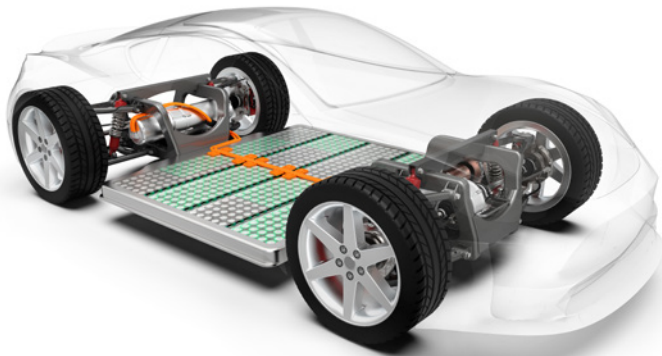




# Material Handling and Packaging to Move **BATTERY** Components Safely

# Material Handling Solutions From Material Design to Manufacturing

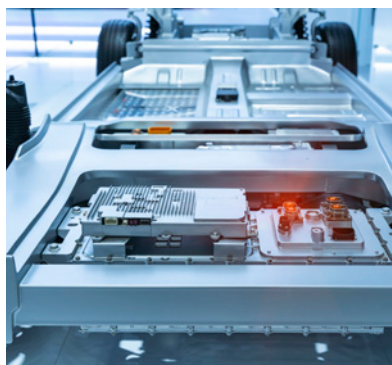
For over 6 years, we have been a trusted battery automation and packaging partner from concept thru manufacturing and beyond. We are commonly called in on OEM and Tier 1 automation packaging or conveyance projects for our engineering expertise and manufacturing experience.



We start with an idea and then create a conceptual part for review with the stakeholders. Because we understand the physical variables involved when determining a solution, we can quickly develop the most efficient manufacturing process and specifications. Our teams continue to reengineer and reinvent products that offer the most economical and unsurpassed features available in the market today.

By exceeding customer requirements, we guarantee future business. Our leading-edge technologies and experience have propelled us from the first EV manufacturers to new manufacturers coming into the industry every day.

Ideally, we like to work with both the OEM and supplier early in the design phase to interact with cross-functional customer teams.



## Component Packaging

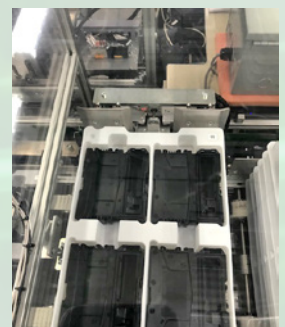
We formulate custom materials, design, engineer, rapid prototype and manufacture tray and rack dunnage to move batteries and sensitive components along the automotive supply chain.

- Battery Cans
- Battery Cells
- Battery Module
- Battery Packs (the skateboard)
- Cooling Tubes
- Current Collector
- Cold Plates
- Emotors
- Stators
- Rotors
- Inverters
- Generators



We design, engineer and manufacture hundreds of custom compounds and resins with a precise combination of desired properties, including:

- Color
- Wear Resistance
- Flame Retardance
- Impact Strength
- Extrusion
- Durability
- Conductivity
- Temperature Resistance
- Stability
- Chemical Resistance
- Anti-Corrosive
- High Tolerances





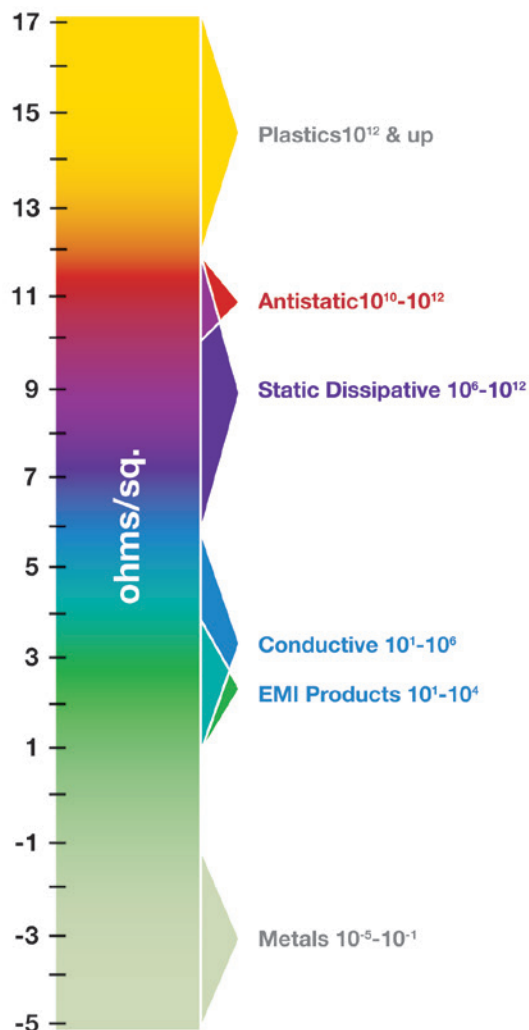
# We Are the Primary Resource for Automated Packaging, Trays and Racks

