

# ELECTRICAL & ELECTRONICS

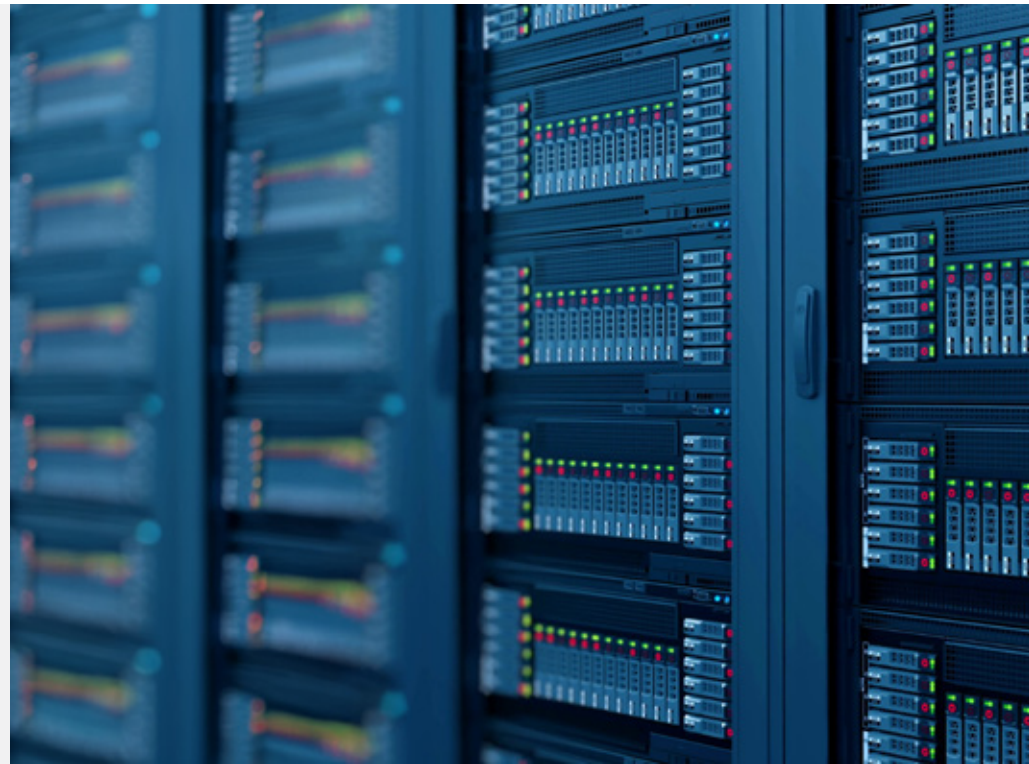


## SABIC SOLUTIONS FOR ELECTRICAL & ELECTRONICS

Electronics are being woven more and more deeply into the fabric of everyday life. The Internet of Things is building technology into our cities, homes, offices and automobiles, creating a new generation of smart devices. At the same time, the fierce pace of development and competition in the electronics markets drives a constant demand for thinner, lighter, more energy-efficient devices. To meet these challenges, manufacturers need to make products that are cost-effective to produce, yet meet consumers' expectations for style, ease of use and sustainability.

SABIC's engineering thermoplastic (ETP) and polyolefin solutions can be used along the entire energy value chain. From solar voltaics to electrification, we offer our customers one of the broadest portfolios of advanced materials in the industry.

For example, components in the energy distribution chain and energy storage, such as smart meters, connectors and energy storage systems, are produced using thermoplastics that offer the required mechanical and electrical properties, as well as flame retardancy, to meet the stringent industry standards



In addition, the expected growth in Electrical Vehicles (EVs) will need an increased EV charging infrastructure with domestic and public chargers. Today, many public chargers are made of metal. As production increases, low temperature impact ETP solutions will play an important role in their design and performance.

### CONSUMER ELECTRONICS

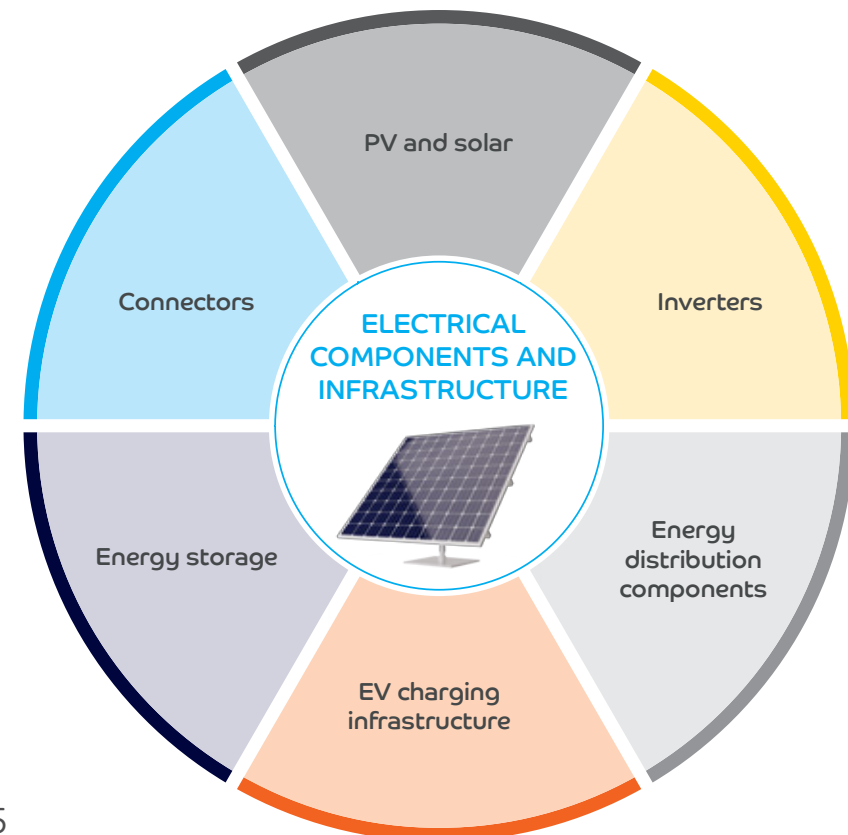
As consumer electronics continue to evolve, global advancements in the materials that go into them are key to enabling innovation. Differentiation in design and style is essential to driving commercial success in a very competitive domain.

Combining excellent mechanical properties, versatile colorability, and processability, SABIC's thermoplastic technology can help make products more durable, reliant, lighter, responsive and visually unique.



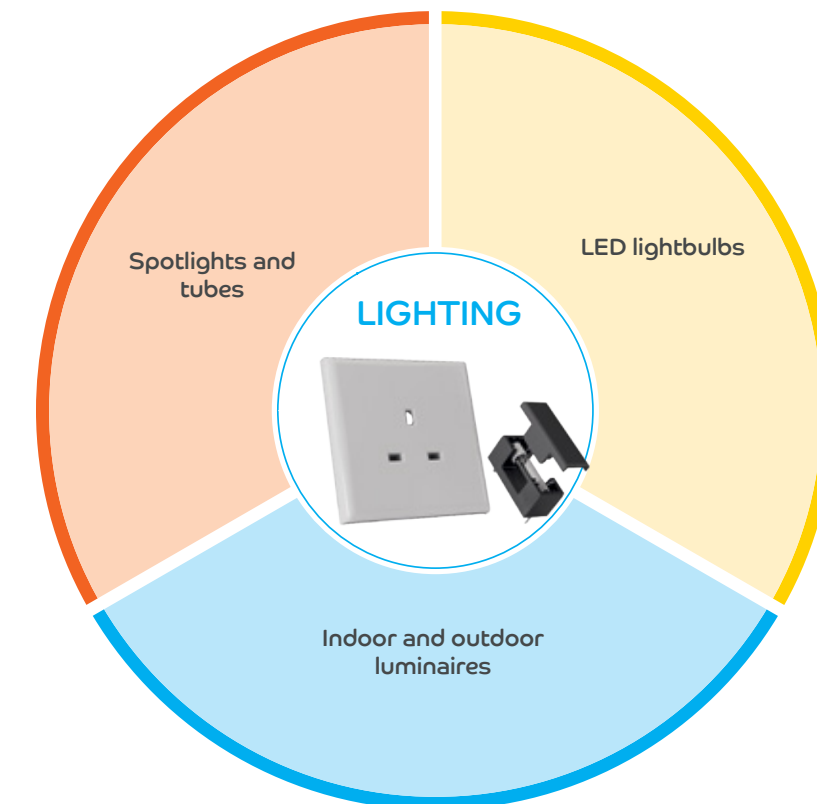
## ELECTRICAL COMPONENTS AND INFRASTRUCTURE

SABIC provides a wide range of high performance material solutions for various segments in the electrical industry. Our solutions can help customers address today's top challenges: smaller & thinner components, energy storage and management, cost effective design, longer product life, more stringent regulations and enhanced sustainability.



