

# Mat Mount and Insulation Solutions for BS6

Dr Gopakumar Parameswaran- R&D

Mr Prasad Soman Marketing Manager – Marketing Manager

# Our Vision

3M Technology Advancing Every Company

3M Products Enhancing Every Home

3M Innovation Improving Every Life



# 3M corporation

## Since 1902

- Global Sales : \$ 30.3 Billion
- Subsidiaries in 70 countries
- Sales in nearly 200 countries
- 89,000+ employees
- International sales : \$18.2 Billion  
(60% of company total)
- Net income: \$4.8 Billion
- R&D investment: \$1.8 Billion
- 60,000+ products



# 3M Automotive Locations

## North America

- 3M Canada
- 3M Mexico
- 3M United States

## South America

- 3M Argentina S.A.C.I.F.I.A.
- 3M DO Brazil Ltda.
- 3M Venezuela

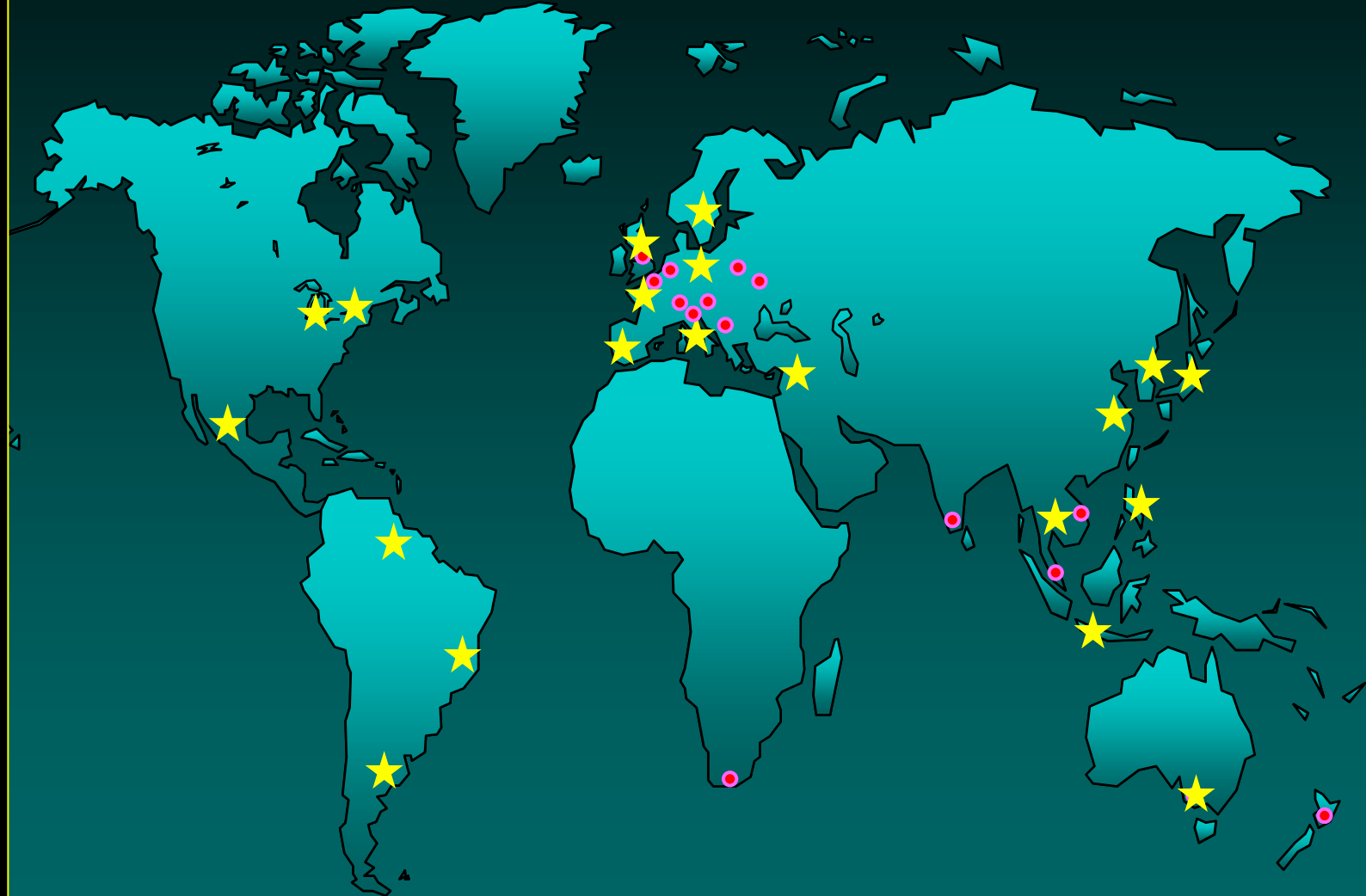
## Europe/MEA

- 3M Belgium N.V./S.A.
- 3M Czech Republic
- 3M France
- 3M Deutschland GMBH
- 3M Hungary
- 3M Italy SPA
- 3M Netherlands
- 3M Poland
- 3M Russia
- 3M Espana S.A.
- 3M Slovakia
- 3M Svenska AB
- 3M Turkey
- 3M Ukraine
- 3M United Kingdom

## 3M South Africa

## Asia-Pacific

- 3M Australia
- 3M China Ltd.
- 3M India
- 3M Indonesia
- Sumitomo/3M
- 3M Korea Ltd.
- 3M Malaysia Sdn. Berhad
- 3M New Zealand Ltd.
- 3M Philippines Inc.
- 3M Taiwan Ltd.
- 3M Thailand Ltd.
- 3M Vietnam



AMCs/TMCs



Sales / Support

# 3M in India : 29 Years of Innovation

- Established in 1987
- 29 year old company
- Headquarters in Bengaluru
- Branch offices at Mumbai, Gurgaon, Pune, Kolkata, Hyderabad and Chennai
- Innovation Centers at Bengaluru and Gurgaon
- Manufacturing footprint spread across Bengaluru, Pune and Ahmedabad
- 1600+ employees
- 3M India Limited: 2120 crores sales turnover for 12 months ended March 31<sup>st</sup> 2016



