EV supply equipment (EVSE) assembly

While electric vehicles (EV) become more mainstream, consumers will demand faster and more reliable charging as associated with refueling gas-powered vehicles. From the electronic control box to the charge plug connector and cable, these components need to be designed to withstand a variety of conditions and power loads.

Heat management, structural integrity and environmental protection are just a few considerations to be aware of when developing EV supply equipment assemblies. Within each of these applications, material selection can play a critical role. Polymer solutions from LyondellBasell can help with mechanical and electrical challenges, such as drop impacts, overheating, meeting safety standards and endure repeated use.

From thermoplastic resins and compounds to thermoset composite solutions, the diverse polymer portfolio from LyondellBasell is uniquely positioned to address your challenges in EV supply equipment assemblies.

Material solutions for EV supply equipment (EVSE) assembly

Charger enclosures

- *Hifax*
- *Polytrope*
- *Schulablend*
- *Polyfort*
- *Premi-SMC*

Electrical housings

- *Polyflam*
- *Diamond*
- *Dura-BMC*

Structural frame

- *Premi-SMC*

Charge plug & cable

- *Polyflam*
- *Schuladur*
- *Schulamid*
- *Petrothene*
- *Adflex*

Design selection example

1 Charger enclosures

- *Hifax & Schulablend*

In wall charger units designed for home use with Level 1 and Level 2 charging modes, high gloss grades of *Hifax* TPO, *Polytrope* TPO and *Schulablend* styrenic alloys (ex. PC/ABS) combine high impact toughness with premium surface appearance, offering durability and aesthetics. For larger EV charging stations designed for public use with Level 2 and DCFC fast-charging modes, glass-reinforced *Polyfort* PP compounds offer high strength, stiffness, and chemical resistance to withstand abusive conditions.

Inside unit

2 Electrical housing

- *Polyflam & Dura-BMC*

Polyflam (PP, PC, alloys and PA) are specified in many safety-oriented electrical housing components. These flame-retardant grades achieve UL ratings for flame, thermal aging and electrical testing. Materials can be colored “safety orange” for quick identification. For extreme heat and flame areas, housings made with *Dura-BMC* (Bulk Molding Compounds) can incorporate conductive fillers for ESD protection and EMI shielding around sensitive electronics.

3 Structural frame

- *Premi-SMC*

Premi-SMC (Sheet Molding Compounds) are an attractive alternative to traditional steel beams and fabricated assemblies. The high strength and stiffness of these lightweight composites can be exploited in easily moldable 3D designs to meet structural requirements. *Premi-SMC* is strong to resist corrosion, chemicals, high heat and flame to pass exposure tests.

4 Charge plug & cable

- *Polyflam & Petrothene*

Charge plugs and cables must be extremely rugged to withstand being dropped, crushed by cars, and dragged across rough surfaces. *Polyflam* (PBT, alloys and PA) grades have high strength and dimensional stability to resist deformation under load while meeting electrical and flame requirements. When looking at cable insulation, *Petrothene* polyolefins meet stringent industry regulations for use in high voltage wire & cable.