## LIGHTING

SABIC provides a wide range of high-performance materials for light-emitting diode (LED) lighting that can help customers address today's top challenges: enhancing designs and aesthetics, extending useful life and greater sustainability and improving cost-effectiveness vs. metal.



## Dielectric Solution for 5G Base Stations

### LNPTM THERMOCOMP™ Compounds

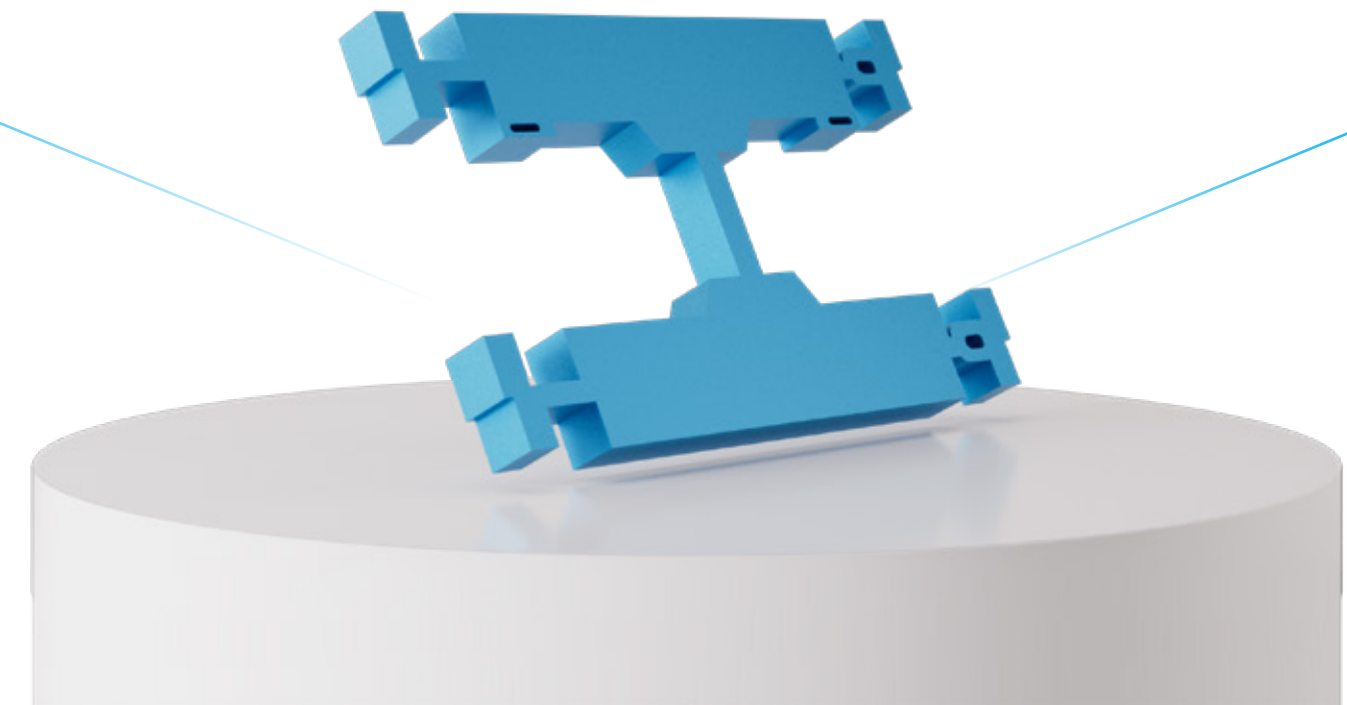


#### SOLUTION SUMMARY

- Stable dielectric properties across different frequency and temperatures
- Can maintain good impact and dimensional stability across broad environmental temperature range
- Each part weighs ~ 300 grams

#### VALUE PROPOSITION

- Outstanding Dielectric performance
- High temperature resistance
- Dimensional stability
- Good mechanical properties





## Databox Panels for Cloud Computing

### LNPT™ ELCRIN™ Resins



#### SOLUTION SUMMARY

- Tough, impact resistant
- Upgraded with sustainability grade for carbon footprint reduction
- Flame resistant and colorable
- Each part weighs ~500 grams

#### VALUE PROPOSITION



- Sustainability
- Colourable
- Impact resistance
- Flame resistant



## Notebook Covers

### LNPT™ THERMOCOMP™ Compounds



#### SOLUTION SUMMARY

- Robust flame performance
- Good balance of dimensional stability, flatness and impact resistance
- Good flow for thin wall processing
- Each part weighs around 100 grams

#### VALUE PROPOSITION



- Flame retardant
- High strength
- Low warpage
- Good flow



## Gaming Controller - Lubricated Thumb-Stick Holder

### LNPT™ LUBRILOY™ Compounds



#### SOLUTION SUMMARY

- Low wear and friction
- Dimensional stability, enabling smooth and quiet operation
- Passed rotation and wear tests
- Meets part requirement on flame resistance with high-gloss finishing
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Wear resistance
- Dimensional stability
- Flame retardant
- Easy processing



## Sustainability Solution for Smart Phone Case

### LNPT™ ELCRIN™ Compounds



#### SOLUTION SUMMARY

- Sustainability grade for carbon footprint reduction
- Better chemical resistance compared to alternative options while maintaining drop/impact strength
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Sustainability
- Colourable
- Impact resistance
- Chemical resistance



## Nano-molding Technology Solution for Tablet Antenna

### LNPT™ THERMOCOMP™ Compounds



#### SOLUTION SUMMARY

- Can be injected into metal surface which has been treated with a special chemical solution, replacing traditional processes
- Flame resistant, good color stability, can be processed easily
- Each part weighs ~ 100 grams

#### VALUE PROPOSITION



- Low warpage
- Colour stability
- Easy processing
- Flame retardant



## Insulator of 5G Radio Frequency Connector

### NORYL™ Resins



#### SOLUTION SUMMARY

- Good dielectric properties to minimize transmission signal loss when in use
- Heat resistance helped to pass welding process
- Dimensionally stable to ensure no deformation during production and use
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Heat resistance
- Impact resistance
- Dimensional stability
- Good dielectric properties



## Laser Direct Structuring Solution for Smartphone Rear Cover & Speaker Top Cover

### LNPT™ THERMOCOMP™ Compounds



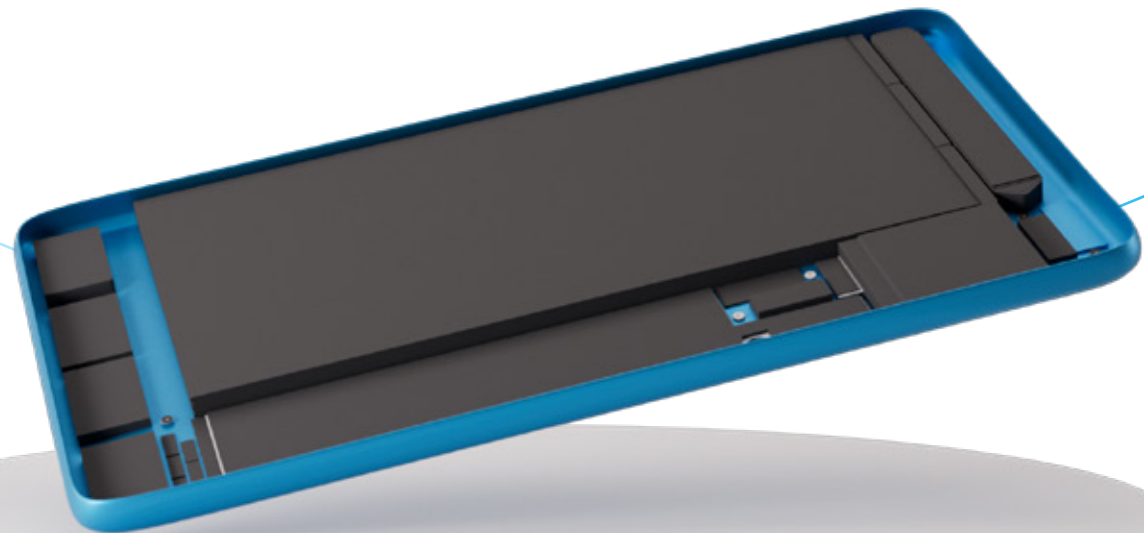
#### SOLUTION SUMMARY

- Laser Direct Structuring (LDS) process for selective metallization of injection molded parts
- Allows fast and easy design changes
- Light weight and dimensional stability
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Laser Direct Structuring capable
- Light weight
- Dimensional stability
- Easy processing



