Plastics Industry Trends

A snapshot of materials, technology and top industry challenges

Plastics News

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Objectives

To assess:

- Current use of materials and technology and unmet needs
- Changing role of the materials supplier
- Top industry issues and challenges

Methodology:

- Online survey administered via email invitation to plastics industry professionals in February 2015.
- Multiple sample lists including subscribers to *Plastics News* and registrants to DuPont Packaging & Industrial Polymer and DuPont Performance Polymers web sites.
- Response is about 50/50 from the two sources.
- 813 respondents qualified themselves as being involved in the selection, use or purchase of resins, polymers or elastomers.
  - Most respondents use engineering polymers, general polymers and elastomers.
  - Job functions are primarily research & development, management and the design community.
  - Markets primarily served are automotive, industrial and electrical/electronic.
  - Nearly half of respondents are based in the U.S.; one fourth in Europe and the rest from regions around the world.
Material/Technology Findings

Current Materials Portfolio Needs Augmented to Meet Industry Need

While 34% of the plastics community is fully satisfied with the current resin portfolio, **more than half say** they have unmet needs.

**QUESTION:** How sufficient is today’s resins portfolio for the development of products that meet industry needs?

Source: 2015 DuPont, Plastics News ‘Plastics Industry Trends’ survey conducted by Plastics News
Material/Technology Findings

Industry Wants to Enhance the Same Material Attributes They Value Today

Questions:
Please rank the Top 3 material properties you rely on most.
Please rank the Top 3 material properties you would like to see enhanced in resins.

Source: 2015 DuPont, Plastics News ‘Plastics Industry Trends’ survey conducted by Plastics News
**Polymer Property Enhancements Tops the List of Technology Requests**

*About 3 in 5 plastics professionals surveyed see a need for improved polymer properties — with 'recycle technology' not too far behind.*

<table>
<thead>
<tr>
<th>Technology</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymer Mechanical Property Improvements</td>
<td>57%</td>
</tr>
<tr>
<td>Recycle Technology</td>
<td>42%</td>
</tr>
<tr>
<td>Processing Enhancements to Improve Productivity</td>
<td>35%</td>
</tr>
<tr>
<td>Multi-Material Technologies</td>
<td>31%</td>
</tr>
<tr>
<td>3D Printing</td>
<td>31%</td>
</tr>
<tr>
<td>Nanotechnology</td>
<td>26%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
</tr>
</tbody>
</table>

**QUESTION:**
Which of the following technologies need to be enhanced?

*Totals are greater than 100 due to multiple answers.*

*Base = 655*
Materials Suppliers are More Important Today

Nearly 40% say the role of material supplier is more important than it was 3 years ago.

Base = 671

**QUESTION:**
How has the role of the material supplier changed in the past 3 years (since the last NPE)?
**Top Issue Findings**

Environment, Sustainability, Competitive Global Environment and Unstable Oil Prices Top the List Plastics Industry Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment and Sustainability</td>
<td>15%</td>
</tr>
<tr>
<td>Competitive Global Environment</td>
<td>15%</td>
</tr>
<tr>
<td>Unstable Oil Prices</td>
<td>14%</td>
</tr>
<tr>
<td>Global Economy/Currency Challenges</td>
<td>11%</td>
</tr>
<tr>
<td>Regulatory Challenges</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
</tr>
<tr>
<td>Consumer Perception of Plastics</td>
<td>8%</td>
</tr>
<tr>
<td>Workforce Shortages</td>
<td>8%</td>
</tr>
<tr>
<td>Consolidation in the Supply Chain</td>
<td>6%</td>
</tr>
<tr>
<td>Aging Equipment and Infrastructure</td>
<td>5%</td>
</tr>
</tbody>
</table>

**QUESTION:**
Please rank in order what you believe are the top 3 concerns facing the plastics industry.

*Other is composed of counterfeit products and materials, social unrest and maintaining shareholder returns, which each received less than 4%*

Base = 688
Business Characteristics of Respondents

What type of polymers do you typically work with?

- **60%** Engineering Plastics (e.g. Nylon/PA, PET, PBT, Acetal/POM, Alloys)
- **59%** General Plastics (e.g. PP, PS, ABS, PVC)
- **45%** Elastomers (thermoplastic & thermoset elastomers)
- **30%** Specialty engineering resins (e.g. PEEK, PPS, PPA, LCP)
- **24%** Ethylene Copolymers
- **15%** Thermosets (Polyester, Phenolic, Epoxy)
- **11%** Packaging materials (Barrier resins, OPP, OPET, BOPA)
- **9%** Bio-based polymers

Base = 785

Which title best describes your role?

- **27%** Research & Development
- **24%** Management, Marketing, Product, Brand, Sales
- **22%** Industrial or product design/design engineering or management
- **8%** Purchasing
- **8%** Technical service/trouble shooting
- **4%** Operations
- **8%** Other (please specify)

**Other includes quality control/quality assurance, finance/human resources/consulting services, software or Information Technology (IT)**

Base = 767