

# 2-SHOT LSR MOLDING > FROM MOLEX

As more wet-location and outdoor applications move away from mechanical operation and toward electrification, improperly sealed electrical connections risk even greater damage than they once did. To ensure a proper wire-to-wire connector seal for high-value applications, a rubber seal and its component may need to be bonded together as one component; 2-Shot LSR (liquid silicone rubber) Molding provides that opportunity at a cost-effective price.

## WHAT IS IT?

**2-Shot (2K) LSR Molding is a specialized process using curable silicone that allows for the creation of superior sealed products.**

The process consists of two separate, important developments:

### 2K molding

2K molding is a process through which thermoplastic and silicone materials are injected and formed into the same mold in one cycle. The materials are formed when they cure.

**A**

The first shot forms a thermoplastic component.

**B**

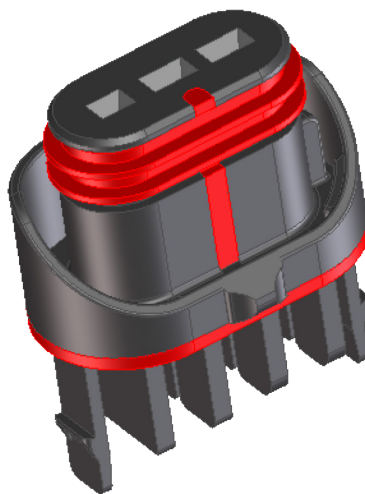
The second shot overmolds the LSR or rubber onto the thermoplastic component. This second shot is where the LSR seal is formed.

Thermoplastic component

Overmolded thermoset plastic or rubber

### LSR molding

LSR is a highly pure curable silicone with low compression set, great stability and resistance to extreme temperatures. These attributes make LSR an ideal material for parts production as it avoids any material-quality-related issues.



2-Shot LSR Molding

**2K LSR** ←  
versus  
Traditional  
Manufacturing  
Methods

Contrary to traditional thermoplastic molding that cures as it cools, LSR cures with heat, which presents unique challenges when trying to incorporate several molding processes into a single 2K cycle.

Secondly, traditional sealing methods also require mechanical locks for sealing, often involving assembly of a rubber ring or seal onto a preformed plastic component, creating the possibility of assembly error. Conversely, LSR seals are bonded onto the thermoplastic component, eliminating the need for mechanical locks.

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## WHERE IS IT AND **WHY** is it important?

2K LSR Molding is particularly important for any application that needs sealed connectors. Without 2K LSR Molding, creating similar housings requires additional tooling and assembly processes, thereby increasing costs while creating the possibility of assembly error.

Additionally, the 2K process can expand design options and lead to better product design opportunities. LSR material is weather-, chemical- and flame-resistant, more so than typical sealing materials used in other applications. Teamed with a large usable temperature range (-90 to +200C°), using 2K LSR can be a key manufacturing strategy to differentiate a superior sealed product from others on the market.

## APPLICATIONS

**By creating next-level sealing, 2K LSR Molding allows electrification to expand into previously difficult or impossible applications or environments.**

Some typical applications include:

### Industrial

- Food and beverage processing
- Oil and gas refineries
- Material handling operations
- Forest and garden equipment
- Generator sets (Gensets)
- Marine equipment

### Commercial Vehicle

- Agricultural machines
- Construction and mining equipment
- Trains and rail equipment
- Military-grade vehicles

### Transportation

- Cars
- Motorcycles
- Buses and coaches
- Commuter trains



*Food and beverage processing*

## THE MOLEX ADVANTAGE >

Molex has created a niche in 2K LSR Molding with our design and process engineering prowess. That prowess is demonstrated through successful programs that use 2K LSR Molding, as well as a lengthy history of designing sealed solutions for numerous varying applications. Externally, Molex partners with best-in-class vendors for materials, processing and tooling to ensure a top-notch result where it counts—the seal. Utilizing that seal, 2K LSR molded products can obtain an IP69K rating and pass the J2030 power-wash test. These products also save costs by eliminating assembly steps, decreasing tooling and molding costs, and reducing material usage and component counts.

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