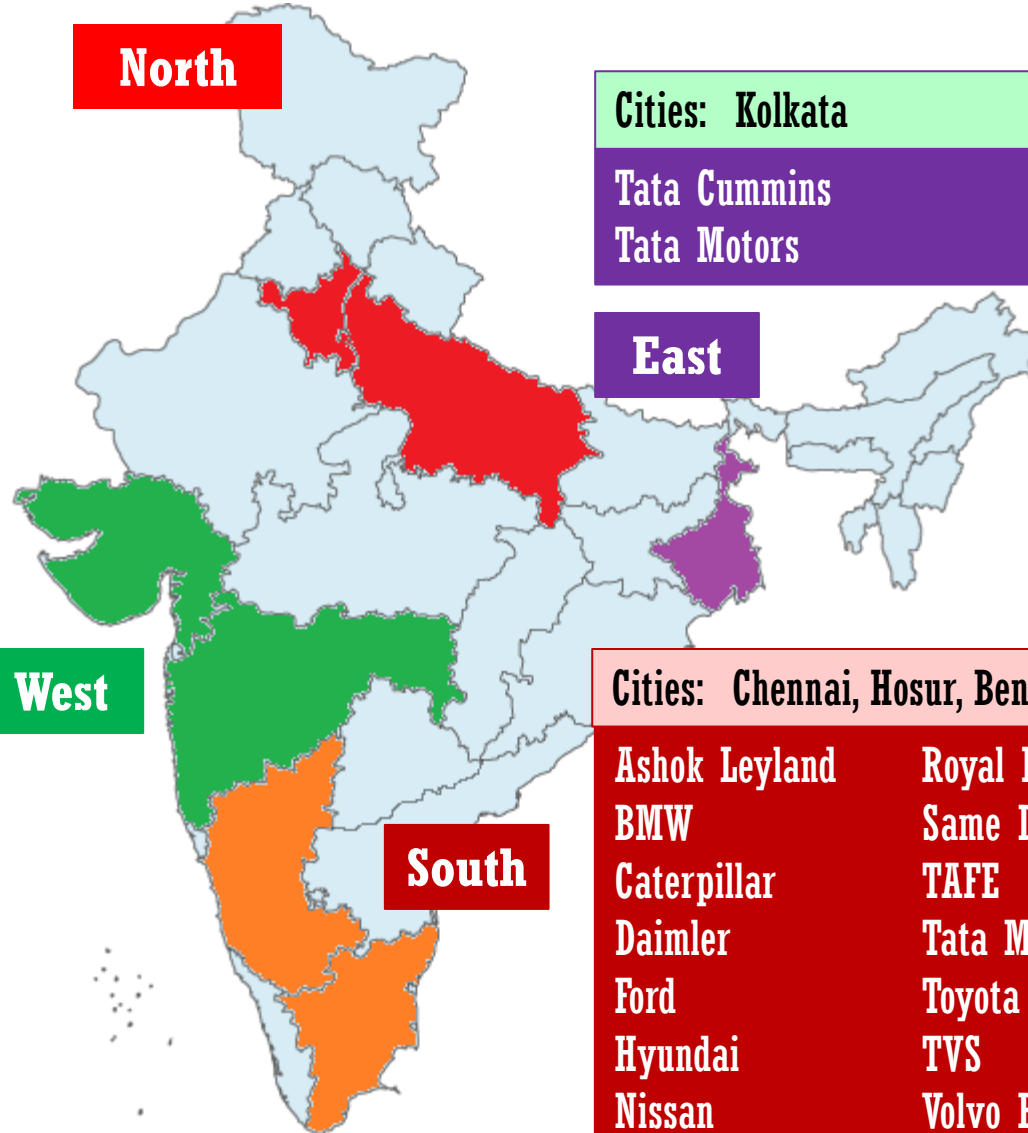
# 3M Customer Base

**Cities:** Delhi, Gurgaon, Noida, Ghaziabad, Ludhiana, Haridwar

Eicher	Mahindra
Escorts	Mazda
Hero Motor	New Holland
Honda Motorcycle	Suzuki
Honda Cars	Motorcycles
ICML	Tata Motors
JCB	Yamaha
Maruti Suzuki	

**Cities:** Baroda, Halol, Sanand, Mumbai, Pune, Nashik, Aurangabad.

Bajaj Auto	Mercedes Benz
Fiat	Skoda
Force Motors	Tata Hitachi
GM	Tata Motors
John Deere	Volkswagen
Mahindra	Volvo Eicher
Suzuki	
Ford	
Honda Motorcycle	



