Speeding Development. Reducing Risk.

Electromagnetic Interference (EMI) Shielding and Thermal Interface Materials Solutions for Life Science Devices

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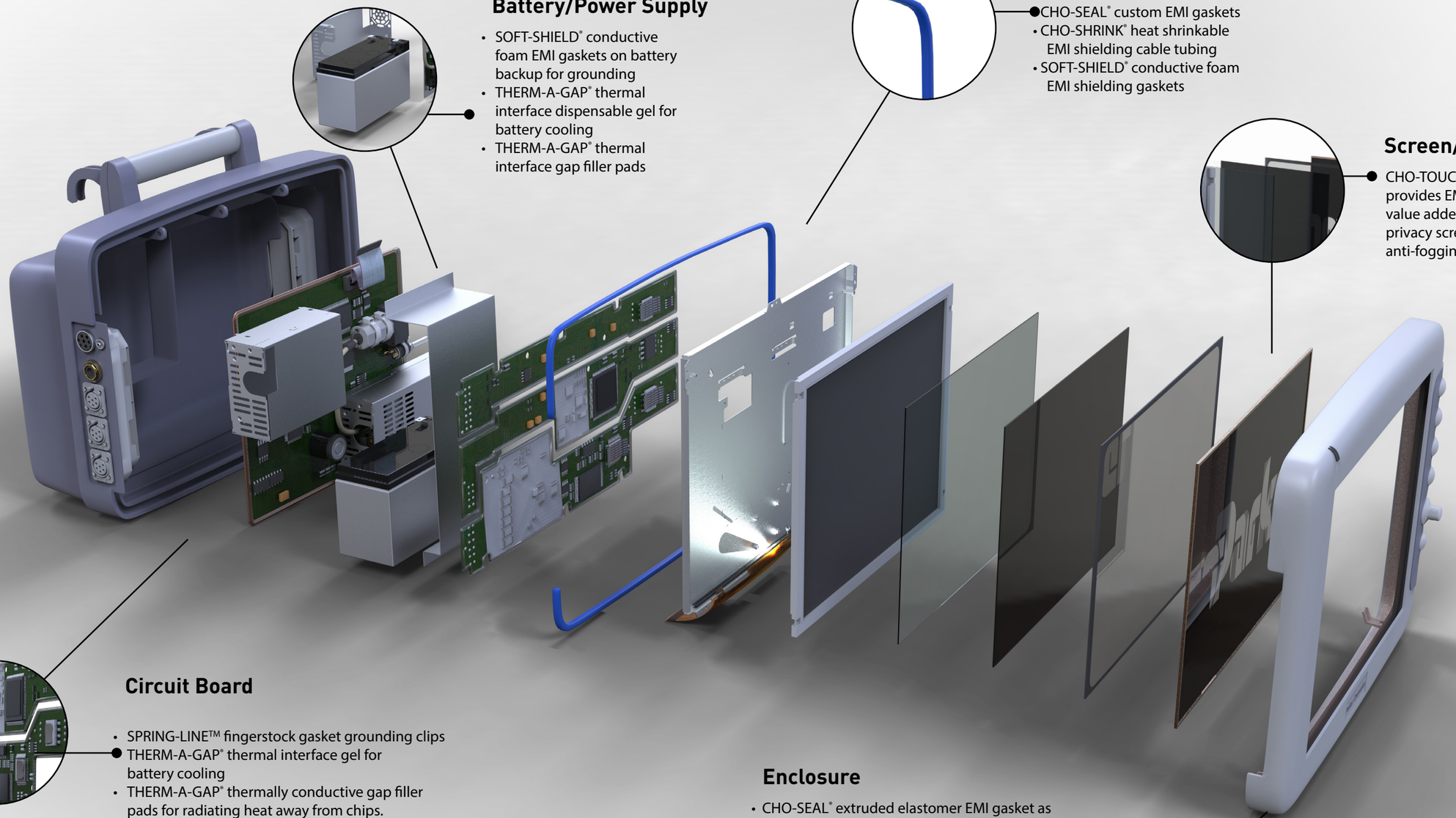
ENGINEERING YOUR SUCCESS.

