

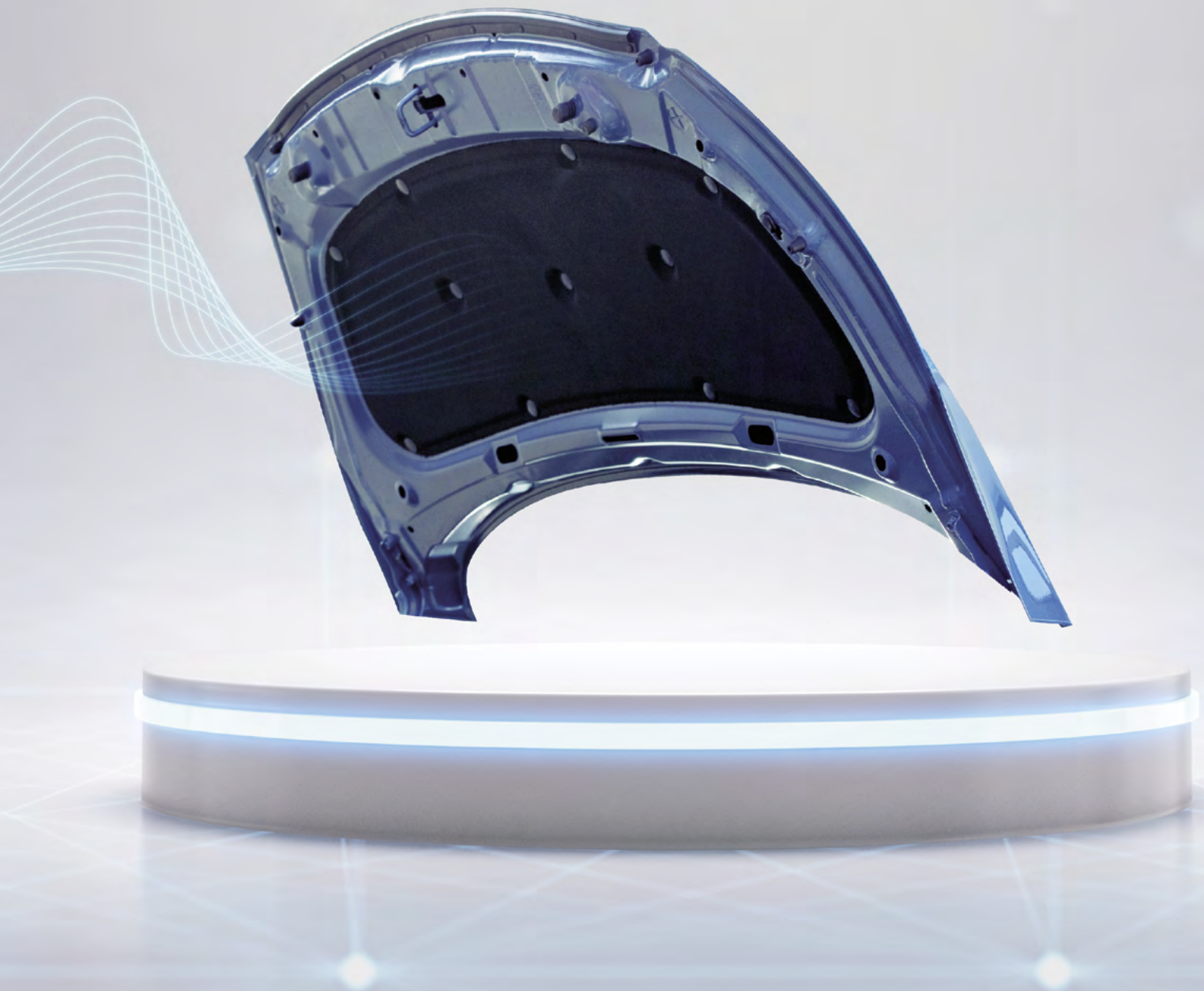
HUNTSMAN

Enriching lives through innovation

Polyurethanes

ACOUSTIFLEX[®] solutions

Peaceful mobility with innovative chemistry



The comfort of silence

Silence is something you don't always notice – until it is disrupted. ACOUSTIFLEX® MDI-based polyurethane systems are innovative solutions developed to deliver improved automotive acoustic performance, creating peaceful in-vehicle experiences that get noticed.

Why ACOUSTIFLEX® polyurethane systems?



Quieter

Dampen noise and vibration with cost-effective polyurethane technology.



