

The logo for Struktol, featuring the word "struktol" in a bold, red, sans-serif font. The text is contained within a white rectangular box with a red border. A small registered trademark symbol (®) is located to the upper right of the word. The background of the slide header is a green gradient with abstract, glowing lines and a globe-like pattern on the left side.

**struktol**®

Plastic Additives

# Struktol Innovations: RP 11 for Viscosity Modification of Polypropylene

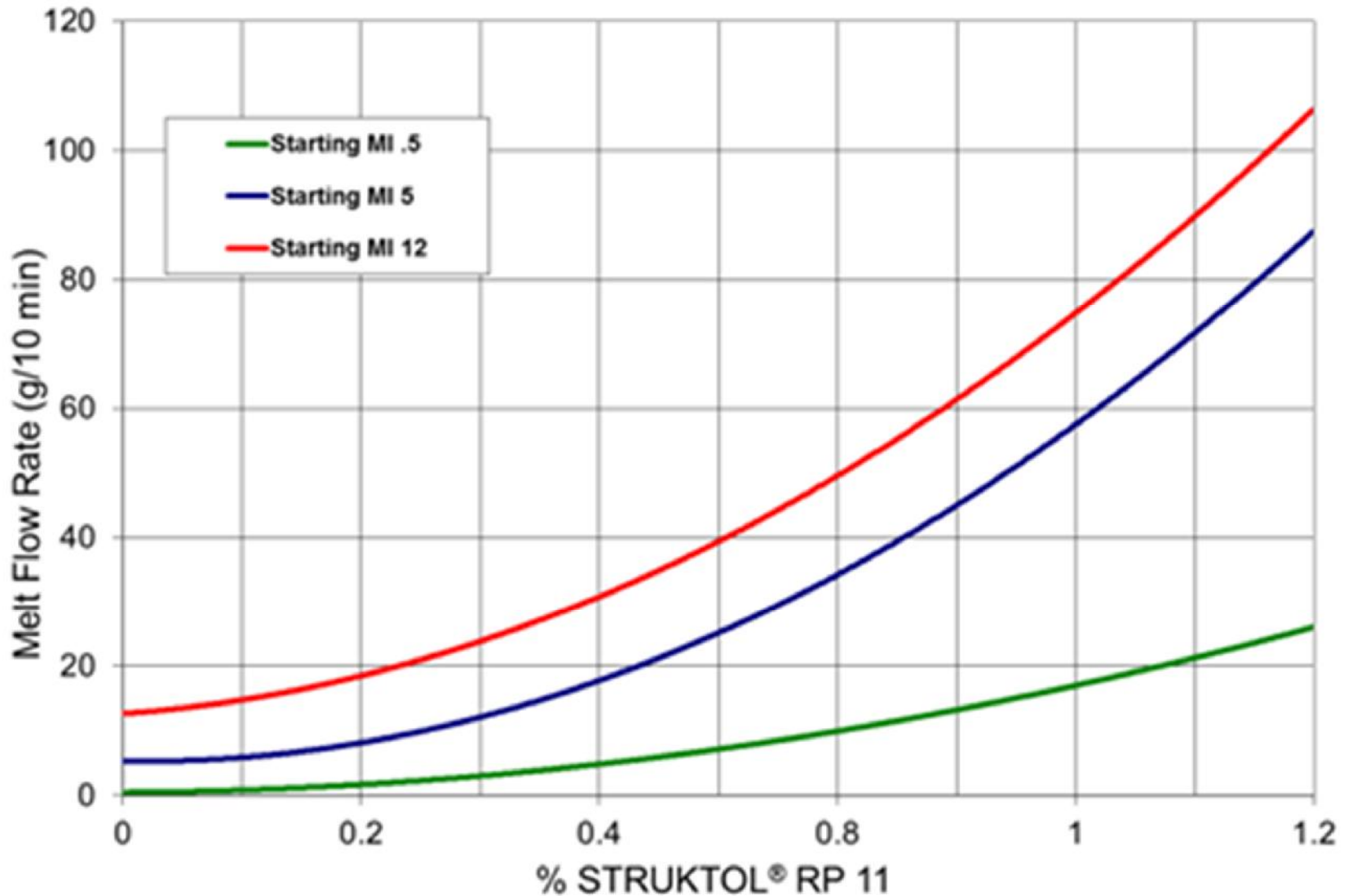
Introduction and Overview

September 2012

# STRUKTOL<sup>®</sup> RP 11

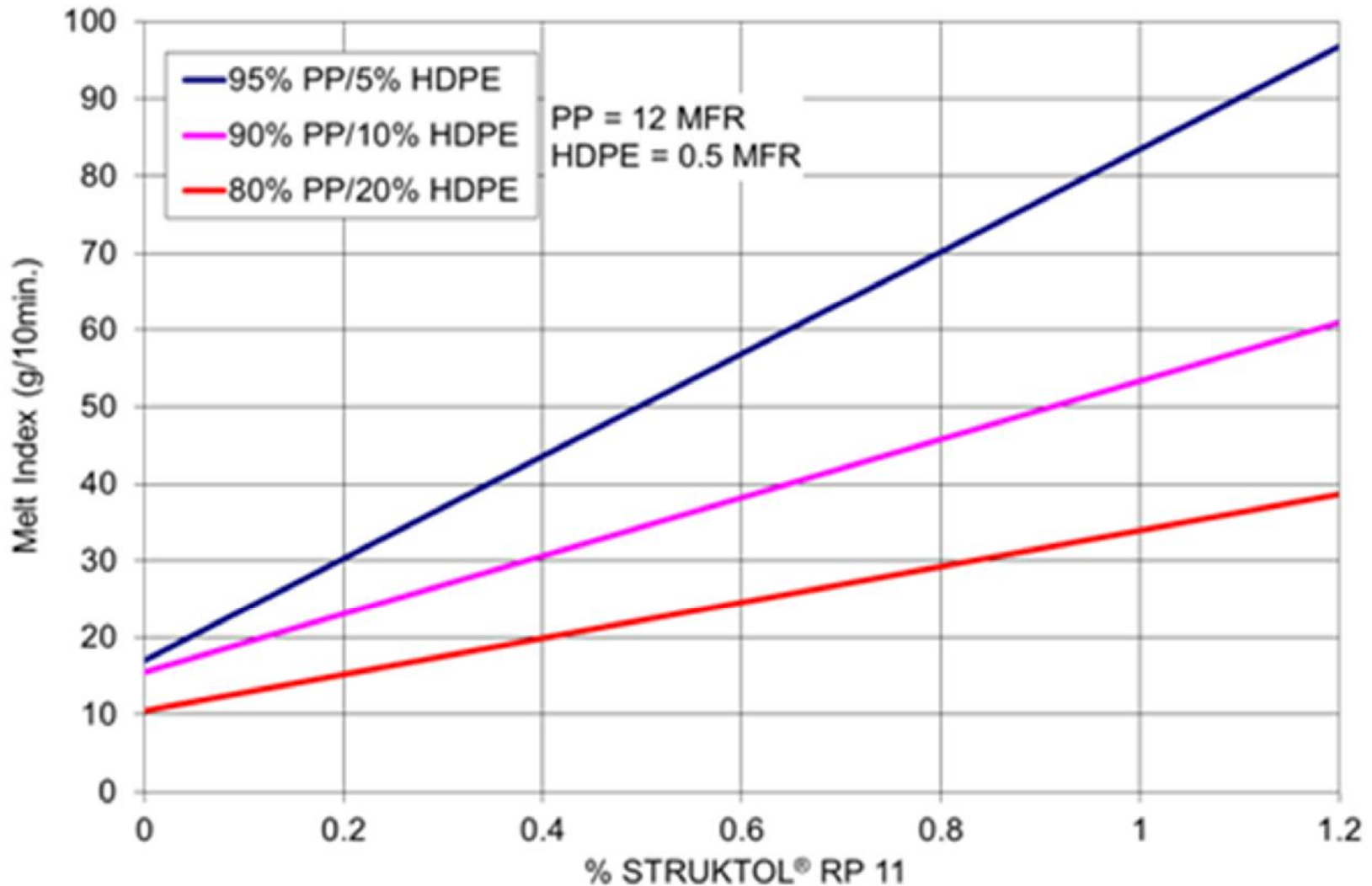
- Functional viscosity modifier for polypropylene
- Replaces peroxide at a 1:1 ratio
- Provides metal release characteristics and lubrication
- Improved melt flow rate control
- Easy to handle and feed at the extruder or molding machine

# RP 11 in Homopolymer PP



# RP 11 for Polypropylene

Effects on Viscosity in Blended Polymers



# RP 11 Effects on Physical Properties

## Fractional Melt HPP

	Control HPP	0.5% RP 11	0.75% RP 11	1.4% RP 11
MFR, g/10 min.	0.4	6.0	10.5	34.5
Notched Izod, ft lbs/in	4.0	2.6	3.5	2.0
Tensile Yield, psi	4710	4500	4110	3950
Elongation at Yield, %	6.8	7.2	7.6	8.0