**North**

**Cities:** Kolkata

Tata Cummins  
Tata Motors

**East**

**West**

**Cities:** Chennai, Hosur, Bengaluru

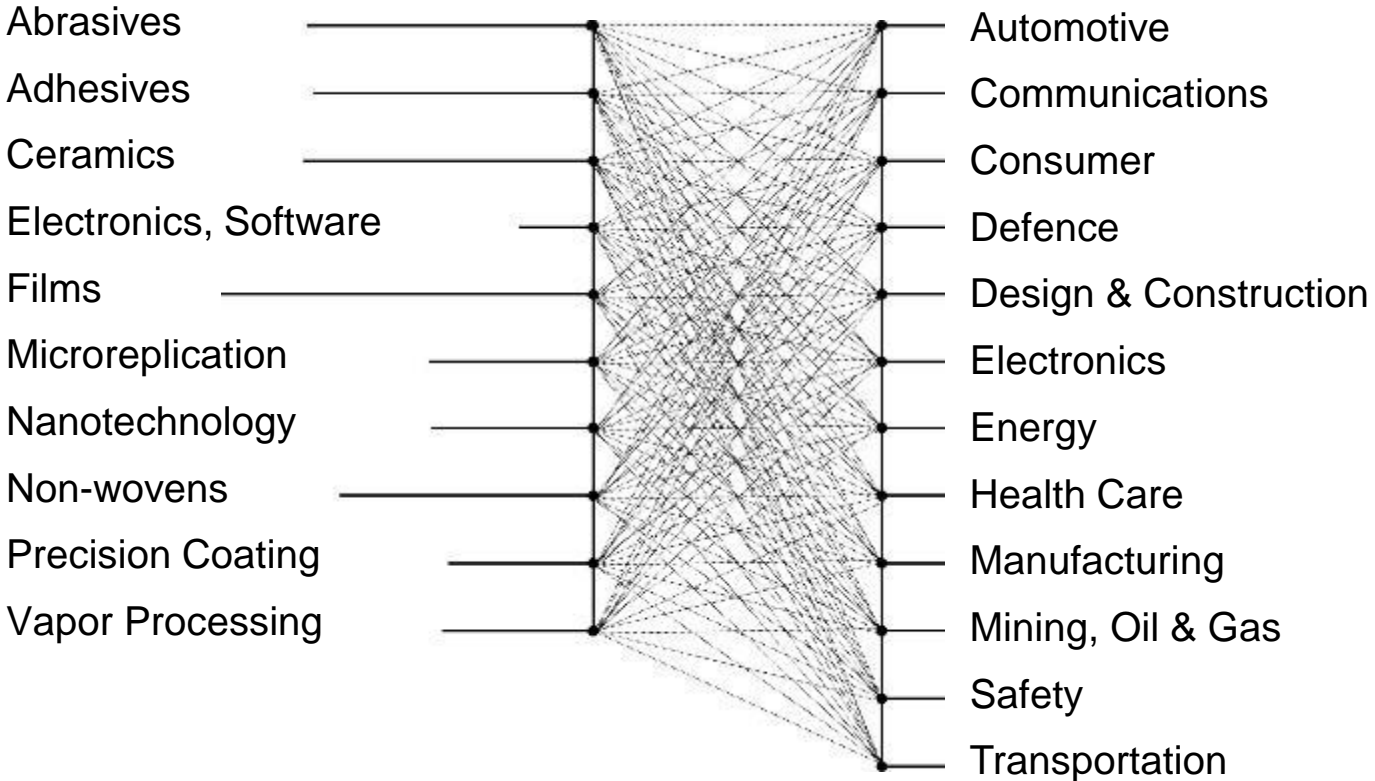
Ashok Leyland	Royal Enfield
BMW	Same Deutz
Caterpillar	TAFE
Daimler	Tata Motors
Ford	Toyota Kirloskar
Hyundai	TVS
Nissan	Volvo Buses
Renault	

# 46 technology platforms leveraged across multiple markets

## Technology Platforms

## Markets

<b>Ab</b> Abrasives										
<b>Ad</b> Adhesives	<b>Fi</b> Films								<b>Md</b> Medical Data Management	
<b>Am</b> Advanced Materials	<b>Fl</b> Fluoro-materials							<b>Ec</b> Energy Components	<b>Mf</b> Mechanical Fasteners	
<b>Ce</b> Ceramics	<b>Nt</b> Nano-technology						<b>Ac</b> Acoustic Control	<b>Fe</b> Flexible Electronics	<b>Mi</b> Microbial Detection and Control	
<b>Co</b> Advanced Composites	<b>Nw</b> Nonwoven Materials	<b>Mo</b> Molding	<b>Pe</b> Predictive Engineering & Modeling	<b>Rp</b> Radiation Processing	<b>An</b> Analytical	<b>Fc</b> Flexible Converting & Packaging	<b>Pr</b> Process Design & Control	<b>Bi</b> Biotech	<b>Fs</b> Filtration, Separation, Purification	<b>Op</b> Opto-electronics
<b>Do</b> Dental & Orthodontic Materials	<b>Po</b> Porous Materials & Membranes	<b>Mr</b> Micro-replication	<b>Pm</b> Polymer Processing	<b>Su</b> Surface Modification	<b>As</b> Application Software	<b>In</b> Inspection & Measurement	<b>Se</b> Sensors	<b>Dd</b> Drug Delivery	<b>Im</b> Imaging	<b>Tt</b> Track and Trace
<b>Em</b> Electronic Materials	<b>Sm</b> Specialty Materials	<b>Pd</b> Particle & Dispersion Processing	<b>Pp</b> Precision Processing	<b>Vp</b> Vapor Processing	<b>Es</b> Electronics & Software	<b>Is</b> Integrated Systems & Design	<b>We</b> Accelerated Weathering	<b>Di</b> Display	<b>Lm</b> Light Management	<b>Wo</b> Wound Management
<b>Materials</b>	<b>Processing</b>				<b>Capabilities</b>			<b>Applications</b>		



