Tough answers for your material handling and industrial container questions
Helping to make your tough choices easier

With ongoing concerns about durability, reuse/recyclability, and overall cost-to-use, the material handling and industrial container market segments continue to seek out efficient alternatives to traditional materials such as wood, metal, and glass.

The Dow Chemical Company (Dow) – one of the world’s largest and most versatile producers of plastic resins – is working to fulfill this need by helping its customers produce stronger, tougher, lighter, and more efficient material handling and industrial containers.

Dow’s broad portfolio of polyethylene and polypropylene resins offer the toughness, stiffness, flow, gloss, and recyclability required for today’s complex material handling and industrial container applications.

Industrial containers made from polyethylene and polypropylene resins are potentially recyclable in communities that recycle polyethylene and polypropylene.
Material handling

First and foremost, material handling applications demand exceptional durability. In addition to offering excellent product protection and extended service life, plastic solutions can enable improved cleanliness, safety, and stability across a broad range of temperatures and climates. Other key attributes include top load strength/rigidity, low temperature impact resistance, surface aesthetics, and, in the case of large parts, high/uniform flow. Precision engineering and molding capabilities also allow for increased dimensional consistency, which is especially important in automated material handling operations.

The material handling segment offers excellent potential for growth, especially in plastic pallets and novel logistic solutions. This potential is driven by increased durability requirements and the need to reduce packaging waste while increasing recycling/reuse opportunities. One area of particular interest is the investigation of radio-frequency identification (RFID) to help make plastic pallets an even better option for long-term cost-efficiency. Product development is primarily focused on improved consistency for recycling needs, as well as resins with increased gloss, stiffness, and toughness.

Typical applications for Dow polymers include pallets, crates, totes, bins, pails, collapsible containers, beverage cases, nursery pots, carts/trash receptacles, and intermediate bulk containers (IBCs).

Industrial containers

The industrial container segment faces many of the same challenges as material handling, with toughness (including impact, chemical, and environmental stress crack resistance), rigidity, safety, and service temperature range among the most important attributes. Material substitution continues to drive the growth of plastics in this arena. Cost reduction and processability are also key issues. Good organoleptics and U.S. Food and Drug Administration (FDA) compliance remain essential for food contact applications.

Typical applications of Dow products in this segment include containers for food, chemicals, paints, pesticides, and water-based products, as well as tight head pails.
Dow offers one of the industry's broadest and deepest portfolios of plastic resins for material handling and industrial container applications. Whether you’re working on existing, new, or material replacement applications, this wide range of polyethylene (PE) and polypropylene (PP) products means you can look to Dow resins for durability/toughness, stiffness, cold temperature performance, food contact compliance, downgauging/lightweighting, aesthetics/gloss, flow, or virtually any other performance or processing need (Figure 1).

**DOW™ HDPE Resins**

Excellent flow, impact strength, rigidity, environmental stress crack resistance (ESCR), low warpage, low taste/odor contributions, low temperature performance, and downgauging capabilities are among the attributes that make DOW™ High Density Polyethylene (HDPE) Resins a solid choice for injection and rotational molded applications such as pallets, industrial size pails, crates, bins, and carts/trash receptacles.

**DOW™ Polypropylene Resins**

DOW™ Polypropylene (PP) Resins offer consistent processability, high heat resistance, low water absorption, high stiffness/hardness, excellent moisture barrier and chemical resistance, enhanced mold filling and release ability, and excellent fatigue resistance. Dow’s portfolio of PP features homopolymers for stiffness, impact copolymers for impact resistance, and random copolymers for clarity. Typical applications include pallets, totes, bins, crates, pails, nursery pots, and IBCs.

**INSPIRE™ Performance Polymers**

This innovative family of propylene-based products offers a combination of distinct performance properties and processing benefits. High stiffness/toughness/clarify formulations of INSPIRE™ Performance Polymers can offer exceptional performance to high clarity applications such as pails, crates, totes, and other rigid containers, including those for refrigerated and frozen food.

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**Figure 1:** Stiffness vs. Toughness – Dow Resins for Material Handling and Industrial Container Applications

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CONTINUUM™ Bimodal Polyethylene Resins

As the most recent Dow innovation for rigid packaging, CONTINUUM™ Bimodal Polyethylene Resins emphasize the three cornerstones of performance for blow molded applications: excellent impact strength, exceptional environmental stress crack resistance (ESCR), and the high stiffness required for exceptional top load strength. Their distinctive combination of performance and processability makes them an excellent choice for pails and IBCs, including applications that require lightweighting.

Table 1 indicates which Dow product families are best suited for typical material handling/industrial container applications.

Table 1: Dow Product Families for Material Handling and Industrial Container Applications

<table>
<thead>
<tr>
<th>Product Family</th>
<th>Pallets</th>
<th>Crates (including collapsible)</th>
<th>Totes (including collapsible)</th>
<th>Bulk Containers/Bins</th>
<th>Carts/Trash Receptacles</th>
<th>Beverage Cases</th>
<th>Nursery Pots</th>
<th>Pails</th>
<th>Intermediate Bulk Containers (IBCs)</th>
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Contact your Dow representative for additional information.

DOW™ HDPE Resins and CONTINUUM Bimodal Polyethylene Resins meet the diverse range of demands placed on packaging for bulk/institutional food, commercial cleaners, and more.

DOW™ HDPE Resins, DOW™ Polypropylene Resins, and INSPIRE™ Performance Polymers allow you to target performance to the specific needs of your container application(s).
Why choose Dow?
The answer may seem obvious, but the reasons for choosing Dow go far beyond its status as one of the world’s largest producers of plastic resin. Dow is expanding the potential for plastics via its efforts to:

- **Build customer success through global capabilities** such as reliable, consistent supply; the ability to serve seamlessly across all regions; a proven commitment to sustainable development; and more

- **Cover the extremes and everything in between** with one of the industry’s broadest lines of plastic resins — including products that offer competitive advantage as well as industry essentials

- **Be first to what’s next**, as demonstrated by its track record of innovation, leadership in developing technology to meet marketplace needs, and desire to engineer tomorrow’s solutions

- **Offer access to experts with answers** — who assist customers with their experience and understanding of market segments, applications, and fabrication processes; a collaborative approach to problem-solving; and fast answers to technical questions

The combined result is an exceptionally strong portfolio of products and services few, if any, other suppliers can match. We believe it makes Dow your best choice — whether you’re looking for a single resin or a single-source supplier for all of your plastics needs.

To learn more about how working with Dow can benefit your business, contact your Dow representative, or call The Dow Customer Information Group (CIG) at 1-800-441-4369 or 989-832-1426. You can also visit us on the web at www.dowplastics.com.
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c. use as a critical component in medical devices that support or sustain human life; or
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