

# Parker LORD – Solutions for Battery Packs



ENGINEERING YOUR SUCCESS.



# Who is Parker LORD?

**LORD is now a part of Parker Hannifin, a leading global provider of motion and control technologies.**

## **YOUR COLLABORATIVE PARTNER**

We deliver solutions designed to meet your specific needs, continuous process improvements and cost targets.

## **GLOBALLY SUPPORTED**

With global manufacturing capabilities, our team delivers consistency and quality around the globe. This commitment to customers is why our products are on nearly every car in the world.





## Where We Manufacture

# Broad Solutions Targeting EVs

## INFOTAINMENT / NAVIGATION MCU, BOARD / CHIP LEVEL ELECTRONICS

- Potting & Encapsulant
- Thermally Conductive Gap Filler
- Gels, Greases, Underfills
- Thermally and Electrically Conductive Materials
- Structural adhesives for bonding

## BIW CLOSURES, COMPOSITE EXTERIORS

- Structural adhesives for bonding and assembly, after-market

## HEADLAMPS

- Potting & Encapsulant
- Thermally Conductive Gap Filler
- Electrically Conductive Adhesive
- Sealants

## CHARGER / INVERTER

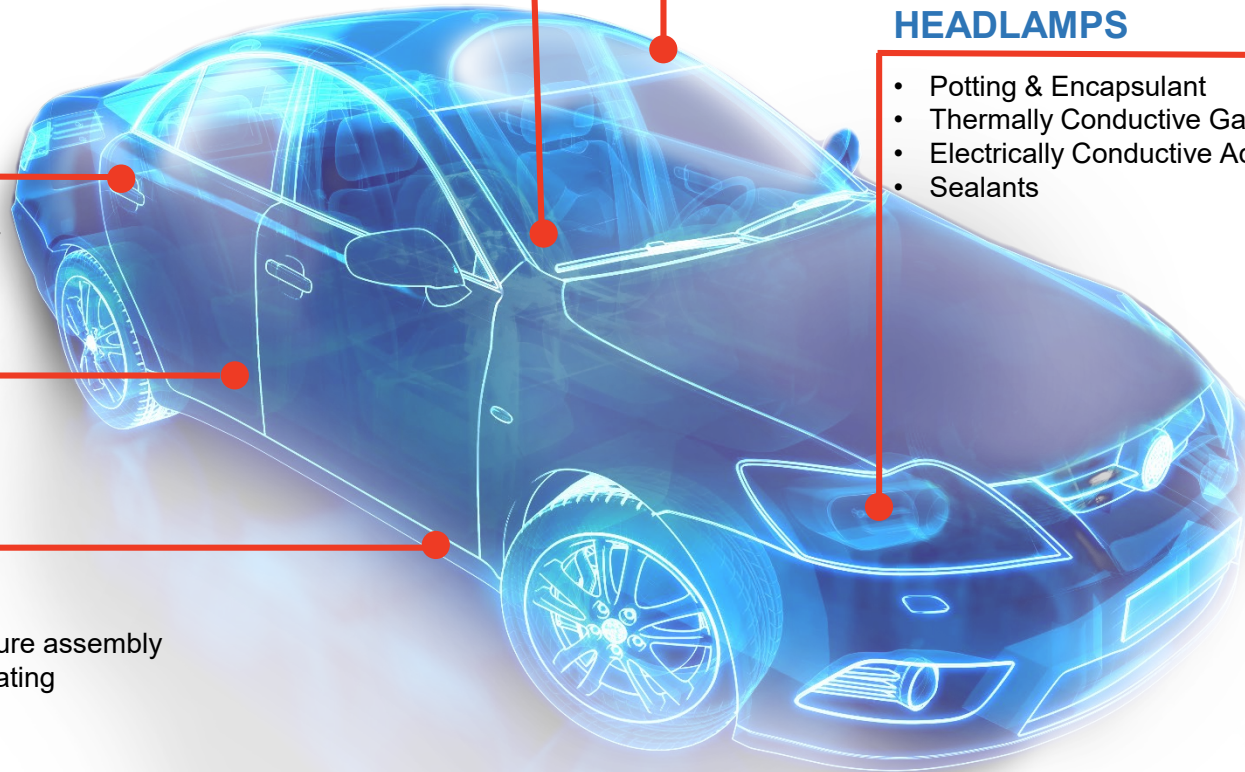
- Potting & Encapsulant
- Thermally Conductive Gap Filler
- Dielectric Coating

## MOTOR

- Potting & Encapsulant
- Dielectric Coating for Magnets

## BATTERY PACK

- Thermal Management Materials
- Structural Adhesives
  - Cell bonding and enclosure assembly
- Dielectric & Flame Resistant Coating
- After market rework solutions



# Thermal Management Solutions for Battery Packs

LORD CoolTherm® gap fillers, encapsulants, and adhesives act as a thermal link between batteries/modules and a heat sink, ensuring proper heat flow. This easy to dispense, room-temperature cure is fully customizable and compatible with cylindrical, pouch and prismatic batteries.