With dozens of battery factories in the pipeline by 2030 -battery and automotive manufacturers need to react quickly, efficiently and sustainably. Machines and parts must meet numerous requirements to have smooth line integration. We help manufacturers and machine builders be more flexible, efficient and sustainable from product design to production ramp-up and recycling.

Whether running small-scale custom production or large digitized factory production, our customers rely on us to deliver precision, accuracy, repeatability, traceability, and quality. Our multi-material and multifaceted production capabilities address the battery industry's most complex component protection manufacturing challenges and provide solid elastomer urethane, foamed urethane, injection molding and thermoformed solutions.

" I like to work with PolyFlex. They are indeed pioneers in the plastics industry. Their materials knowledge, design and engineering team and manufacturing experts have helped us meet tight deadlines in the emerging and evolving battery manufacturing industry."

## A Spectrum of Solutions



**Anti-static Compounds** ( $10^{10}$  to  $10^{12}$ ) provide a relatively slow decay of static charge – from just hundredths to several seconds – thus preventing accumulations that may discharge or initiate other nearby electrical events. With our all-polymeric PermaStat® line of compounds, these decay properties are inherent to the material and are not humidity-dependent or limited by the fragility of anti-static coatings.

**Static Dissipative Compounds** ( $10^6$  to  $10^{12}$ ) allow for dissipation or decay of static charges at a faster rate than anti-static materials – generally within milliseconds. Materials that offer the “optimal” ESD protection ( $10^6$  to  $10^9$ ) are at the stronger end of the static dissipative range. Compounds available include carbon particulate filled grades in our ESD-A product line.

Our **PermaStat PLUS®** line further expands the usefulness of PermaStat® materials with surface resistivity as strong as  $10^8$  ohms/square and excellent capabilities in meeting static protective requirements of ATEX Directive.

**Conductive Compounds** ( $10^1$  to  $10^6$ ) with decay/dissipation rates measured in nanoseconds provide a ground pathway and bleed off strong static charges. These levels of conductivity are achieved by incorporating carbon fiber, high levels of carbon powder, or other conductive additives and are available in our ESD-C product line.

**EMI/RFI Shielding Compounds** ( $10^1$  to  $10^4$ ) compounds are typically qualified by means other than electrical conductivity, as their true function is in blocking electromagnetic and radio frequency energy. These shielding compounds absorb and/or reflect electromagnetic energy, and thus provide shielding against electromagnetic interference while maintaining the design freedoms inherent in thermoplastic molding compounds.

## Circular Product Lifecycle

There is still value in residual, original, and left-over material. Reclaiming the usable portion of the production material and recycling it to be used again in your facility can reduce costs and have a significant positive impact on the environment.

## Turnkey Manufacturing

With multiple design and manufacturing facilities in North America and Europe, PolyFlex brings a turnkey solution to every project – from design and material engineering to prototyping, manufacturing and ISO 9001-2015 certified quality testing.

## Overseas Shipping

DOT has substantial overseas packaging requirements, and many mega factories are located overseas. We are already manufacturing DOT-approved returnable packaging that saves time and money.

## Rapid Response Team Emergency Support

While you can't predict when automation systems or manufacturing flows will be interrupted, you can be assured that the PolyFlex Products Rapid Response Team is ready to go in an emergency. We deliver solutions quickly – anytime, anywhere. Contact the Rapid Response Team at [RapidResponse@polyflexpro.com](mailto:RapidResponse@polyflexpro.com).



Give PolyFlex a call early in the design phase of your next battery manufacturing project and immediately put our experience to work for you or email our team [electrificationteam@polyflexpro.com](mailto:electrificationteam@polyflexpro.com)