



**DRIVING PERFORMANCE AND
INNOVATION**
FOR ROTATIONAL MOLDING APPLICATIONS



YOUR ONE-STOP SOURCE FOR ROTATIONAL MOLDING SOLUTIONS

As more manufacturers embrace the exceptional combination of performance and value offered by rotational molding, the raw materials used are facing stronger and more diverse challenges.

In response, The Dow Chemical Company (Dow) has developed **RESILITY™ Innovative Rotomolding Resins** – a robust portfolio of polyethylene-based solutions focused on the specific demands of rotational molding applications:

- Improved UV & weathering protection
- Bright white & vibrant colored parts
- Fast cycle times & wide processing windows
- Exceptional resin stability
- Increased regrind incorporation capacity
- Reduced plate out
- Lightweighting/downgauging
- Differentiated materials

These exciting materials are designed to offer excellent performance; easier, faster processing; and strong sustainability profiles. In conjunction with Dow's exclusive Pack Studios network, they also offer outstanding opportunities to bring innovative applications to market faster.

Resility™

innovative
rotomolding resins by 

EXCELLENT PERFORMANCE⁽¹⁾

RESILITY™ resins offer the powerful performance required by today's rotomolding applications, including UV stability⁽²⁾ ratings of UV20 and higher. The resins' increased resistance to thermal abuse allows colors to remain vibrant and stable with virtually no color change over extended periods. In addition, improved gas fade resistance supports the resiliency of white during pulverization, rotomolding, and storage.

EASIER, FASTER PROCESSING⁽¹⁾

These next-generation solutions offer up to 30 percent wider processing windows with the flexibility to optimize temperatures and cycle times. Coupled with the resins' exceptional stability, this creates the potential for increased productivity, reduced scrap rates, and lower overall production costs. Other advantages include faster bubble removal (which also contributes to improved low-temperature impact performance) and reduced plate out to help minimize downtime.

MORE THAN "JUST POLYETHYLENE"

In addition to being the world's leading polyethylene (PE) producer, Dow offers a wide selection of other polymers that are extremely well suited for use as additives, supplements, or alternative substrates in rotomolding applications. These include, but are not limited to, polyolefin plastomers, ethylene- and propylene-based elastomers, functional polymers, olefin block copolymers, and polyurethanes.

⁽¹⁾ Data per tests conducted by Dow. Additional information available upon request. Properties shown are typical, not to be construed as specifications. Users should confirm results by their own tests.

⁽²⁾ The addition of a UV stabilization package to a resin does not completely eliminate the effects of UV exposure. The sole intent is to slow down the rate at which these effects occur. Actual results may vary depending on application and other factors such as resin color, transparency, and additives. Therefore, actual end-use testing is recommended.

SOFT TOUCH SOLUTION CREATES EXCITING OPPORTUNITIES

TABLE 1: COMPARISON OF XUS 5844 1.00 AND TYPICAL MDPE^(1,2)

KEY PROPERTIES	TYPICAL MDPE	XUS 5844 1.00 EXPERIMENTAL SOFT TOUCH COPOLYMER ⁽¹⁾	XUS 5844 1.00 ⁽¹⁾ IMPLICATION
Melt Index (g/10 min)	5.0	5.0	Familiar processing reduces learning curve for molders
Density (g/cc)	0.938	0.887	Significantly softer than PE
Melting Temperature (°F)	256	246	Similar, lower melt temperature allows blending with PE
Coefficient of Friction Static Kinetic	0.23 0.20	1.01 0.83	Enhanced grip and slip resistance
Shore D Hardness	55.9	30.2	Significantly softer than polyethylene
Flexural Modulus at 1% Secant (psi)	195,000	6,800	Significantly more flexible than polyethylene
ARM Impact Mean Failure Energy (ft.-lbs.) ⁽³⁾	180	>230	Exceptional impact resistance

FIGURE 1: INSTRUMENTED DART IMPACT PERFORMANCE COMPARISON OF XUS 5844 1.00 AND TYPICAL MDPE^(1,2)