## Anti-microbial Solution for Smart Phone Protective Case

### LNPT™ ELCRES™ Resins



#### SOLUTION SUMMARY

- Anti-microbial material desired due to pandemic awareness and concerns
- Scratch resistant with good weatherability for smart phone cases
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Anti-microbial properties
- Weatherability
- Scratch resistance
- Good transparency



## Electrically Conductive Solution for Integrated Circuit (IC) Chip Trays

### LNP™ STAT-KON™ Compounds



#### SOLUTION SUMMARY

- Prevents static-electricity build-up that could damage electronic components
- Requirements include heat resistance for high temperature processing and dimensional stability to secure the components in trays
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Dimensional stability
- Electrically conductive
- Heat resistance
- Low warpage



## Electric Heater Block

### NORYL™ Resins



#### SOLUTION SUMMARY

- Meets potable water agency approvals
- High strength for effective sealing between lid and center part to withstand high water pressures
- Long-term performance in water environment
- Each part weighs ~2kg

#### VALUE PROPOSITION



- Water agency approvals
- Heat resistance
- Hydrolytic stability
- High stiffness





## Anti-static solution for Semicon Reticle Case

### LNP™ STAT-LOY™ Compounds



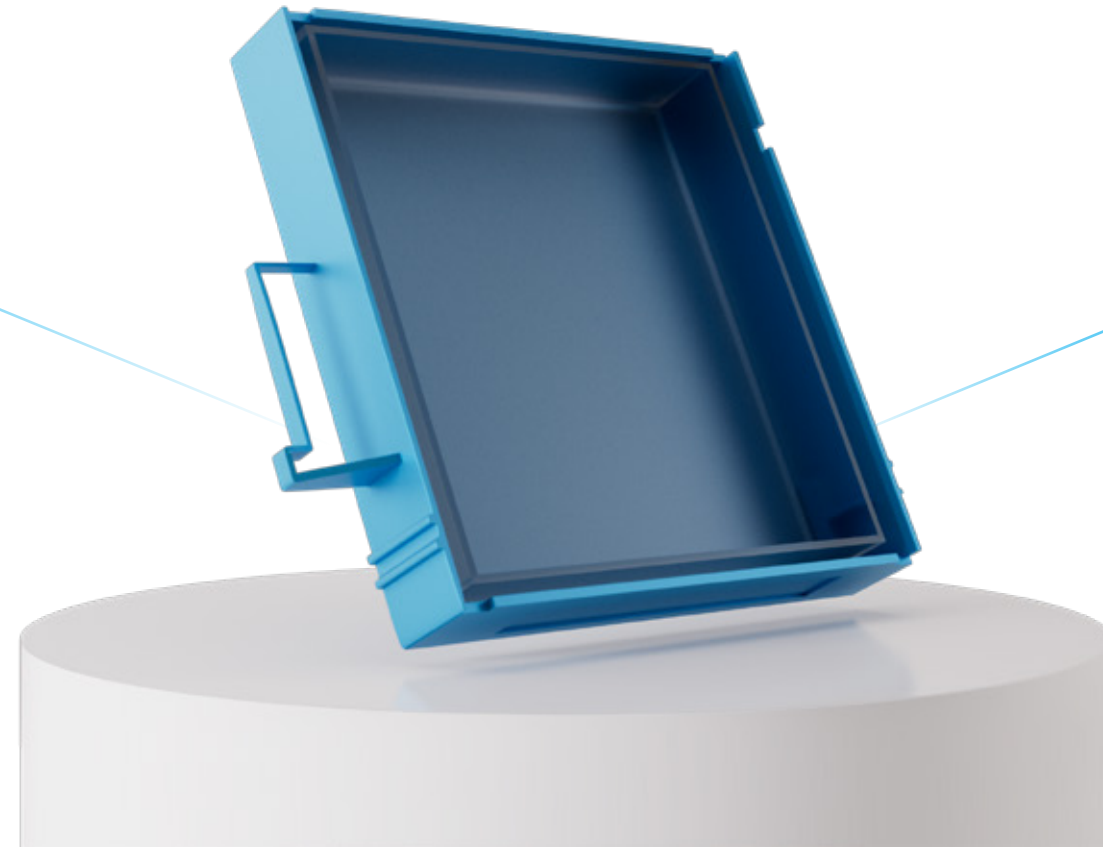
#### SOLUTION SUMMARY

- Low in certain contaminants which could be harmful to electronic components
- Can prevent static electricity harmful to electronic components
- High strength for this semicon application
- Each part weighs ~100 grams

#### VALUE PROPOSITION



- Impact resistance
- Anti-static
- Clean compound (low ionics, low out-gassing)
- Easy processing



## Thermally conductive LCP solution for Semicon Burn-in Test Sockets (BiTS)

### KONDUIT™ Resins



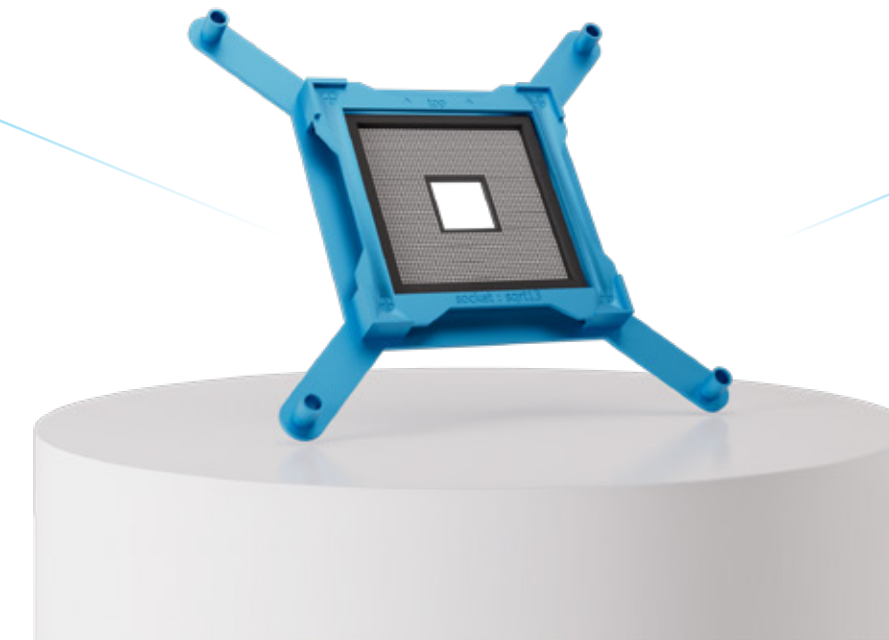
#### SOLUTION SUMMARY

- Such electronic precision parts with intricate designs require material to flow well
- Able to transfer heat
- Heat resistant, allowing the part to hold its critical dimensions well
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Dimensional stability
- High flow
- Thermal conductive
- Heat resistance



# Flexible Material Solution for Data Cable

## NORYL™ Resins



### SOLUTION SUMMARY

- Being flexible, it is a preferred option over PVC from the environmental perspective
- Flame retardant, low moisture uptake with good thermal stability making it a good candidate for such applications

### VALUE PROPOSITION



- Flexible
- Thermal stability
- ECO flame retardant
- Low moisture absorption



# Circuit Breaker Base

## NORYL™ Resins



### SOLUTION SUMMARY

- Robust flame resistance
- Meets certain standards applicable to circuit breakers
- Good mechanical strength, heat resistance and dimensional stability
- Each part weighs ~ 100 grams