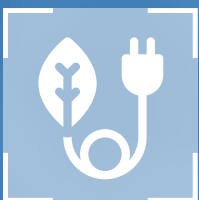
Lighter

Gain advanced acoustic absorption and insulation with less bulk and weight.



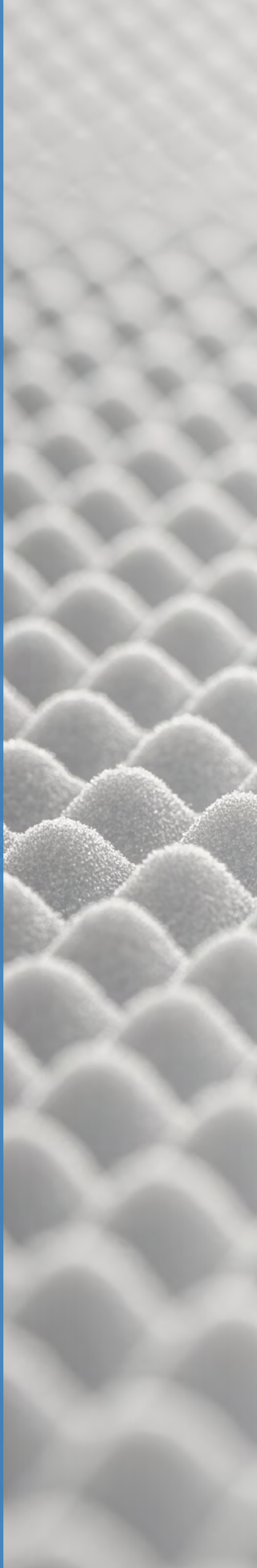
Faster

Speed up cycle times and gain flexibility in your production processes.



Circular and cleaner

Enable manufacturers to maintain technical performance while considering bio-based or recycled material content and improve user experience with low emission MDI technology.



Versatile solutions developed for automotive acoustics

The range of ACOUSTIFLEX® polyurethane solutions includes fully formulated systems to help you achieve differentiated foam properties in automotive noise, vibration and harshness (NVH) applications. The versatility of the ACOUSTIFLEX® polyurethane systems allows you to meet a wide range of performance specifications, while reducing your inventory and maximising your acoustic components offering.

Targeted application areas:

- Wheelhouse and transmission tunnel insulators
- Carpets
- Carpet underlays
- Inner dash and stuffer pads
- Bonnet/hood liners
- Headliners
- Engine and e-motor encapsulations
- Engine top covers



Introducing the next generation of ACOUSTIFLEX® polyurethane systems

Building on our 40 years of experience providing solutions for automotive acoustics, we have added a new generation of advanced acoustic performance with three technologies: **ACOUSTIFLEX® HR FD** system, **ACOUSTIFLEX® HT** system and **ACOUSTIFLEX® S NBR** system.

INSULATION

1 **ACOUSTIFLEX® VEF**
polyurethane system developed for Visco-Elastic Foam (VEF) for carpet back-foaming

- Advanced comfort Visco-Elastic Foam (VEF)
- Very good vibration damping
- Optimised shot weight and fast cycle time
- Available in low emission and odour version: ACOUSTIFLEX® VEF LE (Low Emission) polyurethane system

2 **ACOUSTIFLEX® HR**
polyurethane system developed for High Resilience (HR) foam for sound insulation components

- High Resilience (HR) response
- Can be used for all types of sound insulation applications
- Able to meet major OEM specifications
- Available in low emission and odour version: ACOUSTIFLEX® HR LE (Low Emission) polyurethane system

3 **ACOUSTIFLEX® HR BIO**
polyurethane system with bio-content developed for sound insulation components

- Can be used for High Resilience (HR) foam with bio-content, without compromising on acoustic and mechanical properties
- Low VOC emissions and odour
- For closed-pour and open-pour applications

NEW
4 **ACOUSTIFLEX® HR FD**
polyurethane system developed for sound insulation components

- Can be used for advanced High Resilience (HR) foam
- Maintains very good acoustic properties
- 20% Faster Demould (FD) time compared to incumbent HR technologies
- Enables faster production cycles



ABSORPTION

6

ACOUSTIFLEX® S

polyurethane system developed for engine bay applications

- Can be used for thermoformable semi-rigid foam
- Durable through the entire vehicle life cycle
- Enables easier OEM installation

7

NEW

ACOUSTIFLEX® S NBR ACOUSTIFLEX® S SE

polyurethane system developed for lightweight absorbers of engine compartments

- Can be used for thermoformable semi-rigid foam and batch block foam for lightweight applications
- Offers great flexibility in manufacturing
- Available in Non-Burning Rate (NBR) and Self-Extinguishing (SE) versions