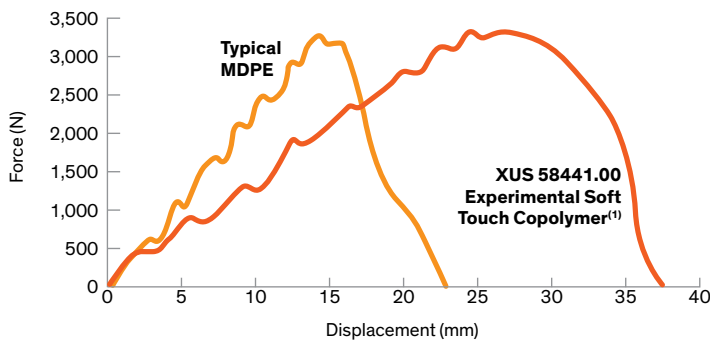
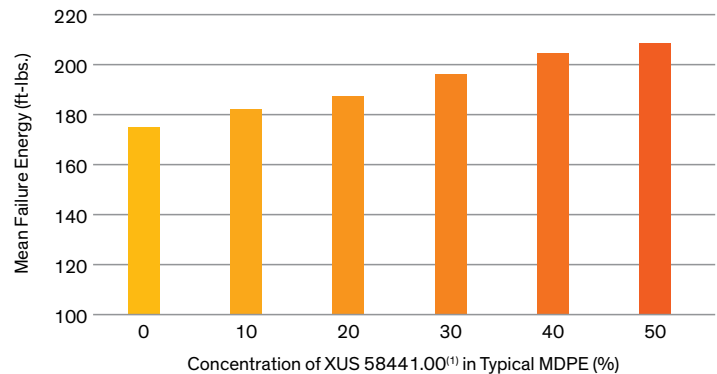


FIGURE 2: IMPACT MODIFICATION OF XUS 5844 1.00 IN BLENDS WITH TYPICAL MDPE^(1,2,3)



⁽¹⁾ If products are described as "experimental" or "developmental": (1) product specifications may not be fully determined; (2) analysis of hazards and caution in handling and use are required; (3) there is greater potential for Dow to change specifications and/or discontinue production; and (4) although Dow may from time to time provide samples of such products, Dow is not obligated to supply or otherwise commercialize such products for any use or application whatsoever.

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⁽³⁾ Plaques rotomolded to 0.25 inch and tested via ARM standard method at -40°C.

⁽⁴⁾ The addition of a UV stabilization package to a resin does not completely eliminate the effects of UV exposure. The sole intent is to slow down the rate at which these effects occur. Actual results may vary depending on application and other factors such as resin color, transparency, and additives. Therefore, actual end-use testing is recommended.

DIFFERENTIATE YOUR PRODUCTS WITH SOFT TOUCH, EXCELLENT DURABILITY

XUS 5844 1.00 Experimental Soft Touch Copolymer⁽¹⁾ is an innovative, elastomeric material that combines soft touch and feel with exceptional resistance to impact, slip, and abrasion plus a UV20+ rating⁽⁴⁾. These attributes – along with easy processing, ambient pulverization capabilities, and



outstanding color stability – make this 2017 R&D 100 Finalist an ideal choice for grips, non-slip surfaces, toys, furniture, and any other application that can benefit from enhanced tactility and durability.

Table 1 provides an overview of key benefits XUS 5844 1.00⁽¹⁾ offers in comparison to a typical, commercially available MDPE.

Figure 1 takes a closer look at impact resistance, showing how parts molded with XUS 5844 1.00⁽¹⁾ can absorb more energy and displace further before failing than the MDPE tested. And while Dow's unique, soft touch offering works great as a standalone substrate, it can also help increase softness and impact resistance in blends with MDPE (Figure 2).

Ask your Dow representative for more information about this and other innovative opportunities only available from Dow.

A ROBUST PORTFOLIO

TABLE 2: ROTATIONAL MOLDING PRODUCT OFFERING⁽¹⁾

PRODUCT	MELT INDEX (g/10 min)	DENSITY (g/cc)	TYPICAL APPLICATIONS
RESILITY™ INNOVATIVE ROTOMOLDING RESINS			
XDPDB-3235 NT7 Experimental Medium Density Polyethylene (MDPE) ⁽²⁾	3.5	0.938	Agricultural and chemical storage tanks, potable water tanks, recreation/toys, industrial packaging
XDPDB-3152 NT7 Experimental MDPE ⁽²⁾	5.2	0.935	Housewares, recreation/toys, industrial packaging
XDPDB-3162 NT7 Experimental MDPE ⁽²⁾	6.2	0.940	Playground equipment, recreation/toys
XDPDB-3170 NT7 Experimental MDPE ⁽²⁾	7.0	0.935	Recreation/toys, industrial packaging, consumer goods
XDPDB-3220 NT7 Experimental HDPE ⁽²⁾	2.0	0.942	Recreation/toys, industrial packaging, consumer goods
XUS 5844 1.00 Experimental Soft Touch Copolymer ⁽²⁾	5.0	0.887	Soft-touch playground equipment, recreation/toys, marine, furniture
HERITAGE ROTATIONAL MOLDING MATERIALS			
DOW™ MDPE DPDA-3135 NT7	3.5	0.938	Agricultural and chemical storage tanks, potable water tanks, recreation/toys, industrial packaging
DOW™ MDPE DPDA-3152 NT7	5.2	0.935	Housewares, recreation/toys, industrial packaging
DOW™ MDPE DPDA-3170 NT7	7.0	0.935	Recreation/toys, industrial packaging, consumer goods
DOW™ HDPE DPDA-3220 NT7	2.0	0.942	Recreation/toys, industrial packaging, consumer goods