### VALUE PROPOSITION



- Dimensional stability
- Non-halogenated flame retardant
- Weatherability
- Heat resistance



## Lubricated Solution for Virtual Reality (VR) Helmet Connectors

### LNPT™ LUBRILOY™ Compounds



#### SOLUTION SUMMARY

- Good impact properties for mechanical parts
- Low wear and friction, along with dimensional stability, enabling smooth operation and longer part life
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Wear resistance
- Dimensional stability
- Impact resistance
- Easy processing



## EMI Shielding solution for Gas Meters

### LNPT™ FARADEXT™ Compounds



#### SOLUTION SUMMARY

- Can shield electromagnetic interference which affects meter performance
- Flame retardant with excellent impact strength
- Colorable, hence painting not required
- Each part weighs ~ 500 grams

#### VALUE PROPOSITION



- Non-halogenated flame retardant
- Excellent impact strength
- EMI shielding
- Colourable



## Weatherable Solution for Virtual Reality (VR) - IR Transmitter Parts

### LNP™ ELCREST™ Resins



#### SOLUTION SUMMARY

- High-gloss surface which also allows infrared light transmission for functionality
- Good weatherability and strength
- Material has passed customer's stringent reliability tests
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Weatherability
- Good surface finishing
- Colorable
- Impact resistance



## Fiber Optical Lens

### ULTEM™ Resins



#### SOLUTION SUMMARY

- Good candidate that meets light transmission at certain frequencies without having signal loss
- Able to keep its critical dimensions due to wide temperature range performance
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Heat resistance
- Good light transmission properties
- Dimensional stability
- Easy processing





## Lightweight Augmented Reality (AR) Eyewear Leg Parts

### ULTEM™ Resins



#### SOLUTION SUMMARY

- Resistant to high heat and cleaning chemicals, dimensional stable with well-balanced mechanical properties and good flow for complex designs
- Relatively lightweight for wearing comfort
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Dimensional stability
- Easy processing
- Good mechanical properties
- Light weight



## Hard Disk Drive Components

### ULTEM™ Resins



#### SOLUTION SUMMARY

- Low in certain contaminants that could cause disk-drive failures
- High strength and heat resistance to ensure part integrity over extended use
- Dimensional stability for reliable part performance
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Dimensional stability
- Low ionics and out-gassing
- High Strength
- Heat resistance



## Fiber Optic Connectors

### ULTEM™ Resins



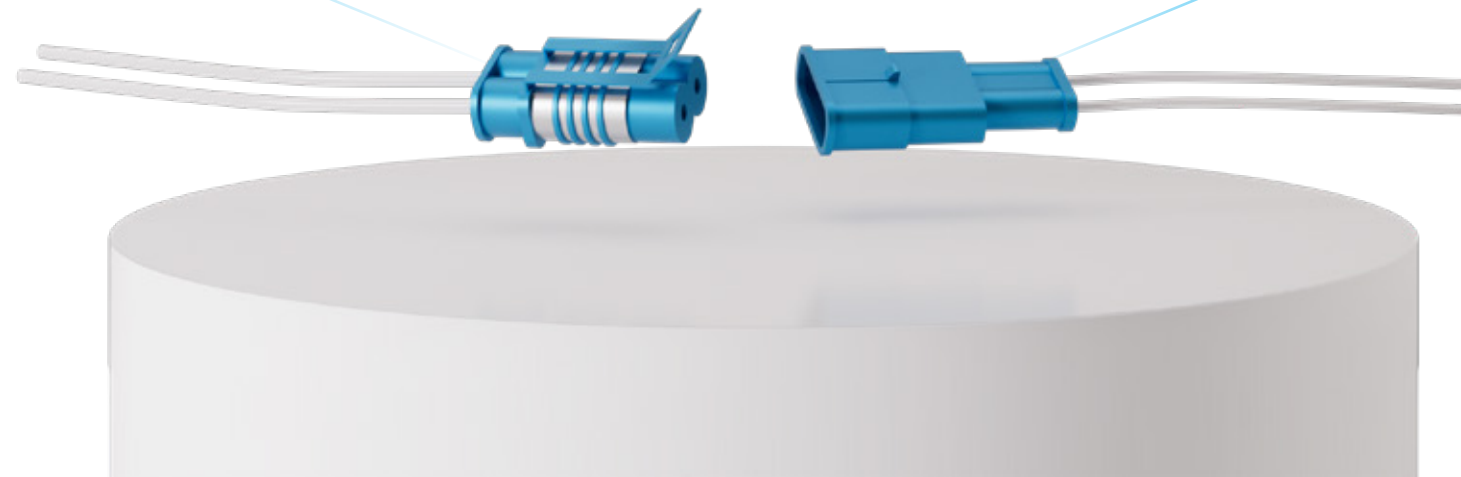
#### SOLUTION SUMMARY

- Good heat resistance, dimension stability and mechanical strength to pass customer durability tests
- Easy processing material to fill thin-wall and intricate parts
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Heat resistance
- Good mechanical properties
- Dimensional stability
- Easy processing



## Laser Direct Structuring (LDS) Capability for 5G-enabled Applications

### LNPT™ THERMOCOMP™ Compounds



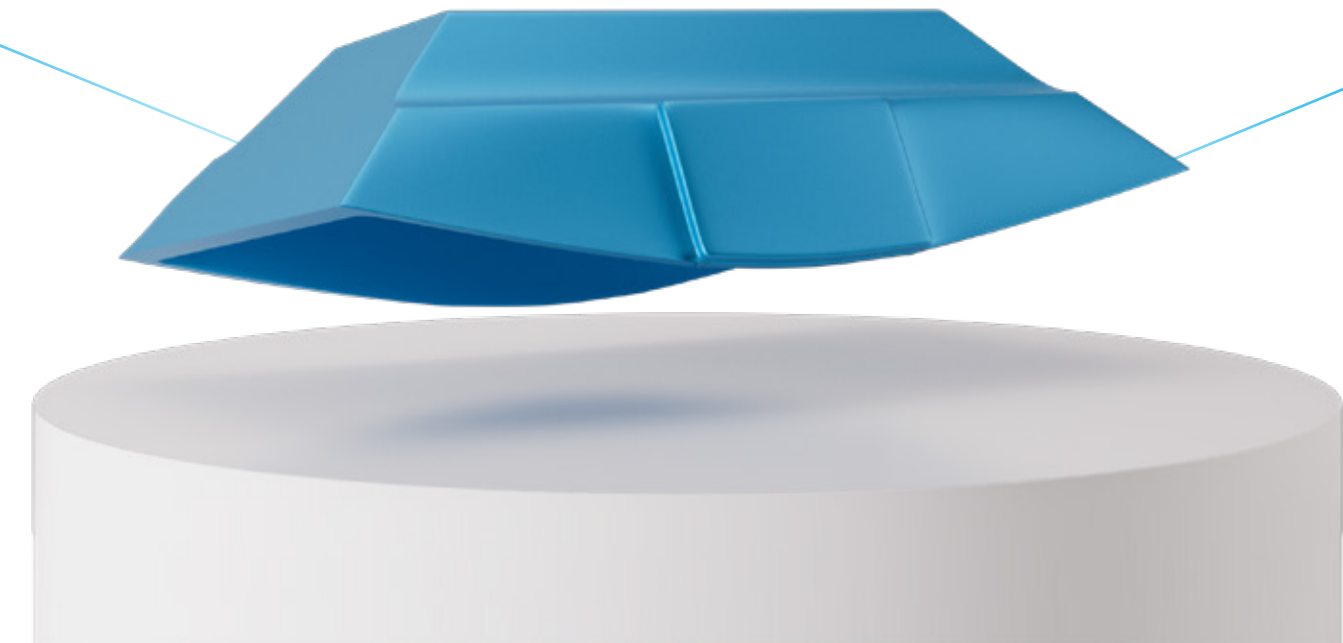
#### SOLUTION SUMMARY

- Laser Direct Structuring (LDS) is a process for selective metallization of thermoplastics injection molded parts
- Better dimensional stability helps to reduce warpage and its heat resistance allows for certain high temperature processes
- Each part weighs ~ 100 grams

