EV BATTERY SOLUTIONS

NAATBatt International Conference 2023

Delia Bryan

Innovation & Action

INOAC

INOAC GLOBAL OVERVIEW

OVER
100
FACILITIES

OVER
20,000
TEAM MEMBERS

OVER
$4 BILLION
US REVENUE
50% AUTOMOTIVE

OVER
97
YEARS

OVER
20
COUNTRIES

Japan
World Headquarters

North America

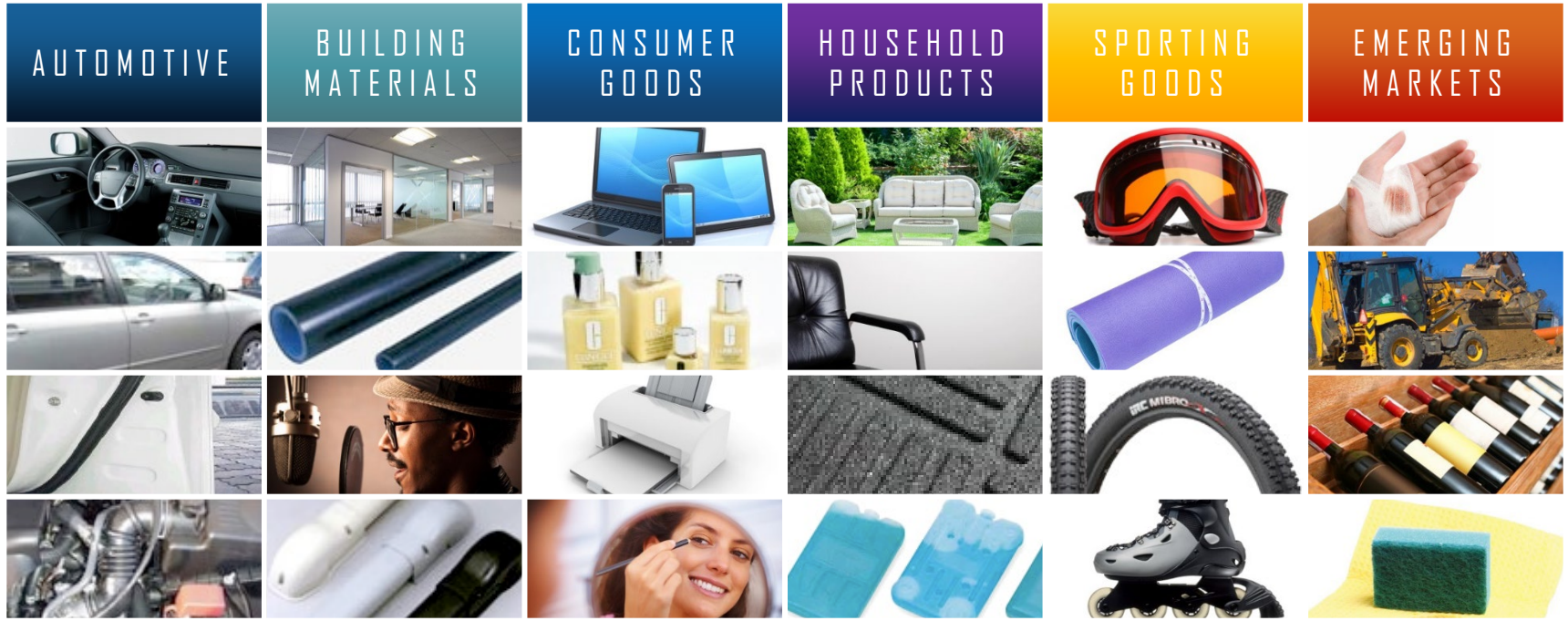
China

Southeast Asia

Who We Are

INOAC's material expertise is focused on four primary materials: Polyurethanes, Plastics, Elastomers, and New/Synthetic Materials

This expertise has led to partnerships with customers across an array of industries.