Chomerics Division Solutions



Battery/Power Supply

- SOFT-SHIELD® conductive foam EMI gaskets on battery backup for grounding
- THERM-A-GAP® thermal interface dispensable gel for battery cooling
- THERM-A-GAP® thermal interface gap filler pads

Cables/Connectors

- CHO-SEAL® custom EMI gaskets
- CHO-SHRINK® heat shrinkable EMI shielding cable tubing
- SOFT-SHIELD® conductive foam EMI shielding gaskets

Screen/Windows

- CHO-TOUCH™ touchscreen provides EMI shielding with value added IR blocking, privacy screen and anti-fogging properties

Circuit Board

- SPRING-LINE™ fingerstock gasket grounding clips
- THERM-A-GAP® thermal interface gel for battery cooling
- THERM-A-GAP® thermally conductive gap filler pads for radiating heat away from chips.
- CHO-FORM® form-in-place EMI gasket enclosure to PCB
- CHO-THERM® High Reliability Thermally Conductive Electrical Insulator Pad
- CHO-SHIELD® EMI and RF coatings for board level shielding on PCB

Enclosure

- CHO-SEAL® extruded elastomer EMI gasket as cover seal for shielding and moisture barrier
- Rear half of enclosure is made from PREMIER conductive thermoplastic for EMI shielding
- CHO-SHIELD® EMI shielding paint coating for plastic on back of enclosure
- SPRING-LINE™ fingerstock spring finger gasket
- SOFT-SHIELD® conductive foam EMI

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Why Parker Chomerics?

One partner, multiple solutions

You have a great design. Don't let the complexity of shielding for electromagnetic interference (EMI) get in your way.

We offer proven solutions in EMI shielding and grounding, thermal management, integrated display solutions, plastic injection molding, and EMI and safety testing services.

Parker Chomerics gives you a wealth of integrated, multi technology systems and components that meet or exceed your specifications and expectations.

From concept through production, Parker Chomerics has been working with medical and analytical device OEMs for more than 30 years. Our selectable levels of integration – which include components, modules, and integrated solutions – reduce technical risk, lower development cost, and speed time to market.