#### VALUE PROPOSITION



- Optimized Laser Direct Structuring performance
- Heat resistance
- Excellent flow
- Dimensional stability



## Ultra-thin Smartphone Battery Cover

### LNPT™ ELCREST™ Resins



#### SOLUTION SUMMARY

- Superior flame retardance allows this thin-wall part to pass customers' stringent requirements on flame performance
- Excellent flow, provides excellent impact resistance when dropped and good chemical resistance to painting
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Non-halogenated flame retardant
- Easy processing
- good chemical resistance
- Dimensional stability



## Electrically Conductive Solution for Carrier Tapes

### LNPT™ STAT-KON™ Compounds



#### SOLUTION SUMMARY

- Extrudable into sheets to be thermoformed
- Electrically conductive to prevent static build-up that can damage components
- Dimensional stability to hold the components securely

#### VALUE PROPOSITION



- Extrudable
- Electrically conductive
- Good impact strength
- Dimensional stability



## High Performance Printed Circuit Boards (PCBs) in 5G Base Stations and High-speed Servers

### NORYL™ Resins



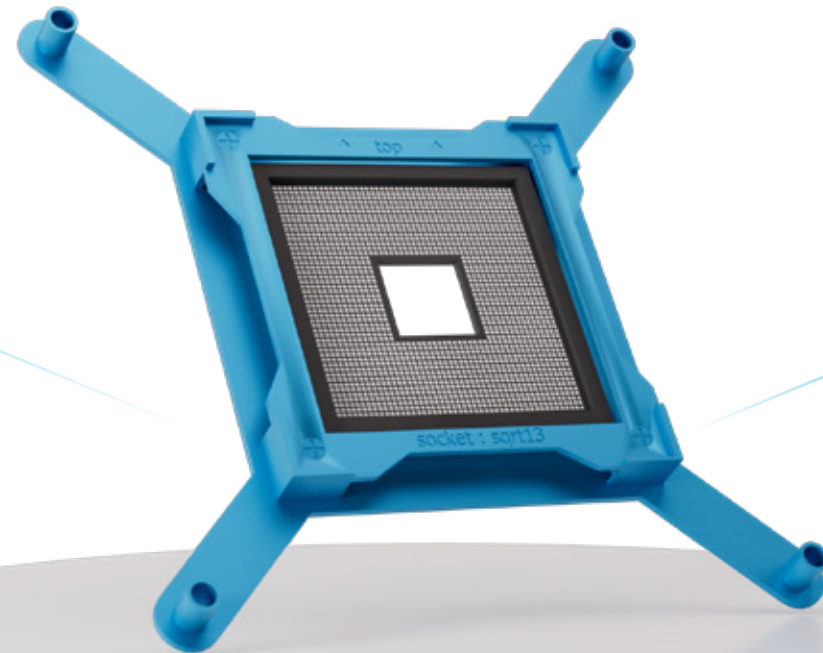
#### SOLUTION SUMMARY

- Offers producers of printed circuit boards (PCB) used in 5G network infrastructure the opportunity to develop effective products by balancing heat resistance and dimensional stability
- Part weight varies

#### VALUE PROPOSITION



- Soluble in conventional solvents
- Heat resistance
- Improved toughness
- Dimensional stability



## Burn-in Test Sockets (BiTS) and Connectors

### ULTEM™ Resins



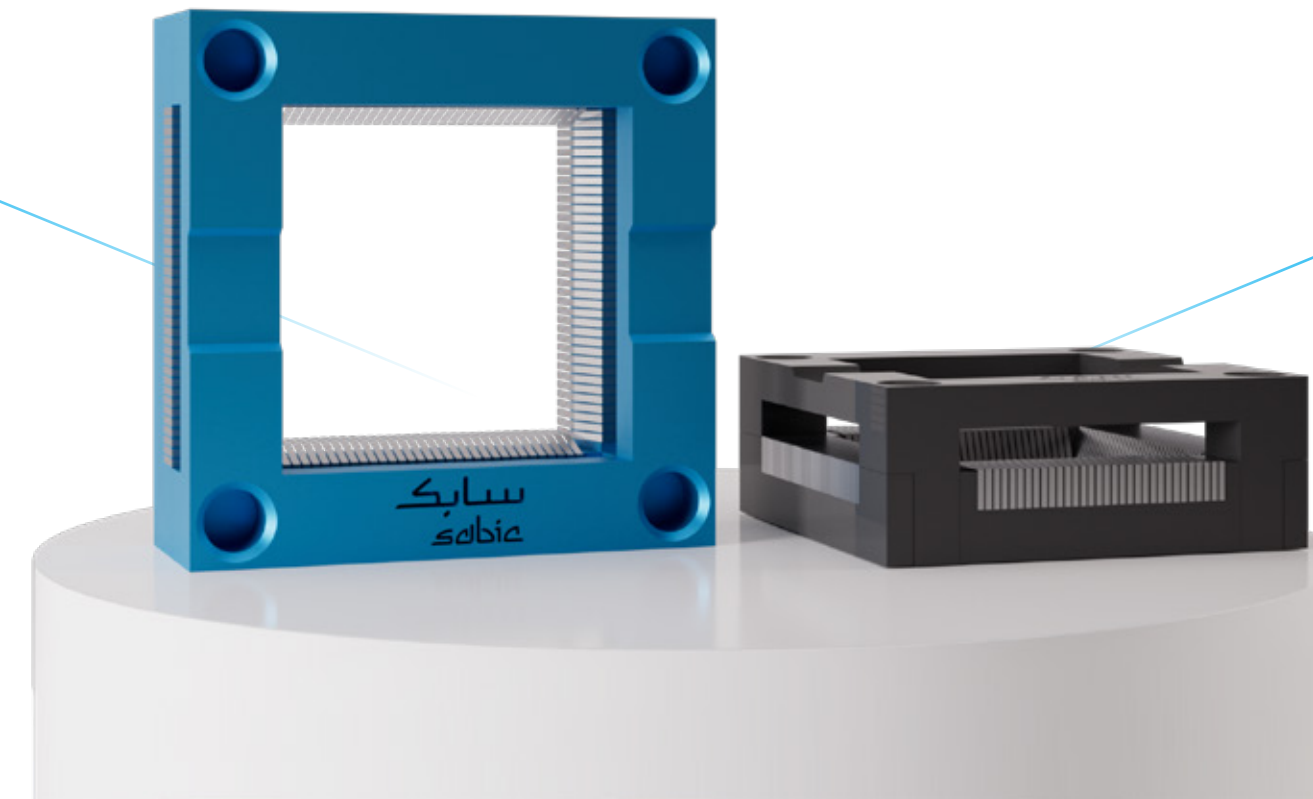
#### SOLUTION SUMMARY

- Small electronic precision parts with intricate designs require material to flow well
- Being heat resistant and balancing flow with toughness, they make a good candidate for this application
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Exceptional flow properties
- High heat resistance
- Dimensional stability
- Inherently flame retardant





## Photovoltaic Encapsulant Film for Solar Panel

### FORTIFY™ Elastomer (POE)



#### SOLUTION SUMMARY

- An ethylene octene copolymer
- Fits the solution of encapsulant film in solar panels
- Excellent electrical performance with high moisture resistance
- Good optical performance and high flexibility
- SABIC material share of this application is 10%

#### VALUE PROPOSITION



- Good electrical performance
- Moisture resistance
- Optical performance
- Flexible
- Shelf life enhancement