# Emissions Lab - Local Application support

- Application test capability will be set up in Bangalore by Q2 2019, real time support from 4 Global Labs at China, US, Japan and Germany
- Local set up includes – Real Condition Fixture Testing, Peak and Relaxed compression testing , High cyclic compression test for mat durability , Loss on Ignition , Thermo-mechanical Analysis, Scanning Electron Microscopy , DSC and TGA .
- Simulation for Mat behavior during actual thermal conditions
- Gap change Analysis
- Global Presence and Global expertise
- Local Mat conversion facility in Bangalore
- Insulation prediction and 3D part / Shape development
- Quick proto sample support for all mat shapes and sizes
- VA - VE due to wide Range of Mat mount systems



## Product Features and Applications- 3M™ Interam™ 800/800c

- Description** High performance, low binder intumescent mat mount with improved low temperature substrate retention for use in a wide range of applications
- Features**
- Good retention performance at low & high temperatures without requiring heat-treatment (Temp Range from Ambient to 950°C)
  - Low organic content
  - Good retention performance over broader mount density range
  - Excellent erosion resistance for long-term durability
  - Designed to be a cost-effective alternative to non-intumescent mats
- Applications**
- Diesel - Light duty through heavy-duty (DPF, SCR & DOC, including large diameter substrates with axial seal devices)
  - Gasoline underbody applications

# 3M™ Interam™ Mat Mount 1850HT Product Information

## Description:

3M™ Interam™ Mat Mount 1850HT is a non-intumescent mat that incorporates multiple fiber technologies to deliver optimized performance and value. Interam Mat Mount 1850HT is a cost-effective non-intumescent mat that can be used in a wide range of gap designs, temperature conditions and applications.

## Features:

- ✓ Wide range of operating temperatures (ambient to 1050°C)
- ✓ Single layer mat solution for small to large gap designs
- ✓ Good erosion resistance
- ✓ Moderate peak compression force
- ✓ High coefficient of friction
- ✓ Low organic binder content
- ✓ Improved canning performance

## Applications:

- ✓ Standard, thin and ultra-thin wall monoliths
- ✓ Underbody, close coupled or manifold mounted converters
- ✓ Gasoline and diesel application including light-duty and heavy-duty



3M Automotive

## Features

- Specifically developed for Heavy Duty and none-road applications
- None-classified product – meets most stringent regulatory requirements

*Fibers used:*

- *AES (alkaline earth silicates) fibers – half life <40 days*
- *Fibers with controlled diameter ( $10 \pm 1 \mu\text{m}$ )*
- *Minimum vermiculite content, just enough to compensate large gap openings*
- *Max. 3% binder content*
- *No classical binder (latex)*

# 3M™ Interam™ Mat Mount 1600 HTE Product Information

3M™ Interam®  
Proven Solutions.

Interam® 1600HTE

## Product Information



**Description:**

- Non-intumescent mat
- Low peak holding force
- High resilient mat

**Features:**

- Excellent erosion resistance
- Wide operating temperature range (cold to >950°C)
- Low thermal conductivity

**Applications:**

- Ultra-thin wall monoliths
- Close coupled or manifold mounted converters
- Diesel applications