INOAC North American Locations

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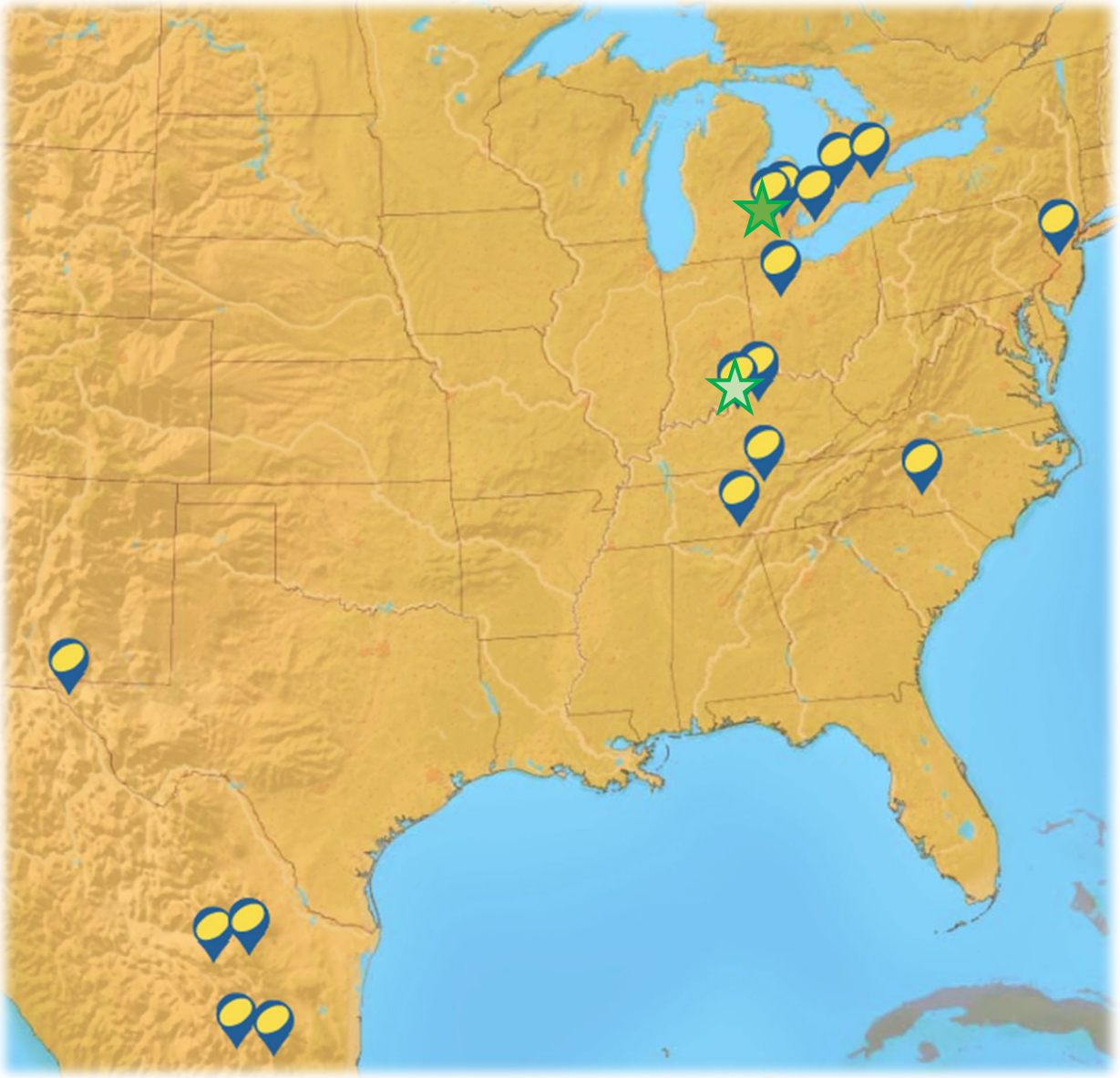

