

DuPont Automotive

Innovation Spotlight: DuPont™ Zytel® and DuPont™ Delrin®



FINALIST, 2017 SPE AUTOMOTIVE
INNOVATION AWARDS
SAFETY CATEGORY

All-Plastic Hood Leveler

Application

A lightweight, all-thermoplastic hood leveler designed to manage pedestrian head-to-hood impacts for reduced head trauma. Developed and supplied by MacLean-Fogg Company for use in the 2018 Lincoln Navigator.

Unmet Need

During collisions, immovable hood leveler posts have been shown to cause pedestrian injuries and even deaths due to head trauma. A hood leveler designed with “controlled collapse” behavior can help manage the energy of collisions for reduced risk of serious pedestrian injuries.

Challenges

- Enable designed-in torque retention to allow leveler height to be adjusted at assembly
- Provide thread engagement with the “stick-slip” behavior required to initiate controlled collapse in the event of a pedestrian collision—while withstanding the routine drop force of hood closures

Solution

This 100% thermoplastic, bi-material system makes unique use of complimenting polymer properties to control forced collapse. The all-plastic hood leveler also:

- Enables a 50% weight reduction and a 35% cost savings
- Is tunable to various hood systems
- Reduces OEM system costs (no brackets)
- Produces no manufacturing waste and is fully recyclable



DuPont Materials Chosen and Why

DuPont™ Zytel® was chosen for the hood leveler because it offers:

- High strength
- Broad temperature toleration
- Consistent stiffness and fatigue resistance over a wide range of temperatures
- Minimal moisture effect with GF Zytel®

DuPont™ Delrin® acetal resin was chosen for this application because it provides:

- Low and predictable friction
- Snap-fit and impact resistance
- Superior stiffness and strength
- Wide operating temperature range
- Good mating characteristics with other polymers

For more information on the Assisted Positive Locking Junction Box and other SPE award winners and finalists, visit the [SPE Automotive Innovation Awards website](#).

Contact DuPont at the following regional locations:

North America

800-222-8377

Europe, Middle East, Africa

+41-22-717-51-11

ASEAN

+65-6586-3688

Latin America

+0800-17-17-15

Greater China

+86-400-8851-888

Japan

+81-3-5521-2801

Visit us at automotive.dupont.com

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