# Hi Friction Mats - 3M™ Interam™ Mat Mount 1700HF Product Information

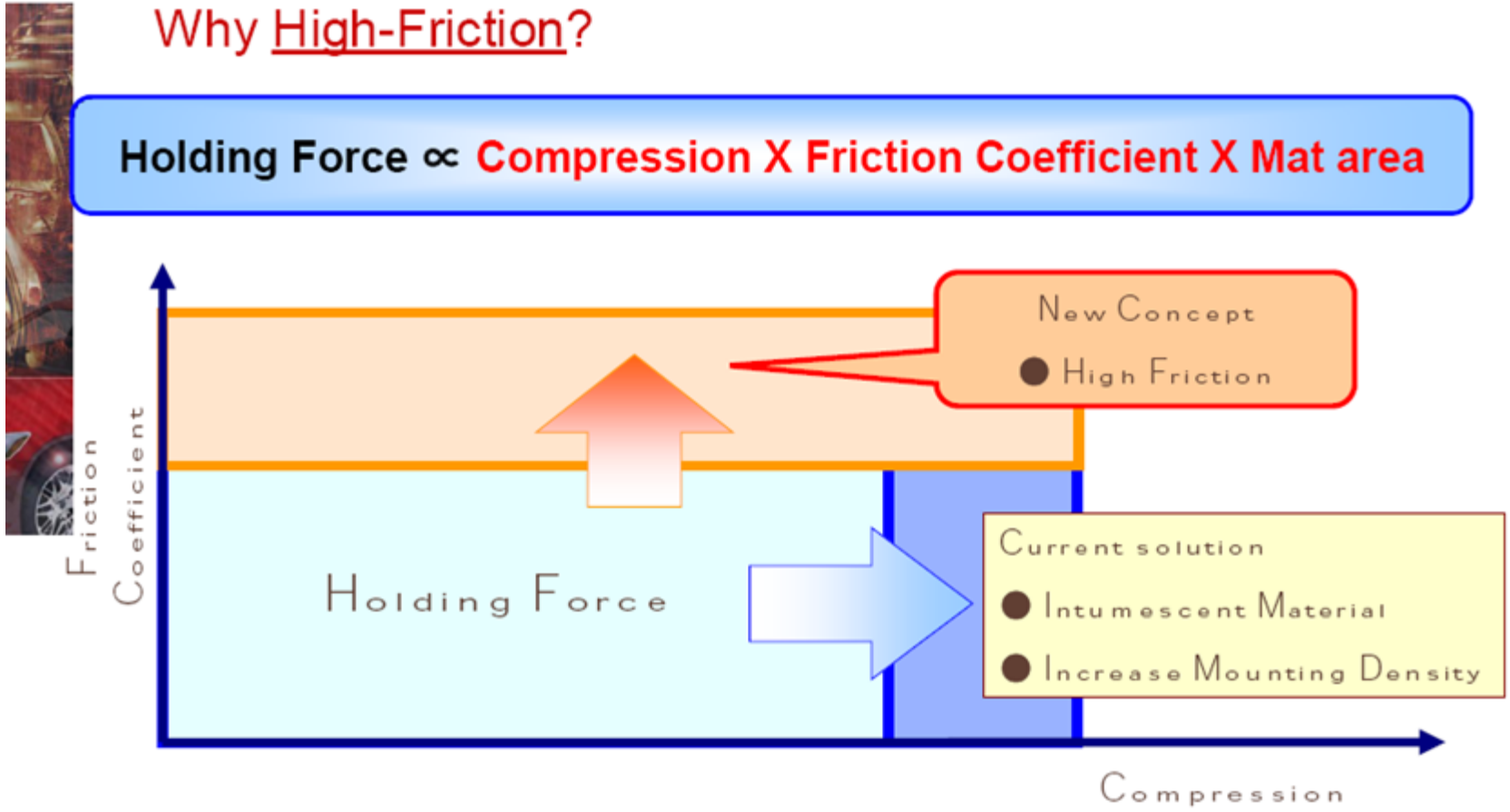
3M Industrial & Transportation Business

Interam™ Brand Products

## Concept of High Friction Mat

### Why High-Friction?

**Holding Force  $\propto$  Compression X Friction Coefficient X Mat area**



# Non Classified High performing Insulation

## Interam™ Thermal Insulation 1250NC

### Product Characteristics

Product designed for external thermal insulation use within diesel after treatment systems such as catalytic converter components (DOC, DPF, SCR, etc.), as well as on general exhaust tubing

- Non-Classified fibers
- Uniform composition
- Good durability; minimal fiber degradation up to 700°C\*
- Very low shrinkage up to 700°C\*
- Easily compressed, allowing it to fit a wide range of gaps and aiding the assembly process
- Fiber containment feature integrated in material formulation (developed to minimize fiber shedding during assembly) – Containment of all surfaces, including edges