## Floating Tanks For Floating Solar Panels

### SABIC® PP Compounds & SABIC® HDPE Polyethylene



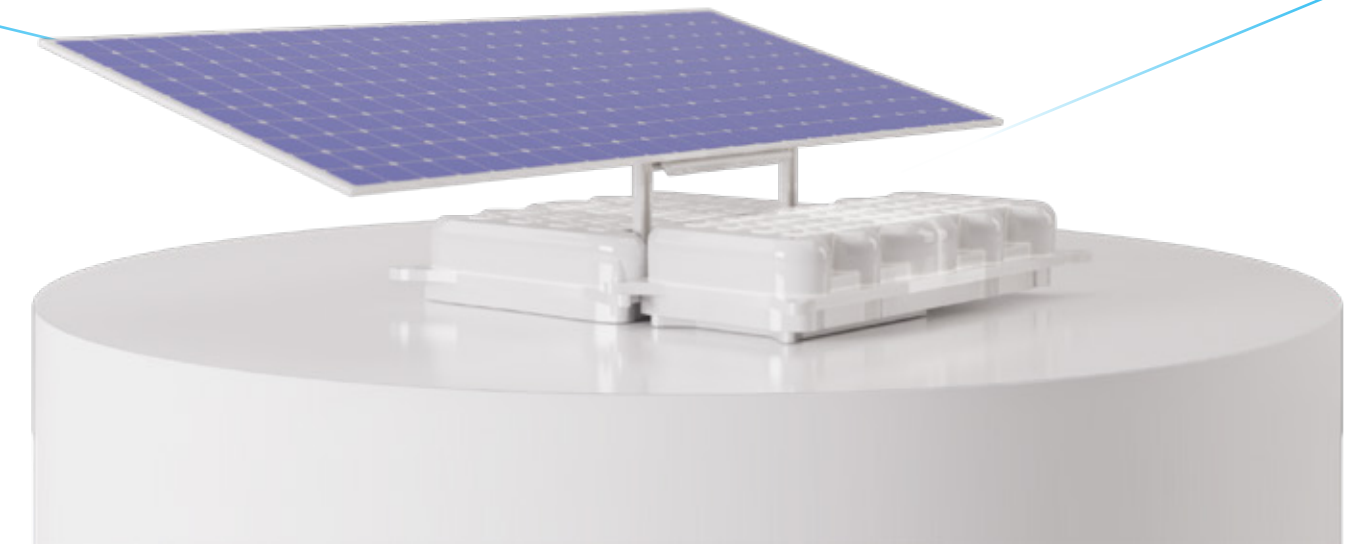
#### SOLUTION SUMMARY

- Newly developed for floating photovoltaic application
- Produced by advanced Access Control Panel (ACP) technology
- Excellent environmental stress crack resistance, impact strength and good processability
- Lightweight, non-tox, weatherability
- SABIC material share of this application is 100%

#### VALUE PROPOSITION



- Lightweight & Non toxic
- Weatherability
- Moisture resistance
- High impact strength



# Photovoltaic Electrical System

## LEXAN™ & VALOX™ Resins



### SOLUTION SUMMARY

- One-stop-solution to enhance the production of photovoltaic electrical systems
- Optimize manufacturing process
- Improve the overall quality, efficiency, and durability of PV systems
- SABIC material share of this application is 20%

### VALUE PROPOSITION



- Flame Retardant
- Good Impact Strength
- High Transparency available
- Weatherability



# 5G Antenna Cover

## SABIC® PP Compound, STAMAX™ and LEXAN™ Resins



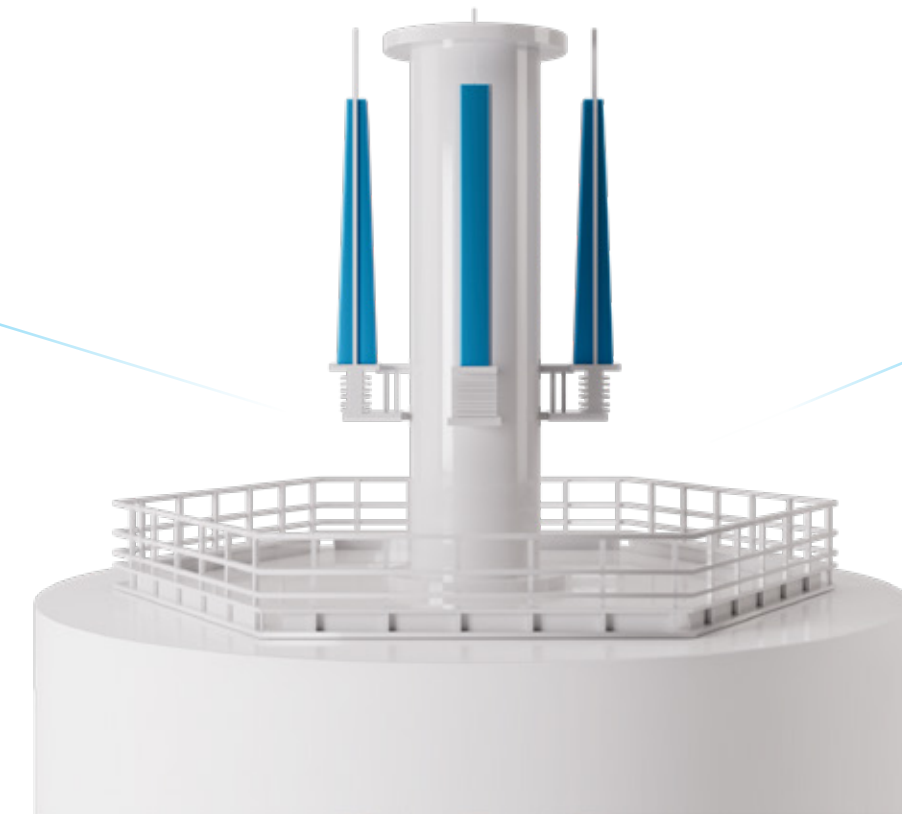
### SOLUTION SUMMARY

- SABIC offers various materials for 5G antenna cover to replace SMC and PVC resins for better environmental friendly solution
- Multiple conversion process with extrusion and injection molding grades available
- SABIC material share of this application is 50%

### VALUE PROPOSITION



- Flame Retardant available
- Good Impact Strength
- Weatherability



## Low Voltage Wire & Cables

### SABIC® EPDM657 Rubber



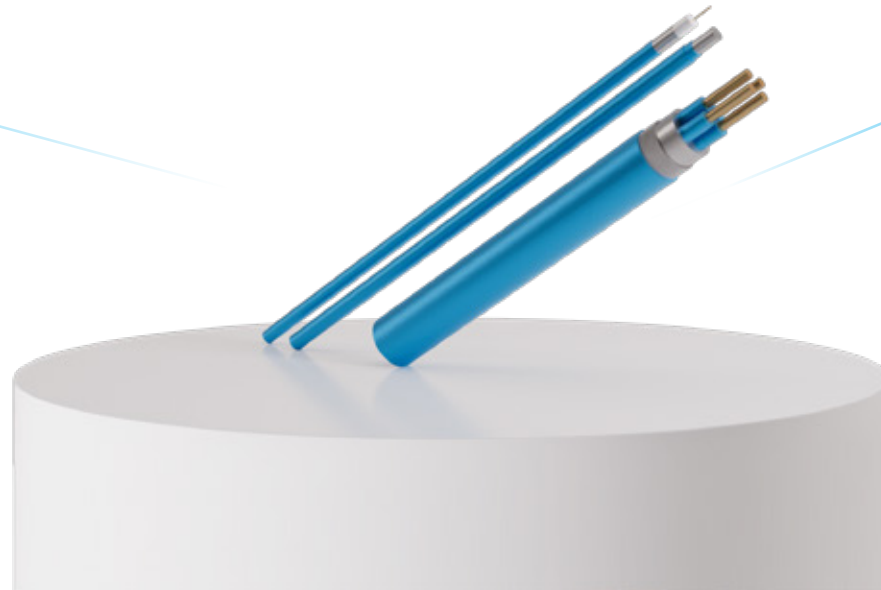
#### SOLUTION SUMMARY

- Excellent weather and thermal resistance
- Suitable for low voltage wire & cables, building profiles, door seals, industrial belts and hoses, etc.
- Excellent extrusion performance, good dimensional stability

#### VALUE PROPOSITION



- Excellent weather resistance
- High mechanical properties
- Good processability
- Flexible



## Electrical Sockets & Vertical Fuses

### SABIC® PP Compound H1030



#### SOLUTION SUMMARY

- Can withstand high temperatures
- Suitable for electrical sockets and other components that may be exposed to heat
- SABIC material share of this application is 80%

#### VALUE PROPOSITION



- Flame Retardant
- High impact



## Electrical Enclosures

### CYCOLACT™ Resin MG47F



#### SOLUTION SUMMARY

- Designed for electrical enclosures
- Excellent resistance properties
- Dimension stability and ease of machining
- SABIC material share of this application is 70%

#### VALUE PROPOSITION



- Good Mechanical Properties
- Ease of Machining
- Dimension Stability
- Excellent Toughness Properties