INOAC USA N.A. Headquarters
Troy, MI

Corporate Offices
Farmington Hills, MI
Monterrey, MX

Manufacturing Headquarters
Springfield, KY

Manufacturing Locations
Chattanooga, TN
Moonachie, NJ
St. Marys, ON
Toronto, ON
Fremont, OH
Livingston, TN
Queretaro, MX
Monterrey, MX
Nuevo Leon, MX

INOAC Battery Materials Applications

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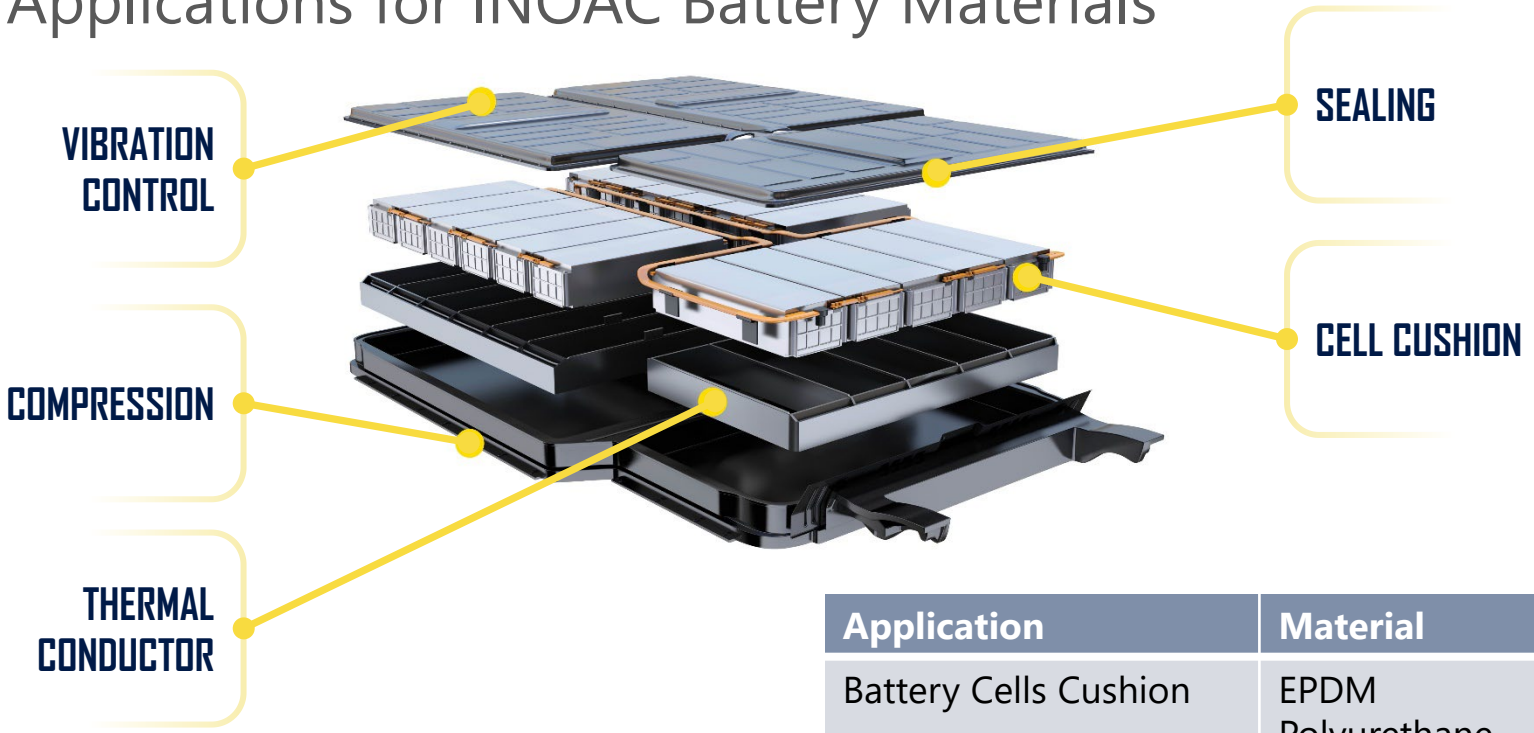
Applications for INOAC Battery Materials



