INNOVATIVE BY DESIGN.

REMARKABLE FACTS ABOUT POLYSTYRENE.

A lightweight, durable, hygienic and affordable material that's made for recycling. We're closing the loop on the unknown, and sharing these noteworthy facts about the remarkably versatile plastic, polystyrene.

INEOS STYROLUTION

Driving Success. Together.

1 POLYSTYRENE **IS RECYCLABLE.**

This truly amazing material is one of the most recyclable plastics. It can be recycled through both conventional and advanced recycling processes. Its unique make-up allows for it to be recycled back to its original building block material, styrene-monomer and to be repurposed and reused, again, and again.[1]

[1] ***See:*** *INEOS Styrolution: Breakthrough in chemical recycling of polystyrene. See http://www.ineos-styrolution.com/news/ineos-styrolution-breakthrough-in-chemical-recycling-of-polystyrene*

2 POLYSTYRENE IS A VALUABLE MATERIAL **USED IN MANY INDISPENSABLE APPLICATIONS.**

From life-saving medical applications, energy efficient insulation in construction and appliances, electronics, and foodservice, products made from polystyrene are an essential part of our lives. In fact, we all use polystyrene every single day. You're likely to find its thermal, moisture protection within the lining of your refrigerator. As a popular choice for food packaging, its insulation properties extend the shelf life of food, keeping it fresher and safer, while preventing food waste[2]. Wherever you find electrical devices in your home or office environment, it's very likely you'll find them containing versatile and durable polystyrene, just to name a few.

[2] ***See:*** *Plastics Make it Possible, Plastic Packaging and the war on Food Waste. https://www.plasticsmakeitpossible.com/plastics-at-home/food/prep-storage/plastic-packaging-and-the-war-on-food-waste/*

3 POLYSTYRENE IS **SAFE FOR FOOD CONTACT.**

A highly versatile and hygienic material, polystyrene is an FDA-approved material for foodservices in homes, schools, hospitals, restaurants and stadiums. Polystyrene is made by polymerizing or stringing together styrene-monomer molecules to build polymers (plastic). Styrene occurs naturally in many foods and beverages. For example, cinnamon, strawberries and coffee to name a few. The U.S. Food and Drug Administration (FDA) strictly regulates all food packaging materials, including polystyrene. The FDA has stated that polystyrene is safe for use in contact with food. The European Commission/European Food Safety Authority and other regulatory agencies have reached similar conclusions.[3] Including advanced (chemically) recycled polystyrene.

[3]***See:*** *FDA and EU food contact compliancy; INEOS Styrolution offers respective grades also for healthcare applications. See http://www.ineos-styrolution.com/INTERSHOP/web/WFS/Styrolution-Portal-Site/en_US/-/USD/ViewStandardCatalog-Browse?CategoryName=Standard_package_ind_health_care_diagnostics&CategoryDomainName=Styrolution-STY_Product*

4 RECYCLING TECHNOLOGIES **TAKE THE "SINGLE" OUT OF SINGLE-USE** POLYSTYRENE PRODUCTS.

Polystyrene's molecular structure is made for recycling. During the advanced recycling process, post-consumer polystyrene waste is converted back to its original monomers. Creating a new generation of the same, high quality, polystyrene material as the original. New products made using recycled polystyrene, including food-grade products, have the identical properties as those made using conventional polystyrene.[4] The demand for sustainable products continues to increase and polystyrene is the perfect material solution for achieving sustainability targets and goals that have been set— a truly circular, recycling solution!

[4]***See:*** *INEOS Styrolution collaborates with Unternehmensgruppe Theo Müller to develop chemical recycling solution for polystyrene. See http://www.ineos-styrolution.com/de_DE/news/INEOS-Styrolution-collaborates-with-Unternehmensgruppe-Theo-Mueller-to-develop-chemical-recycling-solution-for-polystyrene*

5 POLYSTYRENE IS **ONE OF THE BEST SORTABLE PLASTICS** IN THE WASTE STREAM.

As a distinct advantage, polystyrene molecular properties hone unique signaling capabilities that allow for easy and extremely precise sorting. This achievement has led to polystyrene purity levels beyond what is required through both conventional and advanced recycling processes. Tests[5] have shown post-consumer polystyrene waste, including polystyrene foam, can be sorted optically for recycling with a purity result of 99.9+%.