## Gap Filler

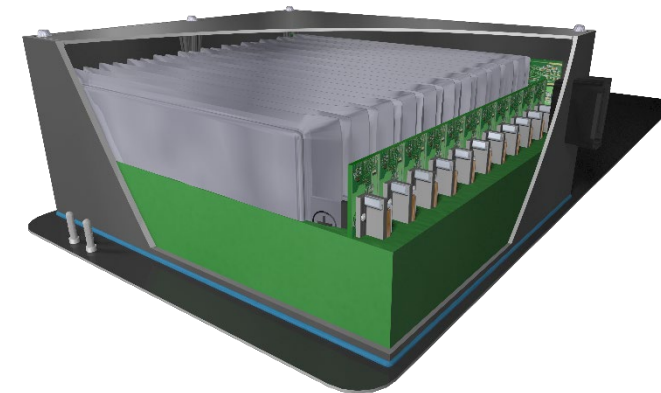
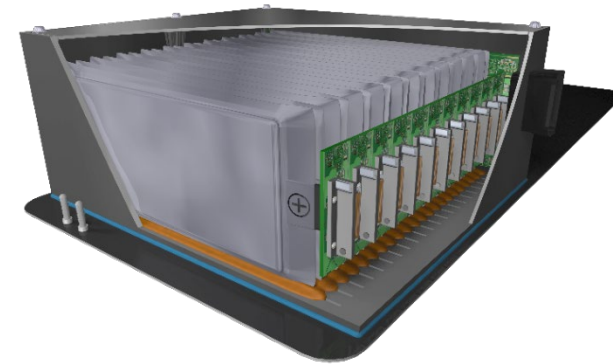
Liquid-dispense, cure in place gap fillers provide low stress on components and improve thermal resistance when compared to thermal pads.

## Adhesives

Provide mechanical rigidity and thermal connection where heat is an issue, improving design flexibility by freeing constraints of mechanical fasteners.

## Potting & Encapsulation

Facilitate optimum heat transfer due to high thermal conductivity and low viscosity. Ensure even coverage and elimination of all air gaps.

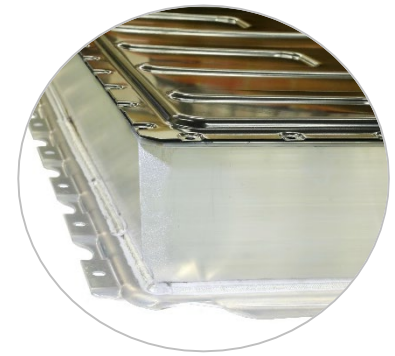


# Structural Adhesives

## Battery Assembly

Our liquid adhesive technologies enable battery assembly due to:

- High bond strength and adhesion without the use of mechanical fasteners
- Hybrid bonding (plastics & metals) adhesives for pack light-weighting
- Thermally conductive structural adhesive for integrated cooling



	Acrylic	Epoxy	Urethane
Pre-Application Phase			
Adhesive Components	2	2	1 or 2
Substrate	Metals Thermoplastics Thermosets Composites	Prepared Metals Rubber Thermosets Composites	Thermoplastics Rubber Thermosets Composites Primed/Coated Metals
Surface Preparation			
Metals Thermosets Thermoplastics	No Yes No	Yes No No	Yes No No
Physical State	----- Med. Liquid to Paste -----		
Packaging	----- 3 oz – 55 gal -----		

# Dielectric Coating

## What is it?

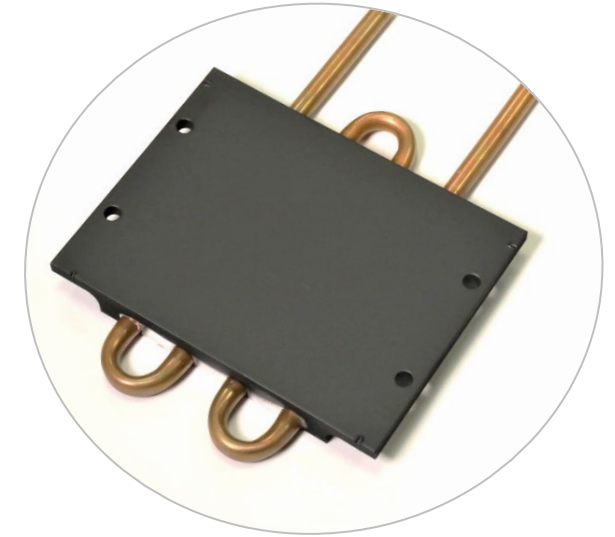
- Heat cure epoxy-based coating that provides excellent electrical isolation
- Can be applied by spray or dip methods