Flex Modulus, kpsi	1.9	1.6	1.7	1.7
Gardner Impact, in lbs.	8	40	64	96

# RP 11 Effects on Physical Properties

## Alternative Fractional Melt HPP

	Control HPP 2	0.5% RP 11	1.0% RP 11	2.0% RP 11
MFR, g/10 min.	0.6	5.4	14.6	37.8
Notched Izod, ft lbs/in	2.3	2.1	2.0	1.8
Tensile Yield, psi	4510	4390	4280	4210
Elongation at Yield, %	6.6	6.9	7.6	8.0
Flex Modulus, kpsi	2.2	1.8	1.9	1.9
Gardner Impact, in lbs.	8	72	88	64

# RP 11 Effects on Physical Properties

## Nominal 5 MFR HPP

	Control HPP	0.4% RP 11	0.8% RP 11
MFR, g/10 min.	5.0	21.5	36.5
Notched Izod, ft lbs/in	2.8	2.8	2.6
Tensile Yield, psi	4780	4520	4480
Elongation at Yield, %	5.3	5.6	4.9
Flex Modulus, kpsi	2.0	2.1	2.2
Gardner Impact, in lbs.	8	64	40

# RP 11 Effects on Physical Properties

Nominal 20 MFR HPP

	Control HPP	0.4% RP 11
MFR, g/10 min.	19.8	41.3
Notched Izod, ft lbs/in	3.6	1.8
Tensile Yield, psi	4200	4410
Elongation at Yield, %	6.7	6.7
Flex Modulus, kpsi	1.7	2.1
Gardner Impact, in lbs.	16	32



# RP 11 Summary

- Easy to control MFR based on loading level
- Substantial increases in falling weight impact strength
- Predictable effects on other physical properties
- Noticeable improvements in mold release



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