PARKER CHOMERICS GLOBAL FOOTPRINT

- Your language
- Your time zone
- Your currency

Our innovative solutions matter

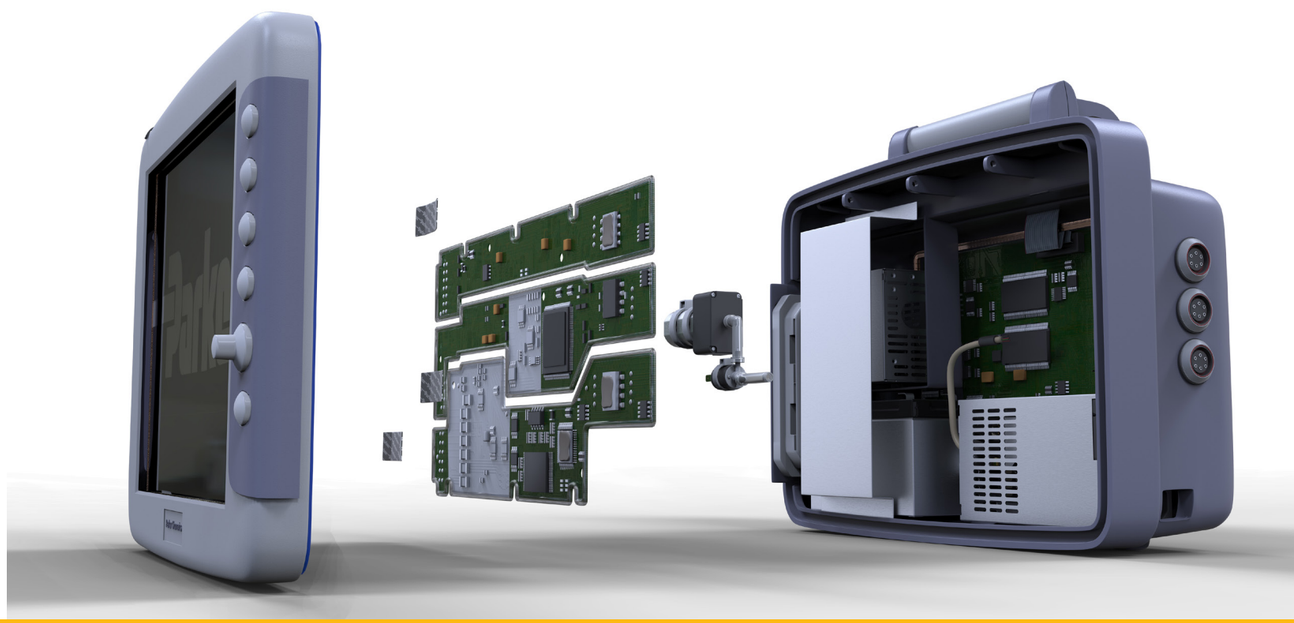
Rapid and continual advances in both electronics and medical technology have seen the quantity, complexity and diversity of equipment for patient care applications increase significantly in recent years.

Medical electronic devices have also become smaller and more portable – often battery powered - and incorporate advanced digital electronics alongside analog circuitry to deliver comprehensive functionality.

Human-machine interfaces have also become more interactive and increase the options that hospitals and doctors' offices have to collect, transmit, and monitor and analyze patient data. All of these factors have contributed to a major rise in shielding (EMI / RFI) and thermal management challenges faced by engineers as well as a need for both shielded and non-shielded optical windows for equipment displays.

Parker Chomerics is a total solution company built on core competencies in material science and process technology serving as the basis for:

- Product development
- Custom engineered solutions
- Complete electronics housing solutions
- Fully integrated optical display assemblies
- Supply chain management



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Trusted Solutions for Life Sciences