[5]***See:*** *Polystyrene proven to be one of the best sortable plastics in the waste stream. See* http://www.ineos-styrolution.com/de_DE/news/polystyrene-proven-to-be-one-of-the-best-sortable-plastics-in-the-waste-stream

6 A POLYSTYRENE FOAM CUP IS **A TRULY CIRCULAR OPTION.**

Polystyrene is used for food and drink storage because they simply make these products better to use. For example, it insulates your morning cup of coffee, keeping it hot and fresh for longer, and without scalding your hands while holding it. If a coffee cup, lid, and stirrer were all made from polystyrene, they could all be thrown into one polystyrene recycling bin. Whereas, for example, if a paper cup is used, you'll need to separate the cup from the lid before recycling, as paper cups consist of multiple mixed materials, including a plastic lining, that make them difficult to be commonly recycled.[6]

[6]***See:*** *Paper or Styrofoam: A review of the Environmental Effects of Disposable Cups. The University of California San Diego. ENVR 192 Prof. Lisa Shaffer.*

7 POLYSTYRENE PACKAGING **CONTAINS A LOWER CARBON FOOTPRINT** THAN MANY ALTERNATIVE SOLUTIONS.

Polystyrene packaging offers a material that requires less energy and water to produce than alternative materials, for example, glass, aluminum, and paper. Additionally, Polystyrene is lighter, therefore, it requires less fuel during shipping.[7] It is also strong and stable enough to allow for the reduction in the amount of material that's needed to produce packaging options. These very important properties make polystyrene a high quality packaging material, with a low carbon footprint.

[7]***See:*** *Life cycle impacts of plastic packaging compared to substitutes in the United States and Canada.*
See https://www.plasticpackagingfacts.org/wp-content/uploads/2018/11/Life-Cycle-Impacts-of-Plastic-Packaging-Compared-to-Substitutes-in-the-United-States-and-Canada.pdf

8 POLYSTYRENE **HELPS THE ENVIRONMENT.**

The notion that polystyrene positively contributes to our societal well-being and environmental sustainability efforts is indeed, accurate[8]. Polystyrene helps to reduce energy consumption (see item 7), reduce food waste (see item 3), and contributes to safe medical practices by providing hygienic healthcare solutions (see item 2). It is also one of the best sortable plastics — it's made for recycling (items 1, 4, 5, and 6). Polystyrene's innovative design combines environmental efficiencies with hygienic benefits yet to be seen by any other invention. Other existing materials cannot replace the benefits and effectiveness of polystyrene. Additionally, alternatives could end up negatively affecting the environment. For example, paper production leads to forest loss and higher energy use for material production and shipping. Practicing responsible litter disposal, and requiring proper waste disposal systems that collect and recycle waste, will ensure that we, and the environment see the unmatched benefits of polystyrene.

[8]***See:*** *Wall Street Journal: Plastic Bags Help the Environment https://www.wsj.com/articles/plastic-bags-help-the-environment-11582048449*