## What does it do?

- Less prone to cracking than traditional plating methods, such as hydroscopic epoxy
- Offer reduced thermal impedance than plating due to thinner layers (50-100 microns)
- Environmentally resistant and protect against high heat and corrosion
- Electrically insulative
- Can reduce eddy currents when used in motor applications
- Provides excellent adhesion in magnet assemblies
- Cured at 180°C for 30 minutes

## Where would I apply it?

- Cooling plate
- Battery box/housing
- Permanent magnets for e-motors

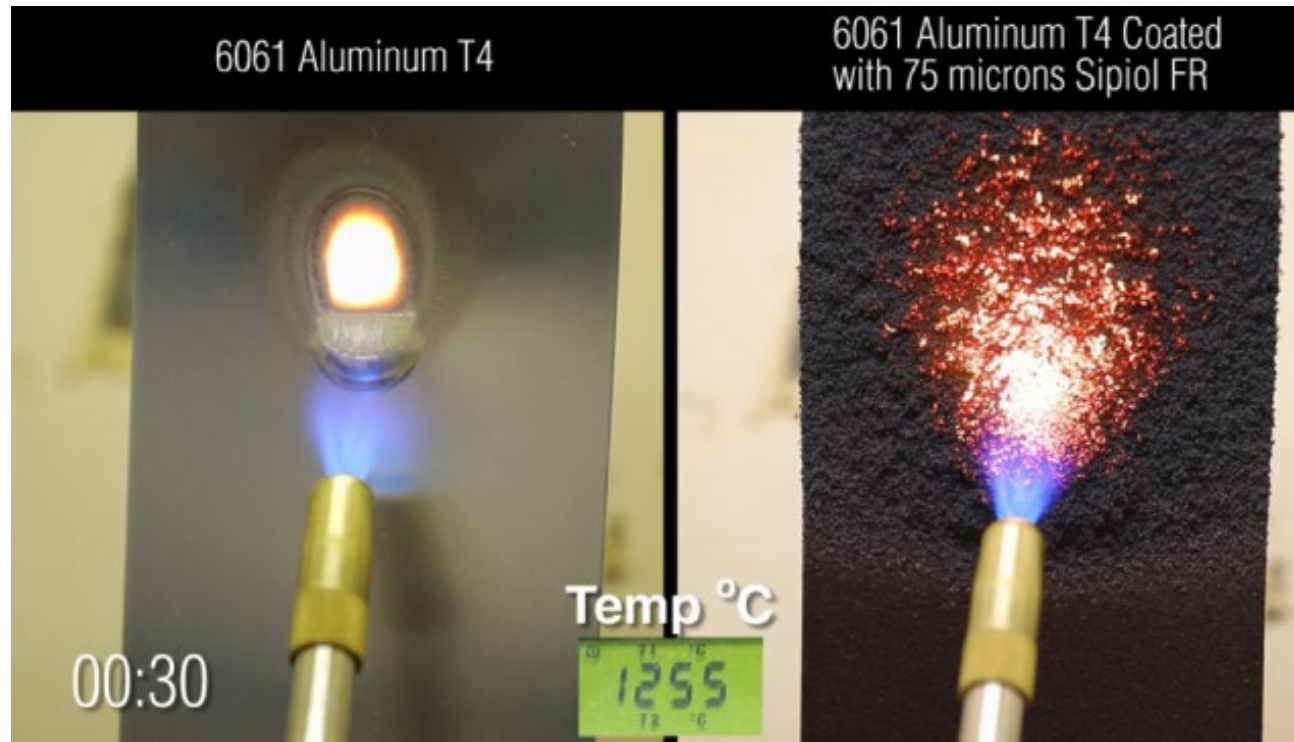




# Flame Resistant Coating

## Flame Resistant (FR):

- Sipiol® FR coating helps slow down thermal runaway event by protecting the underlying substrate
- Can be coated inside/outside of the battery box, or on individual modules





# Thank you!

**Prasanna Srinivasan**

Prasanna\_Srinivasan@LORD.com

+1 919 539-4051