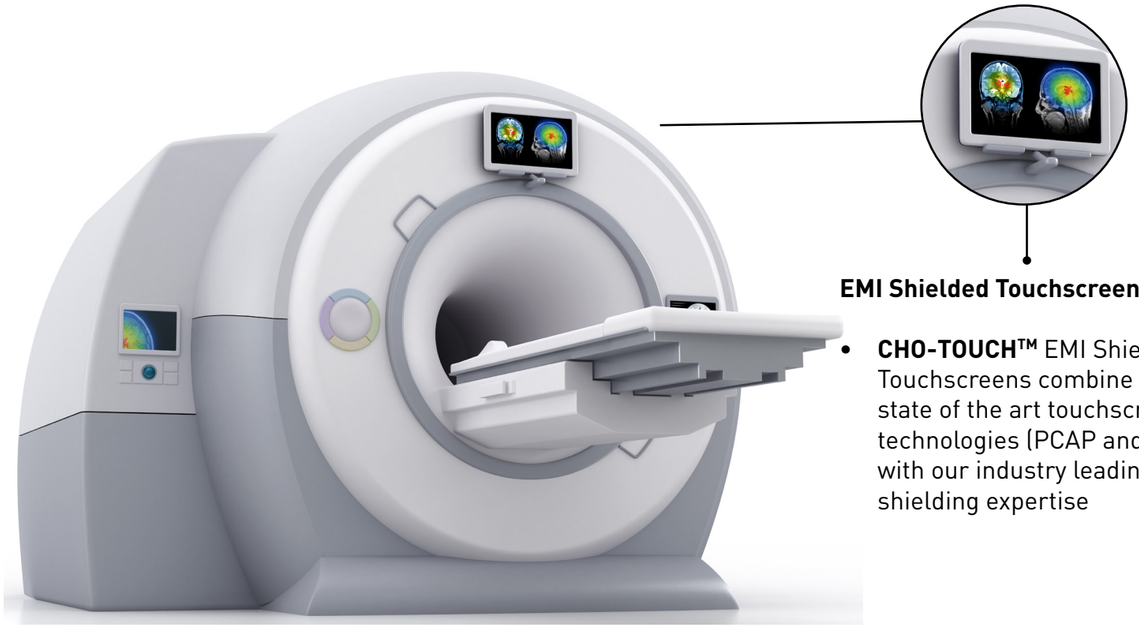
Imaging and diagnostics

X-ray machines • MRI rooms • Ultrasound • Medical ultrasonography • DEXA • CT • Mammography •Stereotactic breast biopsy

Radio frequency (RF) shielding for MRI rooms is necessary to prevent RF noise from entering into the MRI scanner and distorting the images as well as preventing the MRI's own electromagnetic radiation from disruption external medical devices such as pacemakers.

To prevent this distortion, an RF shield enclosure features a "system" of interacting components, including: doors, windows, ceilings, floors, and walls. Additionally, items penetrating the RF shield (power, HVAC, exhaust, piping, and plumbing) must pass through RF filters or waveguides. All of these components work together to provide a functional shield barrier that reduces RF noise to acceptable levels.

Our family of EMI shielding gaskets provide the necessary RF shielding necessary to prevent RF noise from entering the MRI scanner. Parker Chomerics offers the products, technical know-how, close customer support and supply chain capabilities to meet these challenges and deliver superior, reliable and cost-effective solutions.



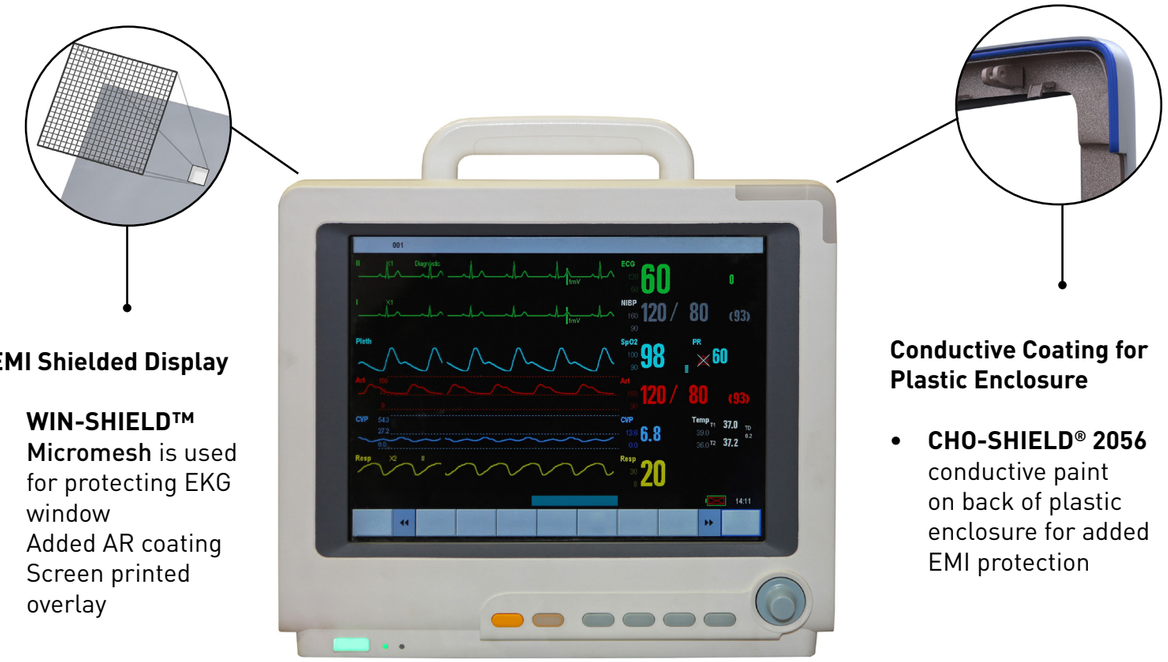
EMI Shielded Touchscreen Displays

- **CHO-TOUCH™** EMI Shielded Touchscreens combine today's state of the art touchscreen technologies (PCAP and Resistive) with our industry leading EMI shielding expertise

