

APPLICATION TEARDOWN

Frunk 'Front Trunk' Storage

As the automotive market continues to rapidly evolve, conventional design elements, like having an engine in the front of the car, are quickly going away. Without the need to accommodate the traditional front-mounted engine and auxiliary components, this compartment is being made available for cargo, and is commonly known as a Frunk (front trunk). While this storage element is not new, more cars (especially electric vehicles) are being designed with this feature.

Given its function, the Frunk needs to be designed with materials that deliver structural integrity for heavy loads and impact resistance over a wide range of end uses and temperature extremes. This application also often requires scratch and mar characteristics to help keep the space free from scuffs and damage to maintain superior aesthetics.

Similar to a traditional trunk, this under hood storage space features surrounding trim covers, sometimes using soft components or sealing functionality from environmental elements.



With a diverse portfolio of engineered polymers, LyondellBasell can offer a variety of material solutions for your unique Frunk 'Front Trunk' Storage design.

Material Solutions for Frunk Design

Frunk 'Bin'

- | Hifax
- | Softell
- | Hostacom
- | Polyfort
- | Premi-SMC

Trim & Covers

- | Hifax
- | Hostacom
- | Polyfort
- | Softell

Seals & Hiders

- | Invision
- | Alcryn
- | Duragrip
- | Eco-Flex

DESIGN SELECTION EXAMPLE

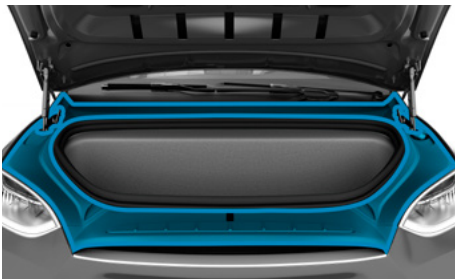


Frunk 'Bin'

■ *Hifax*

When designing a frunk bin, characteristics like durability, dimensional stability and molded-in-color capability should be considered. However, a key feature to its design is structural integrity. Our *Hifax* and *Hostacom* thermoplastic polyolefins (TPO) offer excellent stiffness and impact performances over a wide temperature range, along with premium aesthetics and durability.

For applications requiring additional haptic benefits and scratch resistance at low gloss levels consider our *Softell* grades. For frunk bins without body, chassis or other reinforcements, needing to meet higher structural demands, our *Premi-SMC* portfolio of thermoset solutions can help.



Trim & Covers

■ *Hostacom*

Trim and cover components must harmonize in appearance to the bin and other exterior components, and are subject to frequent user contact. As a result, these parts also require high scratch and mar performance to deliver durability and excellent aesthetics. Our *Hostacom* portfolio of TPOs and PP Compounds offers cost-effective solutions to meet these demands and can be custom color matched.



Seals & Hiders

■ *Invision*

Gaps arising from mating parts, the need for water management functionality, or kinematic allowance such as hood support mechanisms can drive the need for seals and hiders. Soft materials, such as our *Invision* thermoplastic elastomers (TPEs) provide good abrasion resistance, tear strength, and chemical resistance. Whether used for standalone components, overmolding or two-shot molding processes over the hard trim, these color matched materials offer a wide range of flexibility and hardness. An alternative could be our *Eco-Flex* RTPV, which is a thermoplastic recycled rubber-based TPV.

Before using a product sold by a company of the LyondellBasell family of companies ("LyondellBasell"), users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally. LyondellBasell MAKES NO WARRANTY, EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) OTHER THAN AS AGREED TO BY LyondellBasell IN THE PRODUCT SALE CONTRACT. LyondellBasell prohibits or restricts the use of its products in certain applications.

For further information on restrictions or prohibitions of use, please contact a LyondellBasell representative. Users should review the applicable Safety Data Sheet before handling the product. *Hifax*, *Softell*, *Hostacom*, *Polyfort*, *Premi-SMC*, *Eco-flex*, *Invision*, *Alcryn*, and *Duragrip* are trademarks owned or used by one of the LyondellBasell family of companies and is registered in the U.S. Patent and Trademark Office.

5125/22/04