## Cable Industry

### SABIC® HDPE C0549 Polymer



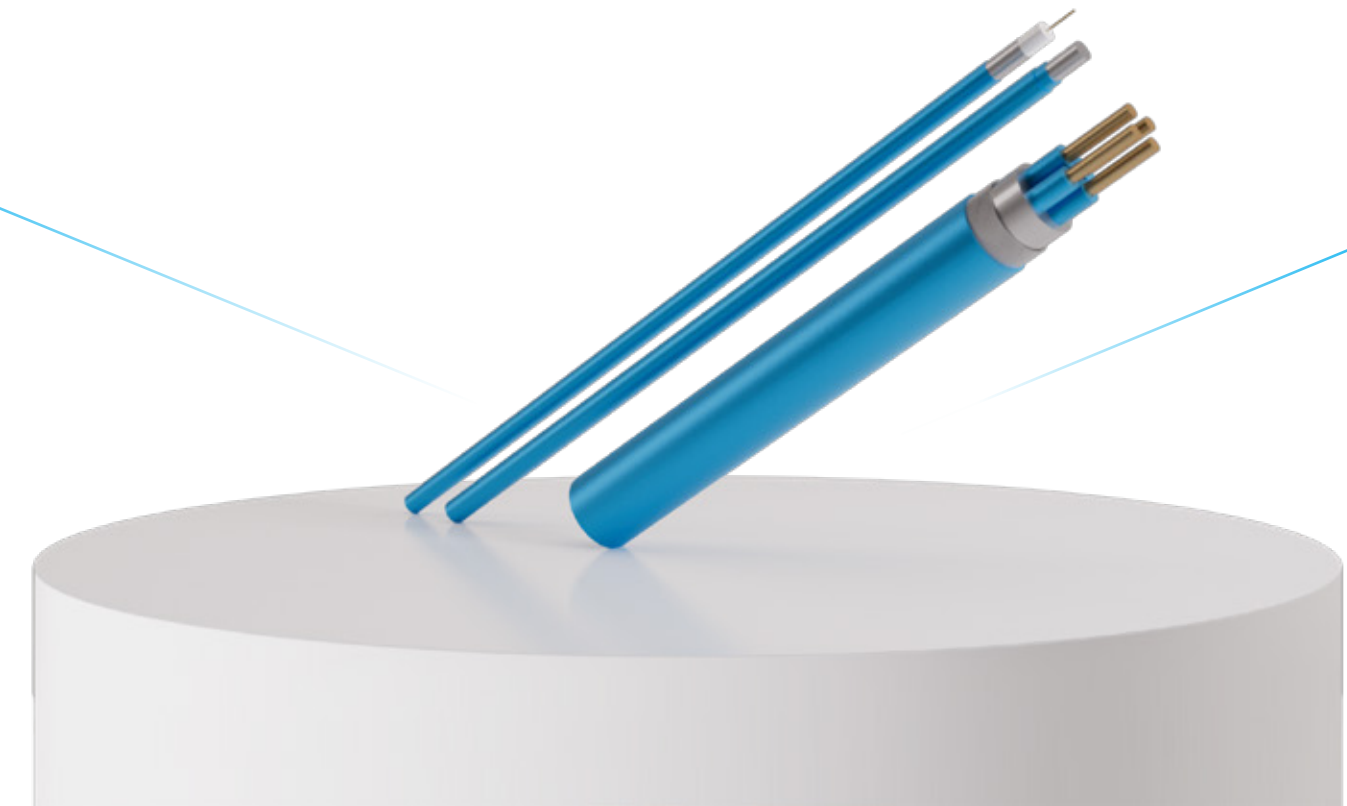
#### SOLUTION SUMMARY

- One of the great solutions for high voltage cable jacketing
- Superior mechanical properties
- Better aging and lower shrinkage rate
- SABIC material share of this application is 50%

#### VALUE PROPOSITION



- High mechanical properties
- Better aging
- Lower shrinkage
- Localization solution
- Better aging





# Floating Solar Panels and Marine Docks

## SABIC® HDPE B5308 Polymer



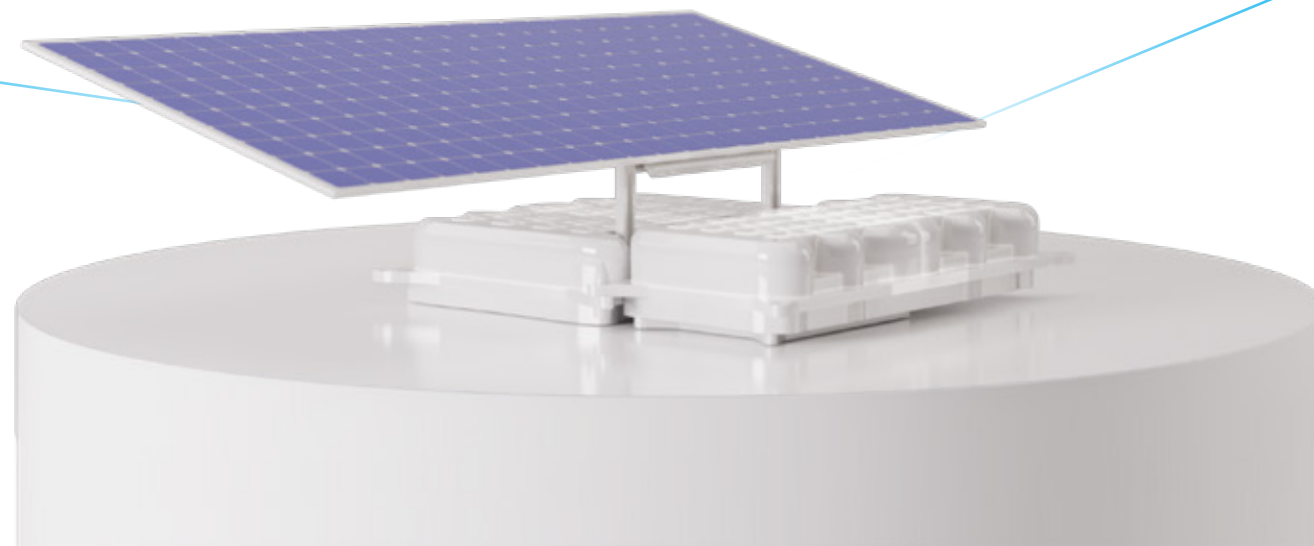
### SOLUTION SUMMARY

- Specifically designed for blow molding floaters for floating photovoltaic panel systems
- Outstanding environmental stress crack resistance
- Excellent mechanical properties, very good toughness and stiffness balance
- Long lifetime and easy blow molding processability
- SABIC material share of this application is 100%

### VALUE PROPOSITION



- Excellent ESCR (Environmental Stress Crack Resistance) Performance: > 3000 h
- Good Process ability at Lower Processing Temperatures
- Improve Top Load Resistance with Good Rigidity



# Sustainability Solution for Connectors

## LNPT™ ELCRIN™ Compounds



### SOLUTION SUMMARY

- Sustainability grade for carbon footprint reduction
- Electrical parts require flame resistance and good drop/impact strength
- Colorable for good aesthetics
- Each part weighs <100 grams

### VALUE PROPOSITION



- Good mechanical properties
- Non-halogenated flame retardant
- Good aesthetics
- Sustainability



## Lubricated solution for Circuit Breakers

### LNPT™ LUBRICOMPT™ Compounds



#### SOLUTION SUMMARY

- Good lubricating property for ease of operating frictional parts
- Heat resistance and high strength help to prolong life of this electrical application
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Wear resistance
- Heat resistance
- Dimensional stability
- High stiffness