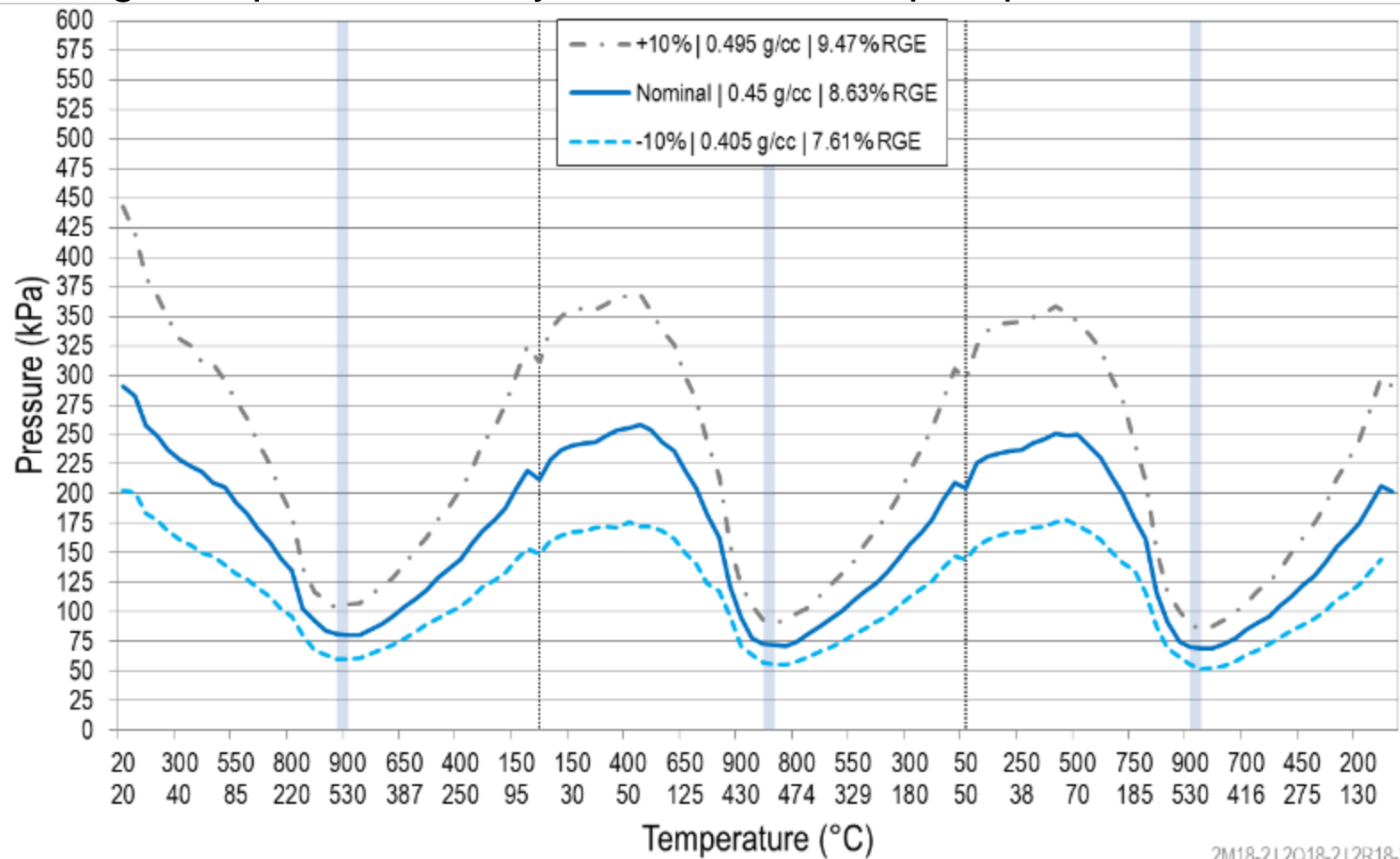
\* 700°C maximum test temperature due to test fixture limitations, higher temperatures to be evaluated per application design

# Real Condition Fixture Test - 900°C / 530°C - Pressure Curves

3M™ Interam™ Mat Mount 1850HT

Basis Weight: 1800 g/m<sup>2</sup> | Substrate: Cordierite | Shell: 409SS | Substrate Outer Diameter: 5in