Application	Material	Name	Key Characteristic
Battery Cells Cushion	EPDM Polyurethane	GOMSPOR® PORON®	V-0 level Flame retardant
Compression/Vibration Control	Polyurethane	CellDamper®	Vibration Dampening Flame retardant
Sealing	Silicon foam	NanNex®	Heat/Weather resistance Flame retardant
Thermal conductor	Silicon foam	Transcool®	High heat conduction and heat transfer

Application: Battery Cell Cushion

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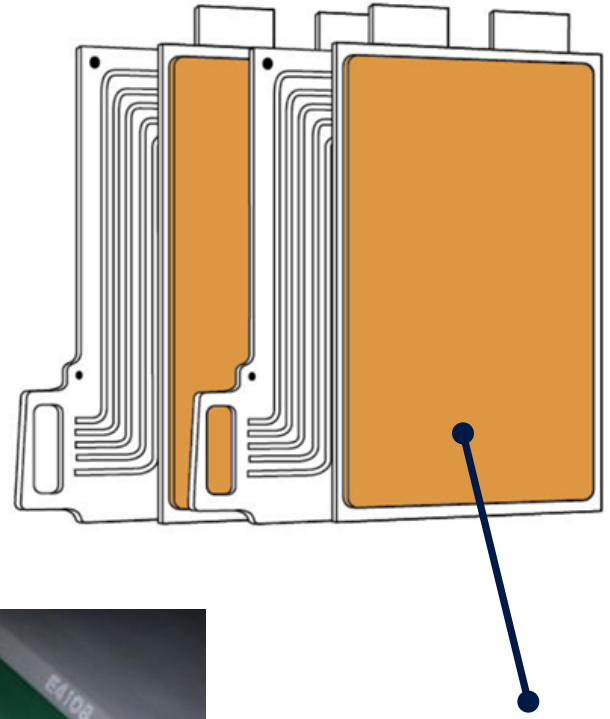
GOMSPOR

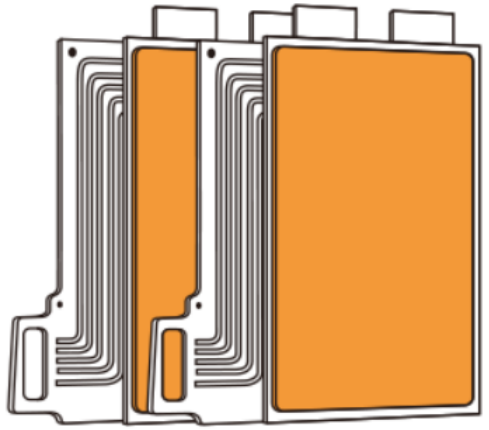
- Grades: E-4348
- Foam Structure: EPDM Rubber Sponge, Closed Cell
- Performance: UL 94 V-0 Approved (grade E-4348)
- Note: Halogen Free