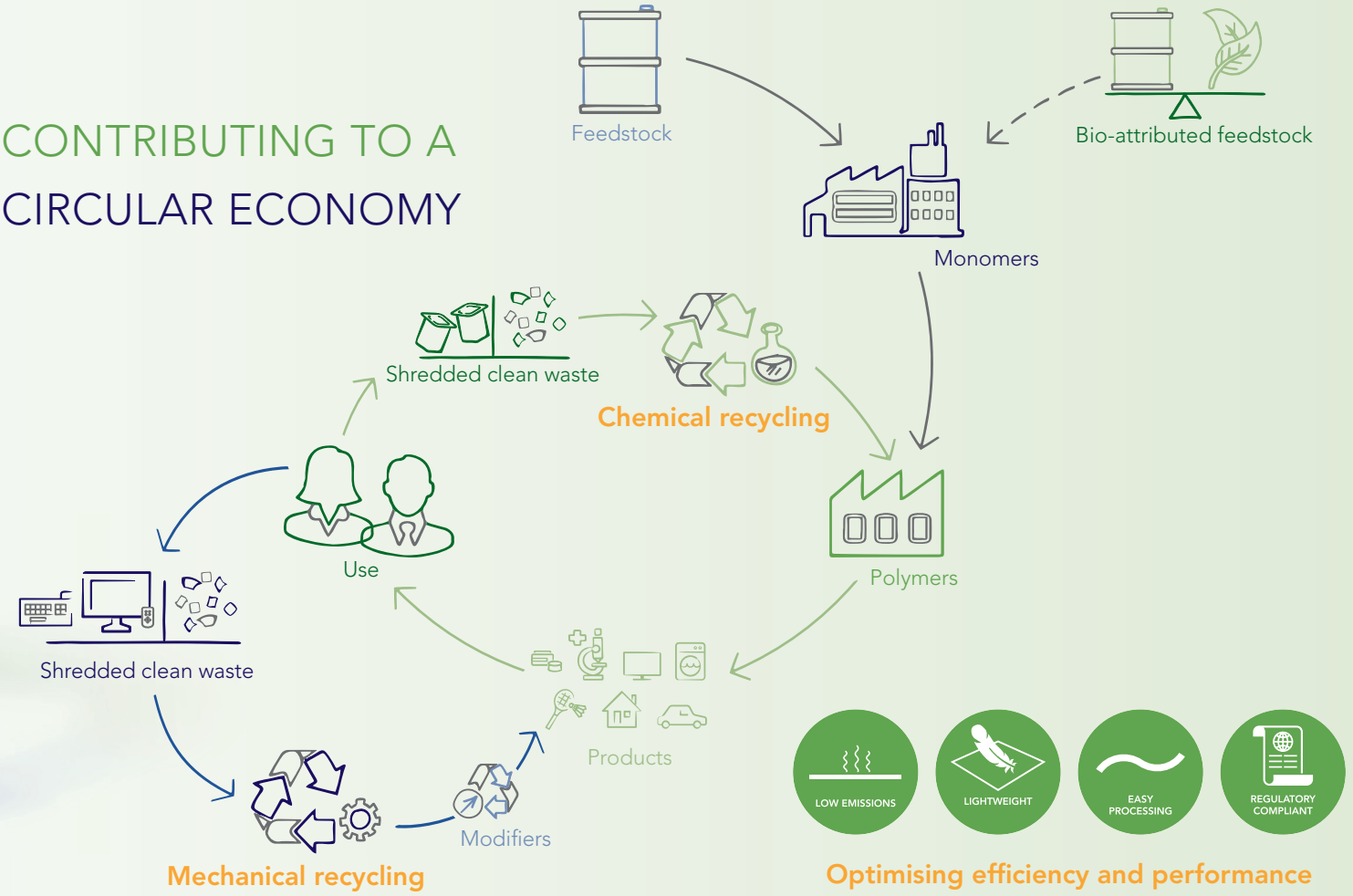
STYRENICS. MADE FOR RECYCLING.

Styrenics are one of the most versatile materials in the 21st century, and have revolutionised the way we live today. Our products have become an indispensable part of consumers' everyday lives and provide solutions to societal challenges such as climate change, resource scarcity, urbanisation, rising living standards and population growth.

The solutions styrenics products offer include extending food shelf life thereby reducing food waste, while also providing lightweight solutions for the automotive industry leading to lower fuel consumption.

This new ECO range not only complements INEOS Styrolution's existing strong portfolio of styrenics standard products and specialties, but also matches the performance of our existing portfolio.