Gap Cycled from Target Gap Bulk Density to a Relative Gap Expansion Value

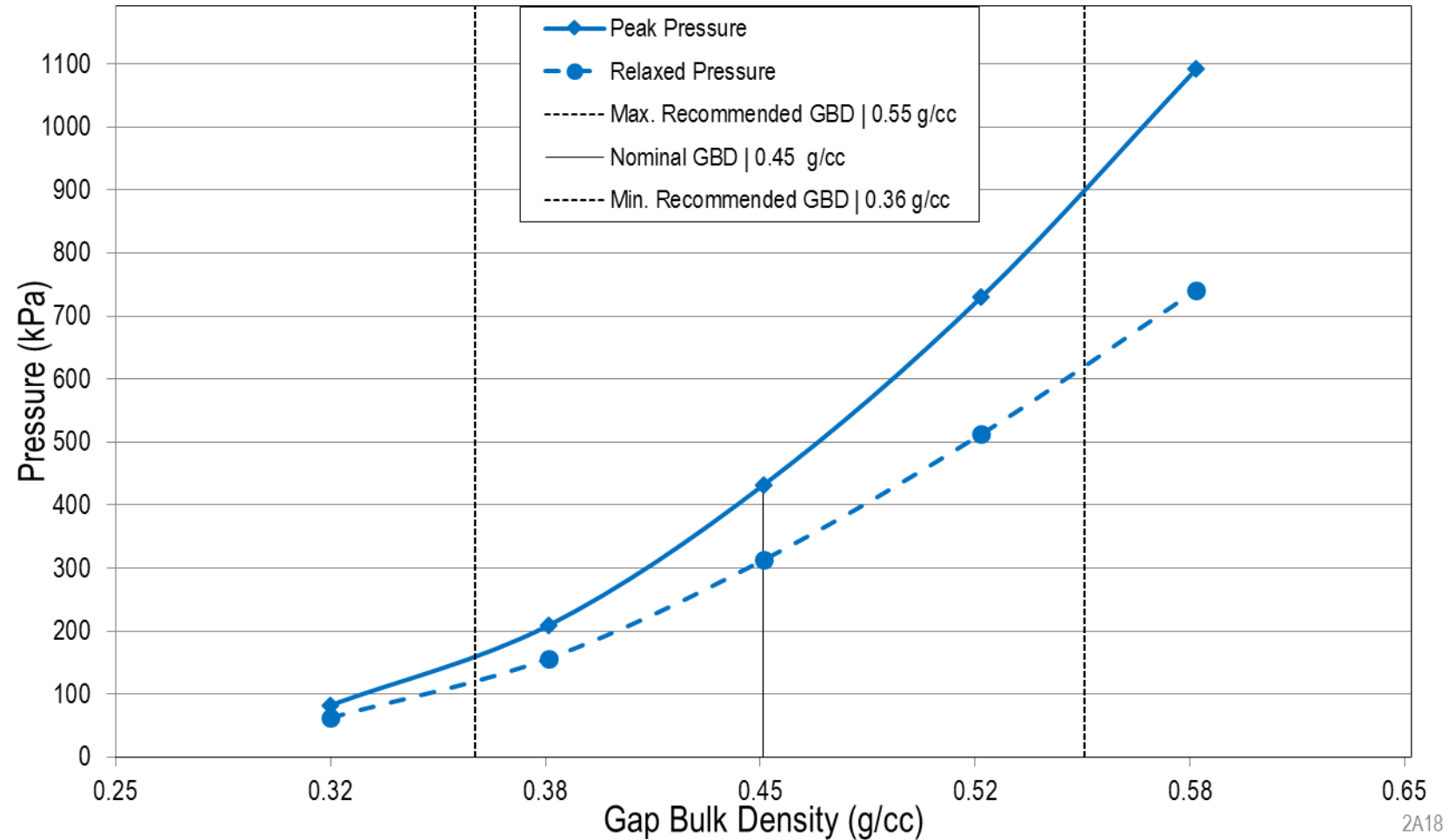


2M18-2|2Q18-2|2R18-2

# Peak & Relaxed Compression - Pressure Curves

3M™ Interam™ Mat Mount 1850HT – valid for all basis weights

Compression Rate: 1in/min | Dwell: 45sec





# Summary

- Local manufacturing capability
- Local lab support & application support
- Local simulation of mat mounts aiding system performance
- Helping Cannery and OEMs save time and money before performing hot vibro shaker tests
- Dedicated sales , technical and quality support teams
- 50+ years Global experience in Mat mount application