Life critical and patient monitoring

Anesthesia delivery • Plasma collection systems • Ventilators • Medical gas analyzers • Vital signs monitoring • Continuous blood glucose monitoring • Display housings • Defibrillators

Nothing is more critical than the EMI suppression and thermal management of the electronic components in sophisticated life-critical medical devices such as ventilators and anesthesia delivery systems. Parker Chomerics is fully committed to supplying superior technology that manufacturers can rely on for their products to run the correct way, every time.

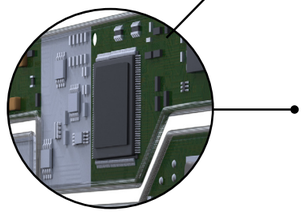


EMI Shielded Display

- **WIN-SHIELD™ Micromesh** is used for protecting EKG window
- Added AR coating
- Screen printed overlay

Conductive Coating for Plastic Enclosure

- **CHO-SHIELD® 2056** conductive paint on back of plastic enclosure for added EMI protection



Thermal Interface Materials (TIMs)

- **THERM-A-GAP™ GEL 30** easily dispensable thermal material for critical electronics cooling

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Featured Parker Chomerics Products

EMI Shielding Elastomer and Form-In-Place Gaskets

Gaskets for shielding of enclosures of electronics such as displays, flanges, and components.

Product	Conductive Filler	Binder	Shielding	Corrosion
CHO-SEAL® 6502	Nickel-Aluminum	Silicone	Excellent	Excellent
CHO-SEAL® 6503	Nickel-Aluminum	Fluorosilicone	Excellent	Excellent
CHO-SEAL® 1298	Silver-Aluminum	Fluorosilicone	Good	Very Good
CHO-SEAL® 1285	Silver-Aluminum	Silicone	Very Good	Good
CHO-SEAL® S6305	Nickel-Graphite	Silicone	Good	Fair
CHO-SEAL® 6370	Nickel-Graphite	Silicone	Fair	Fair
CHOFORM® 5513	Silver-Copper	Silicone	Excellent	Fair
CHOFORM® 5528	Silver-Copper	Silicone	Excellent	Fair

Fabric-Over-Foam EMI Shielding Gaskets

SOFT-SHIELD® fabric-over-foam gaskets provide excellent performance with very low closure force due to the soft urethane foam construction.

Product	Gasket Compression Set	Flammability Rating	Shielding	Operating Temperature
SOFT-SHIELD® 3500	< 15%	UL 94 V-0	Excellent	-40^0 C - 70^0 C
SOFT-SHIELD® 3700	<10%	UL 94 V-0	Excellent	-40^0 C - 125^0 C
SOFT-SHIELD® 4850	<15%	UL 94 V-0	Very Good	-40^0 C - 70^0 C

PREMIER™ EMI Shielding Plastics

Conductive plastics eliminate 35% of the housing weight (as compared to aluminum) and reduce costs by 65%, while providing excellent hydrolysis resistance.

Product	Filler Level	Flammability Rating	Surface Resistance (Ohm/sq)	Shielding Effectiveness (dB)
PREMIER™ A220-HT	Low	N/A	4.50	60
PREMIER™ A240-ST	High	N/A	0.20	85
PREMIER™ A240-FRHF	High	UL 94 V-0	0.25	85
PREMIER™ PEI 140	High	UL 94 V-0	0.45	85
PREMIER™ PBT-225	Medium	UL 94 H-B	10.0	80

CHO-SHIELD® Conductive Paints and Coatings

Conductive paints designed to be applied to the inside of plastic electronic enclosures help shield critical medical equipment from damaging EMI.