## 5G Road Side Unit Antenna Housing

### LNPT™ ELCRES™ Resins



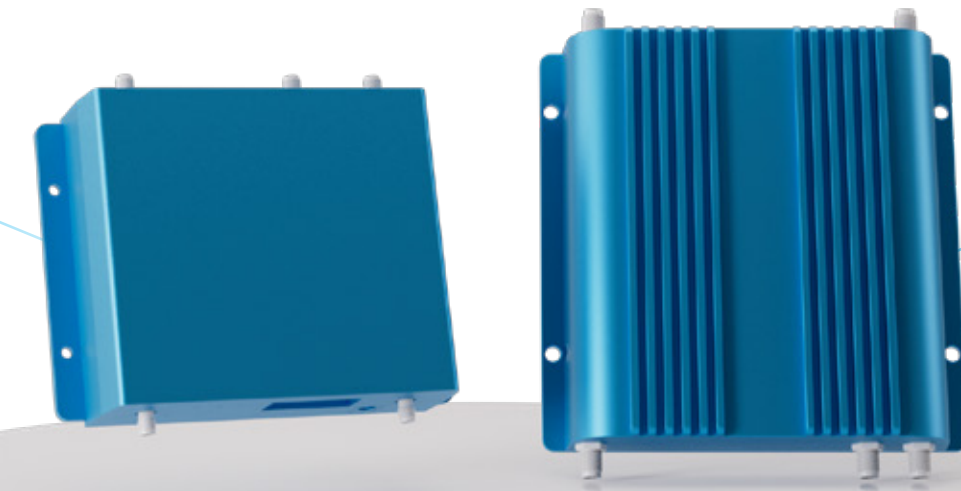
#### SOLUTION SUMMARY

- Good UV and impact resistance over broad environmental temperatures to enhance long-term reliability for outdoor applications
- Good dielectric properties help to optimize data transmission
- Each part weighs ~500 grams

#### VALUE PROPOSITION



- Low temperature impact resistance
- ECO flame retardant
- Weatherability
- Easy processing



## 5G Base Station- Active Antenna Unit Cooling Fan Cover

LNPT™ ELCRES™ Resins



### SOLUTION SUMMARY

- Good UV and impact resistance over broad environmental temperatures to enhance long term reliability
- High strength and easy processing for this cover application
- Each part weighs ~1kg

### VALUE PROPOSITION



- Low temperature impact resistance
- ECO flame retardant
- Weatherability
- Easy processing



## Solar PV Micro Inverter Housing

NORYL™ Resins



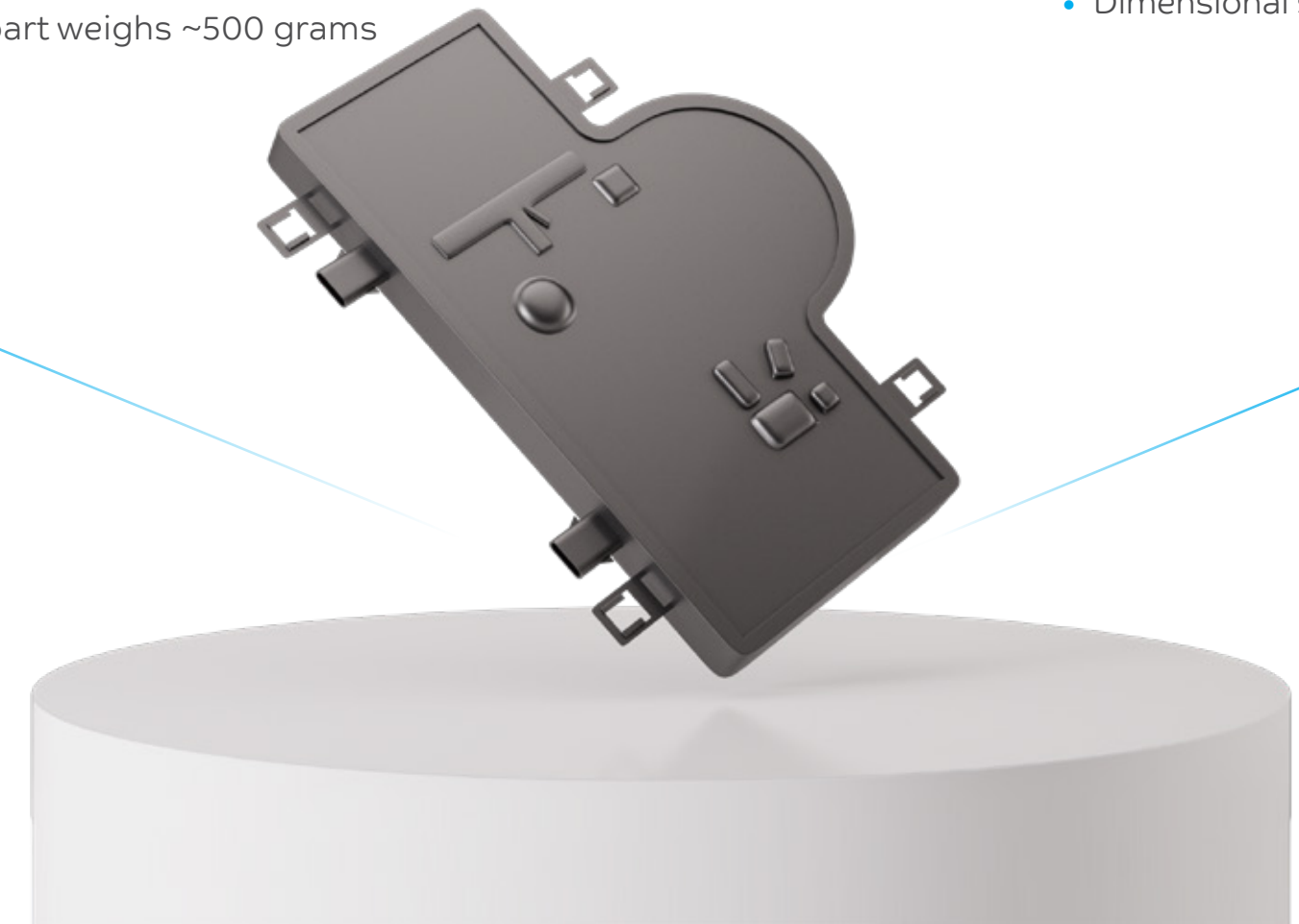
### SOLUTION SUMMARY

- This application requires material to remain strong within a broad outdoor temperature range and good weatherability
- Flame retardant with good heat properties, making this material a good option
- Each part weighs ~500 grams

### VALUE PROPOSITION



- ECO flame retardant
- Weatherability
- Low temperature impact resistance
- Dimensional stability



## Drone Landing Gear Connectors

### LNPT™ LUBRICOMP™ Compounds



#### SOLUTION SUMMARY

- Good balance of stiffness and impact resistance, dimensional stability, low wear and friction
- Provides smoother and softer operation
- Good weatherability to enhance overall drone durability
- Each part weighs <100 grams

#### VALUE PROPOSITION



- Wear resistance
- High stiffness
- Weatherability
- Easy processing



## Wire and Cable Jacketing

### FORTIFY™ (POE) Elastomer C0570D



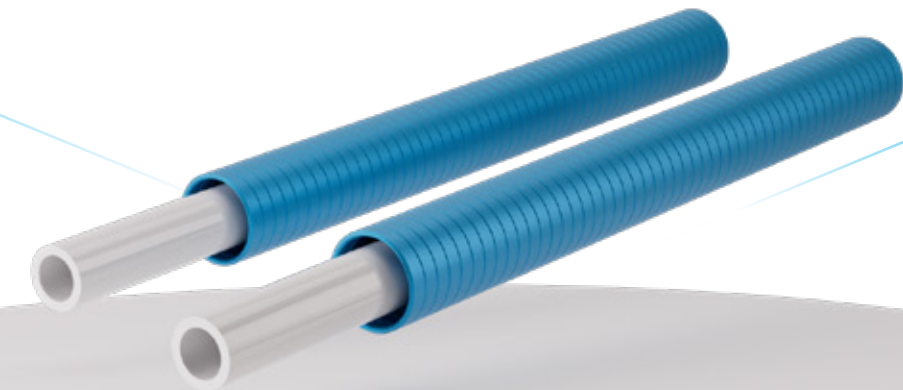
#### SOLUTION SUMMARY

- Can be used as key component in low smoke halogen free W&C compound
- Improves flexibility, and mechanical properties
- SABIC material share of this application is 50%

#### VALUE PROPOSITION



- High Filler loading
- Halogen free





# Computer Mouse

## Mechanically Recycled XENOY™ Resin



### SOLUTION SUMMARY

- Contains 20% recycled ocean plastic by weight in external casing
- SABIC material share of this application is 80%
- Edison Silver award winner for 2022

### VALUE PROPOSITION



- Circular solution
- Aesthetics
- Ocean Plastic