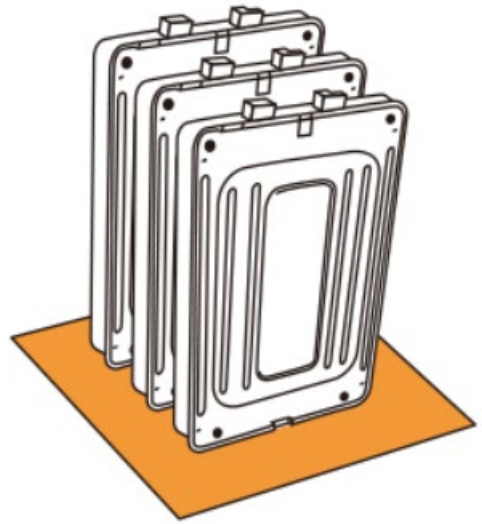


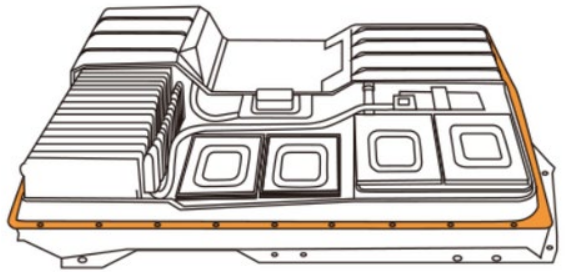
Application: Battery Cell Cushion

PORON

- Grades:
  - Product 48 (under development)
    - Performance in low temperatures
  - RX-32 V-0
    - Obtained UL94：UL-specified plastic combustion test standards
    - Non-halogen grade
  - TR-20/24/32
    - Can also be used as support/base material, sealing
    - The low strain characteristics of TR at room temperature are the most stable of all series.
- Material: Polyurethane (difficult to hydrolyze because it is ether type), Special semi-open cell, fine uniform cell structure
- Performance: Low distortion characteristics have been achieved even at high temperatures (around ~ 110 ° C).
- The physical stability allows for excellent long-term use.