Product	Conductive Filler	Polymer Family	Temperature Range	Shielding Effectiveness (dB)
CHO-SHIELD® 2044	Nickel	Acrylic	-40^0 C to 85^0 C	>55
CHO-SHIELD® 2056	Silver-Plated Copper	Acrylic	-40^0 C to 85^0 C	>75
CHO-SHIELD® 2040	Silver	Arylic	-40^0 C to 85^0 C	>80

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Featured Parker Chomerics Products

Thermal Management and Cooling: Thermally Conductive Dispensable Gels

THERM-A-GAP™ thermally conductive dispensable gels are pre-cured, single-component compounds that can be robotically dispensed on the heat-generating component.

Product	Features	Thermal Conductivity (W-m/K)	Product Type	Flow Rate (cc/min)
THERM-A-GAP™ GEL 8010	Ideal for thin bondlines, UL 94 V-0	3.0	One Part	60
THERM-A-GAP™ GEL 30	Easily dispensable, high performance, UL 94 V-0	3.5	One Part	20
THERM-A-GAP™ GEL 45	Easily dispensable, high end performance	4.5	One Part	55
THERM-A-GAP™ TC50	Controlled dispensing, high end thermal performance	5.5	One Part	10

Thermal Management and Cooling: Thermally Conductive Gap Filler Pads

THERM-A-GAP™ thermally conductive silicone and non-silicone gap filler pads are for applications where heat must be conducted over a large and variant gap.

Product	Features	Thermal Conductivity (W-m/K)	Hardness (Shore 00)	Flammability Rating
THERM-A-GAP™ HCS10	Economical solution, highest conformability	1.0	4	UL 94 V-0
THERM-A-GAP™ 569	Great combination of thermal performance and conformability	1.5	10	UL 94 V-0
THERM-A-GAP™ 579	Lowest outgassing, excellent thermal performance	3.0	30	UL 94 V-0
THERM-A-GAP™ G974	Fiberglass reinforced for improved tear strength	5.0	86	UL 94 V-0
THERM-A-GAP™ 974	Excellent thermal performance, PSA available	6.0	86	N/A
THERM-A-GAP™ 976	Superior thermal performance, low compression force under pressure	6.5	55	UL 94 V-0

Thermal Management and Cooling: Cure-in-Place Potting and Underfill Materials

THERM-A-FORM™ thermally conductive elastomer products are dispensable form-in-place compounds designed for heat transfer without excessive compressive force.

Product	Features	Thermal Conductivity (W-m/K)	Product Type	Hardness (Shore A)
THERM-A-FORM™ T647	Superior thermal performance while maintaining low modulus	0.9	Two Part	25
THERM-A-FORM™ T646	Provides combination of high thermal performance and low cost	1.0	Two Part	50
THERM-A-FORM™ 1641	One component, moisture cure, non-acetic acid generating	1.0	One Part	56

LCD Display Protection and Enhancement

Touchscreen, window and LCD solutions for human interface life science applications providing turnkey solutions with integrated assemblies aids in fast design cycles and fast to market product development cycles.

Product	Features	
CHO-TOUCH™ Displays	Integrated LCD/touch display solutions with optional custom cover glass and and EMI shielding	
Integrated Solutions	Custom plastic or metal housing sub assemblies with specified displays, touchscreens, covers, supply chain components	
WIN-SHIELD™ P	Laminated plastic EMI shielded covers with optional embedded screen printed graphics	
WIN-SHIELD™ G	Laminated or coated glass EMI shielded covers with optional embedded screen printed graphics	
Duralan™ P	Laminated plastic display/touchscreen covers with optional embedded graphics, display enhancements	

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Additional Facilities:
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