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Refer to individual technical data sheets (TDSs) for additional information regarding property performance, regulatory compliance, and handling considerations.

STRONG SUSTAINABILITY PROFILES

Dow solutions for rotational molding applications can be included in PE recycle streams. The resins' inherent strength and toughness offer excellent potential for downgauging, which can result in reduced material usage, lighter weight parts, and lower transportation costs/emissions. Polymer quality and consistency also enables increased capacity to incorporate regrind, another benefit that can help enhance sustainability while also potentially lowering total costs.



INDUSTRY-LEADING DEVELOPMENT AND INNOVATION CAPABILITIES

Dow's powerful Rotomolding solutions and extensive knowledge of material science are supported by Pack Studios – an exclusive network of technical experts, equipment, and testing capabilities that enables collaborative, accelerated development of innovative technologies and applications. As one of seven locations positioned strategically around the world, the Pack Studios facility in Freeport, Texas offers a full suite of developmental rotomolding capabilities:

- Physical and Thermal Characterization
- Light and Electronic Microscopy
- Compounding and Dry Blending
- Pulverization
- Rotational Molding with Internal Air-based Process Control
- ARM, Gardner, Izod, Charpy, and Instrumented Dart Impact Testing
- Fabricated Part Testing
- UV and Weathering Testing
- Regrinding

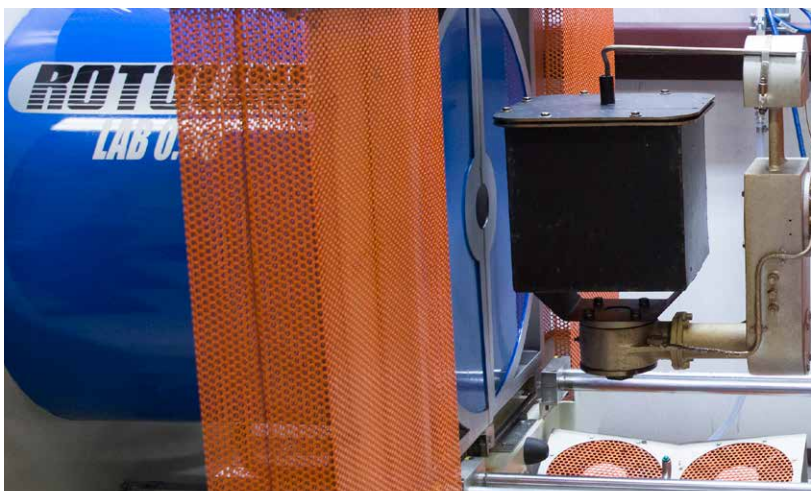
By offering this one-of-a-kind resource, and working closely with other key members throughout the value chain, Dow is able to help you bring better products to market faster.



F · R · E · E · P · O · R · T

GET IN THE DRIVER'S SEAT

WITH A RICH PORTFOLIO OF SOLUTIONS AND AN INDUSTRY-LEADING APPROACH TO APPLICATION DEVELOPMENT, IT'S EASY TO SEE HOW RESILITY™ INNOVATIVE ROTOMOLDING RESINS ARE DRIVING PERFORMANCE AND INNOVATION. FOR MORE INFORMATION ON HOW WORKING WITH DOW CAN BENEFIT YOUR ROTATIONAL MOLDING OPERATIONS, CONTACT YOUR DOW REPRESENTATIVE, VISIT WWW.DOWROTOMOLDING.COM, OR CALL THE NEAREST LOCATION ON THE BACK COVER.



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- use in cardiac prosthetic devices regardless of the length of time involved ("cardiac prosthetic devices" include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass-assisted devices);
- use as a critical component in medical devices that support or sustain human life; or
- use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

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