CONTRIBUTING TO A CIRCULAR ECONOMY



INEOS STYROLUTION

ECO

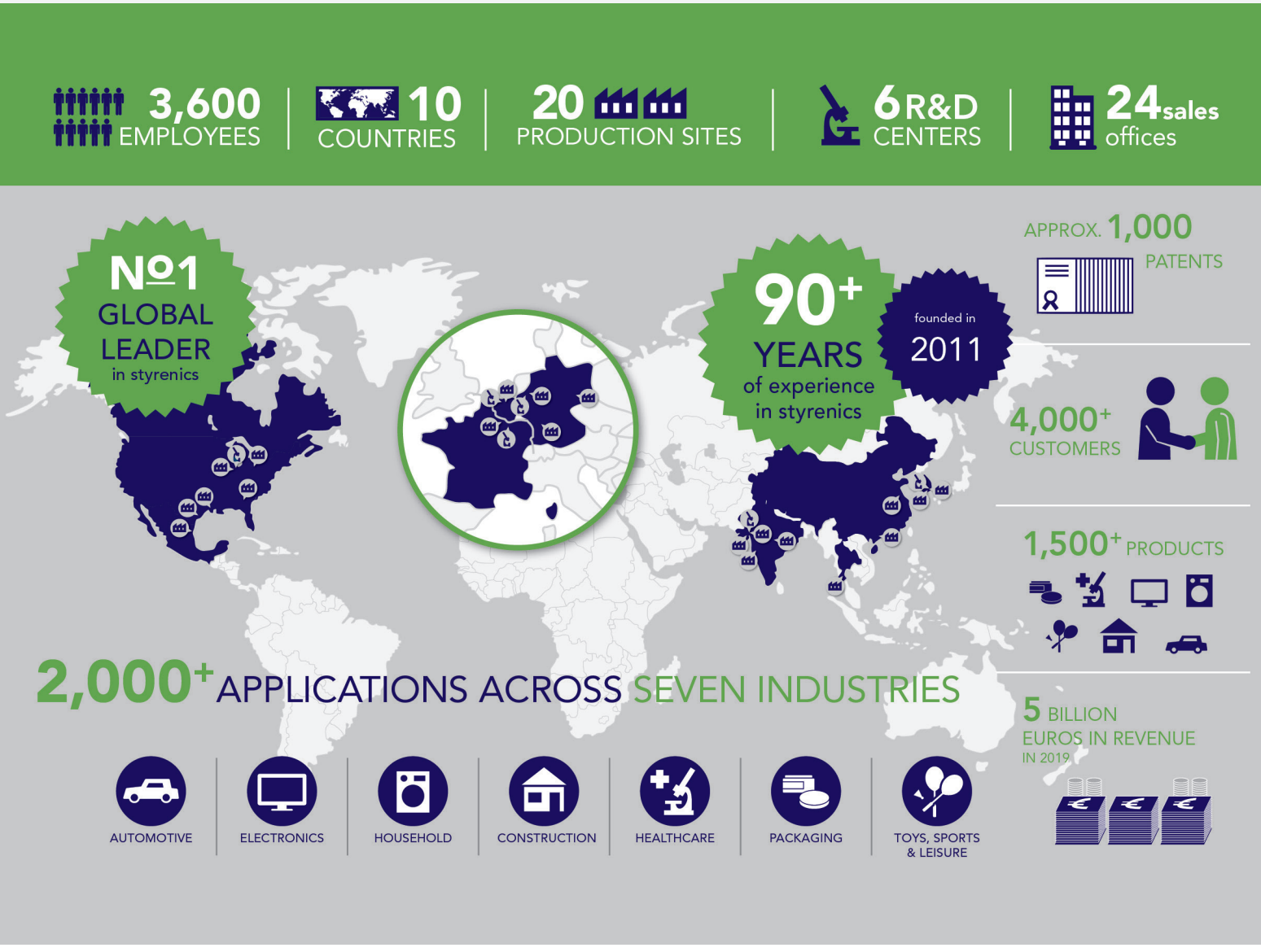
By offering styrenics solutions that deliver strong, sustainable performance, we want to ensure that our customers' businesses and end consumers' choices become more sustainable.

To read more about our ECO family of solutions, please visit: www.styrolution-eco.com.

To read more about our actions and performance on sustainability visit: www.ineos-styrolution.com/sustainability

INEOS STYROLUTION AT A GLANCE

INEOS Styrolution is the global leader in styrenics.The company provides products for many everyday applications across a broad range of industries, including healthcare, automotive, electronics, household, construction, toys/sports/leisure, and healthcare.



INEOS STYROLUTION HAS A LEGACY OF SUCCESSFULLY SERVING THE PACKAGING INDUSTRY FOR OVER 85 YEARS.

LET´S COLLABORATE

If you would like further details, need assistance in creating your applications, or are curious to explore new possibilities with styrenics, please contact us!

www.ineos-styrolution.com/

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