8

ACOUSTIFLEX® R

polyurethane system developed for Rigid (R) foam for acoustic headliners

- Can produce rigid, acoustically active foam
- Lightweight
- Reduces inventory and process steps

MASS LAYER

9

ACOUSTIFLEX® E

elastomeric polyurethane system developed for RIM heavy layer

- Microcellular Elastomer (E) technology
- Provides design freedom for complex 3-D shapes
- Enables minimal material wastage

10

ACOUSTIFLEX® E S

elastomeric polyurethane system developed for spray heavy layer

- Microcellular Elastomer (E) technology for Sprayed (S) damping applications
- Enables improved low frequency behaviour
- Offers versatility for optimal production efficiency

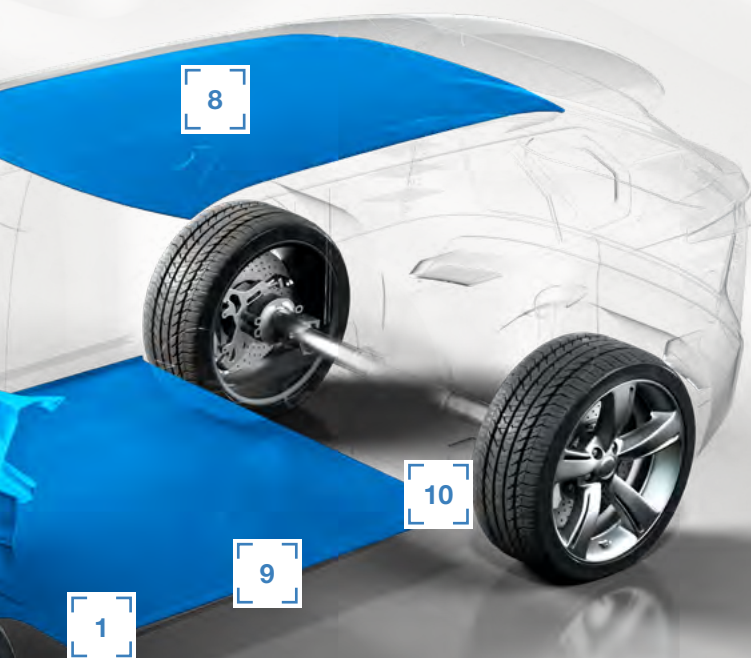
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NEW

ACOUSTIFLEX® HT

polyurethane system developed for engine encapsulation and beauty covers

- High heat resistance (7 days at 180°C)
- Non-burning
- Appealing visual aspect
- Low modulus foam with bio-content



A lighter, quieter and cleaner future

MDI-based acoustic foam solutions deliver very good performance in automotive acoustics and noise, vibration and harshness (NVH) applications.

Our polyurethane-based products provide a distinct combination of traits when it comes to transmission loss and acoustic absorption. Specifically, they enable the production of automotive components that are typically lightweight; offer good thermal performance; have low emission levels; and can be formulated to meet fire and acoustic requirements – depending on customer needs and Original Equipment Manufacturer (OEM) specifications.

Why MDI?

- Lightweight
- Advanced acoustic performance
- Tunable physical properties
- Low emission and odour
- Flexible manufacturing process

