

The International Conference on Additives for Polyolefins



February 23-25, 1998

***Presented by the
South Texas Section &
Polymer Modifiers and Additives Division***

The International Conference on Additives for Polyolefins

Houston, TX

February 23 - 25, 1998



Presented by:

The South Texas Section

and the Polymer Modifiers and Additives Division

Society of Plastics Engineers

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CHEMICAL ADDITIVES FOR POLYOLEFINS

*Recent Developments -
Future Market Trends*

The International Conference on
Additives for Polyolefins

February 24, 1998

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DEFINITIONS

- Additive
 - “A chemical added in minor amounts to a host plastic to improve the overall performance of the system”
 - Additives are categorized by the functions that they perform rather than their chemistries.
- Additive Functions
 - Modifiers
 - Property Extenders
 - Processing Aids
- Specifically excluded are fillers, reinforcements, colorants and alloys



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ADDITIVE CLASSES

- Modifiers
 - Plasticizers
 - Chemical Blowing Agents
 - Coupling Agents
 - Impact Modifiers
 - Organic Peroxides
 - Nucleating Agents

ADDITIVE CLASSES

- Property Extenders
 - Flame Retardants
 - Heat Stabilizers
 - Antioxidants
 - Light Stabilizers
 - Antistatic Agents

- Processing Aids
 - Lubricants
 - Mold Release Agents
 - Anti Block/Slip Agents

PLASTIC ADDITIVE CONSUMPTION

	<u>Billion Lbs.</u>	<u>\$ Billion</u>
■ World Wide Totals	15.9	15.2
■ Regional		
North America	3.9	3.9
Europe	4.2	4.0
Asia-Pacific	5.9	5.7
ROW	1.9	1.6

% ADDITIVE CONSUMPTION BY RESIN

	<u>% Volume</u>	<u>% Dollars</u>
PVC	78%	63%
Polyolefins	6%	15%
Others ¹⁾	16%	22%

Polyolefin Additives: 1.1 billion lbs.
\$2.6 billion

1) Others include styrenics, engineering plastics, and thermosets



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POLYOLEFIN ADDITIVES

- Antioxidants
- Light Stabilizers
- Organic Peroxides
- Anti Block/Slip Agents
- Flame Retardants
- Chemical Blowing Agents
- Nucleating Agents
- Antistatic Agents
- Biocides



MAJOR POLYOLEFIN ADDITIVE SUPPLIERS

AO	LS	OP
Ciba	Ciba	Akzo Nobel
Great Lakes	Cytec	Elf Atochem
GE	Great Lakes	LaPorte
Uniroyal	Clariant	Witco
Cytec		

INDUSTRY TRENDS - RECENT DEVELOPMENTS

- Drive for Shareholder Value
- Fragmentation of Diversified Companies
 - Ciba
 - Clariant
 - Cytec
 - Albright and Wilson
 - Solutia

INDUSTRY TRENDS - RECENT DEVELOPMENTS (Continued)

■ Focus on Core Competencies

- Akcros
- Ciba-Witco
- Mallinckrodt
 - Ciba
 - Baerlocher
- Cookson

■ Product Line Extensions

- Great Lakes
- Ferro
- Ciba

INDUSTRY TRENDS

- Globalization
 - China
 - Numerous small suppliers
 - Logistics/technology issues
 - Investments required
 - Japan
 - Slow growth
 - Small size
 - Regional
 - Incomplete restructuring
 - Cost

INDUSTRY TRENDS (Continued)

- Recent Developments
 - Ciba/Witco - Heat Stabilizers
 - Akzo - Organic Peroxides
 - Elf Atochem - Organic Peroxides
 - Great Lakes - J.V.'s
 - Flames Retardants
 - Antioxidants