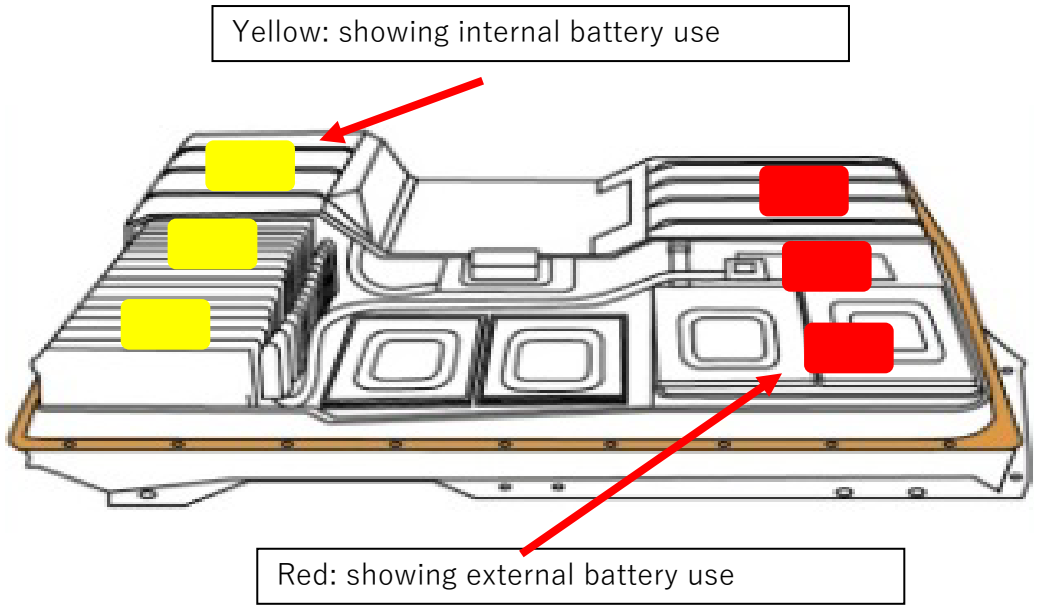


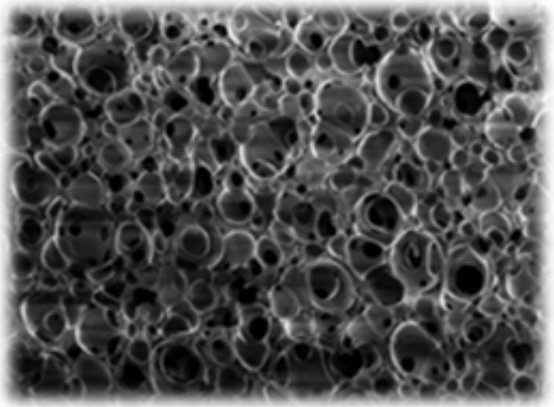


Application: Compression and Vibration Control

CELLDAMPER

- Grades: BF-150/BF-300/BF-500/BF-700
- Material: Polyurethane foam elastomer
- Performance: Vibration control, flame-retardant, and very low compression set.
- Note: Material can be used in a wide range of fields due to its excellent properties not available with conventional
foamed products.

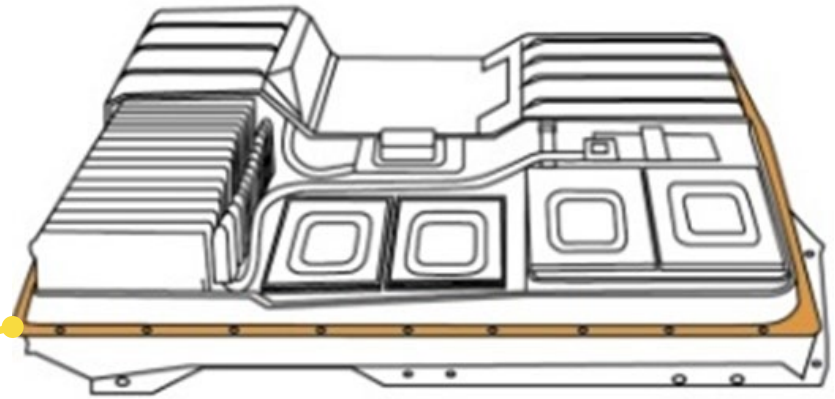




Application: Sealing

NANNEX

- Grades:
  - TL-6302 - High Heat Resistance (under development)
    - Can also be used as cushion between battery cells
  - TL-4400/TL-4700/TL-3503
- Material: Silicone Foam Sheet - Special Semi-Closed Cell
- Performance: Heat resistance, weather resistance, flame retardancy, low compression residual strain

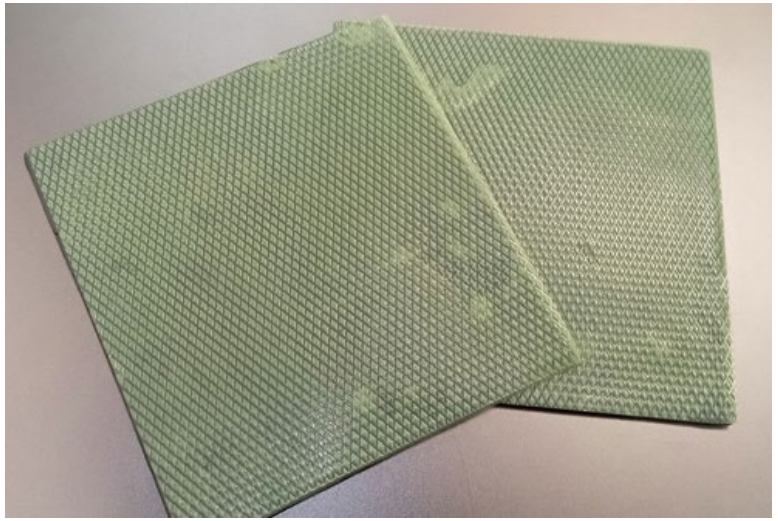


SEALING GASKET
FOR BATTERY CASE

Application: Thermal Conductor

TRANSCOOL

- Material: Silicon solid rubber
- Performance: It has both high heat conduction and softness in order to transfer heat efficiently at the interface.
- Function: Heat transfer at the interface of the product
- Note: Generally called a heat dissipation sheet (TIM)



Thank You

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