5x

less weight than fibres

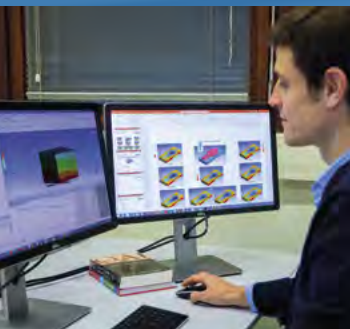
Design success into your products

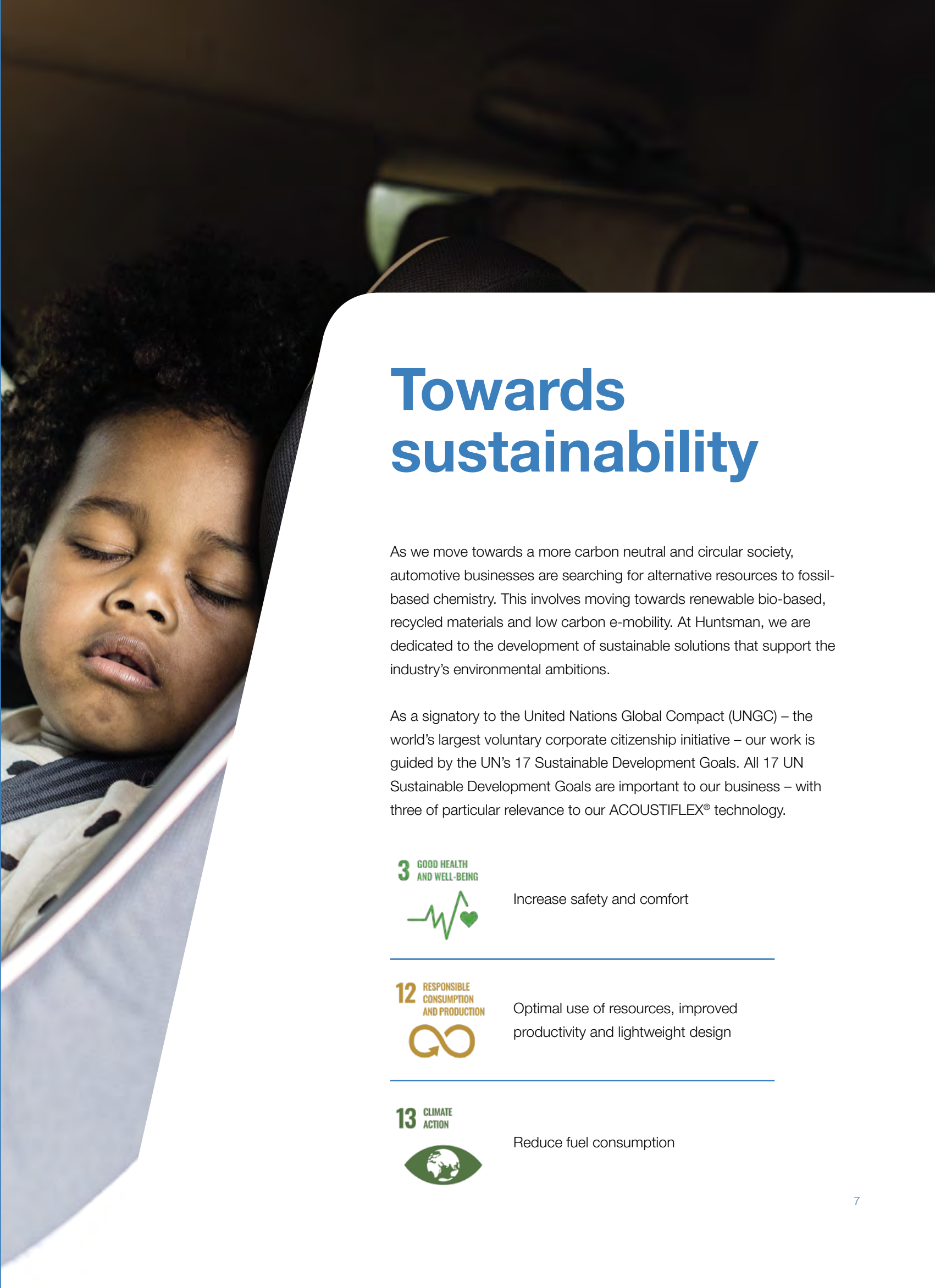
Huntsman Polyurethanes offers state-of-the-art acoustic measurement and modelling capabilities to support your product development. Our in-house acoustic Research and Technology (R&T) teams offer a personal approach to help you develop new solutions that meet your customers' needs and exceed drivers' and passengers' expectations for comfort in full compliance with Automotive ISO and TS standard.

How can we help?

- Design and prototype lighter, acoustically-enhanced and durable components
- Speed up development and manufacturing start-up with our experts
- Reduce Total Cost of Ownership from idea to mass production
- Increase environmental benefits
- Meet automotive regulatory standards

For more information: www.huntsman.com/polyurethanes
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Towards sustainability

As we move towards a more carbon neutral and circular society, automotive businesses are searching for alternative resources to fossil-based chemistry. This involves moving towards renewable bio-based, recycled materials and low carbon e-mobility. At Huntsman, we are dedicated to the development of sustainable solutions that support the industry's environmental ambitions.

As a signatory to the United Nations Global Compact (UNGC) – the world's largest voluntary corporate citizenship initiative – our work is guided by the UN's 17 Sustainable Development Goals. All 17 UN Sustainable Development Goals are important to our business – with three of particular relevance to our ACOUSTIFLEX® technology.

3 GOOD HEALTH AND WELL-BEING



Increase safety and comfort

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Optimal use of resources, improved productivity and lightweight design

13 CLIMATE ACTION



Reduce fuel consumption

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Hazards, toxicity and behavior of the products may differ when used with other materials and are dependent on the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users.

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