumbai - 400072
India
Tel : +91-22-4287-5100
Fax : +91-22-4287-5300 / 400

Japan
KIBC South Building, 6F, 5-5-2
Minatojima Minamimachi
Chuo-ku, Kobe 650-0047
Japan
Tel : +81-78-304-3900
Fax : +81-78-304-3970

Korea
9th Floor, Dukmyung Building,
170-9 Samsung-dong,
Gangnam-gu,
Seoul 135090,
Korea
Tel : +82-2-3404-6800
Fax : +82-2-556-3263

Singapore (SEA)
150 Beach Road
#37-00 Gateway West
Singapore 189720
Tel : +65 6297 3363
Fax : +65 6298 8606

Taiwan
No. 19, Industrial Third Road
Kuan Yin Industrial District
Taoyuan 32853,
Taiwan
Tel : +886-3-483-8616
Fax : +886-3-483-6412

Global headquarters
Huntsman Corporation
10003 Woodloch Forest Drive
The Woodlands, Texas, 77380
USA
Tel : +1-281-719-6000
Fax : +1-281-719-6055

Asia Pacific
Huntsman Performance Products
150 Beach Road
#37-00 Gateway West
Singapore 189720
Tel : +65-6297-3363
Fax : +65-6296-3368

Europe, Middle East and Africa
Huntsman Performance Products
Everslaan 45
B-3078 Everberg
Belgium
Tel : +32-2-758-9544
Fax : +32-2-758-9946

www.huntsman.com/performance_products