

Close to the customer around the world



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**Our title theme: The sea shell -
A finesse of nature**

Nature displays a vast variety of sophisticated designs, such as, for example, a sea shell. Starting from the outer creases to the folding mechanism up to the smooth mother-of-pearl layer on the inner side - the construction is perfect. Storopack commits to achieve this ideal of the comprehensive perfection in each molded part and thus associates its own claim with motifs from nature.

Welcome to Storopack

This brochure describes the technical molded parts made from expandable foams for various branches of industries and applications. The descriptions are an inspiration for new, individual ideas and concepts. Expandable foams offer a high degree of freedom for designing.



Perfume tray

Storopack has produced technical molded parts for several decades. The corporate group is active worldwide and has production locations in Europe and China.



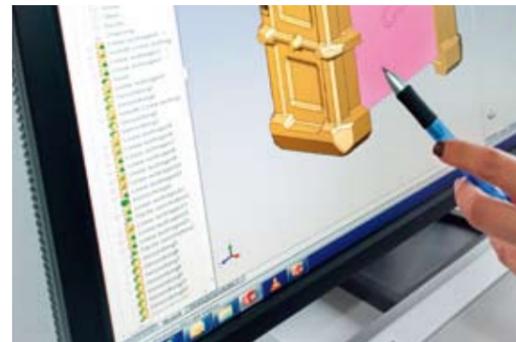
Lost Foam pump cap

Added value through material and design

Technical molded parts made from Expandable Polypropylene (EPP), Expandable Polystyrene (EPS, Styropor®) or Neopor® improve the utility of the products and the production methods still further due to their special material properties. The advantages lie in their light weight and moldability, they are robust, are shock-absorbing and excellent insulators.



CNC prototyping



CAD development

Team of experts for development and prototyping

CAD development, CNC prototyping and the know-how from many years of practical experience - the engineers at Storopack make the technical molded parts based on this. Ideas on achieving further added value for the products of our customers are examined in association with them. The technical facilities include a climate chamber and drop testing equipment and our superior product quality is developed through team work and alongside our contact partner for the customer. The benefits: short reaction times, no waiting periods as a result of outsourcing, and the best conditions for simultaneous development.

Range of Services

Storopack is partner in various processing steps in the value creation chain. Our customers can make use of one, more than one or all areas from the range of services offered by Storopack.

1. Analysis: What are the requirements of the customer? Which materials are suitable? What are the design requirements for the molding? Which environmental influences should one presume?

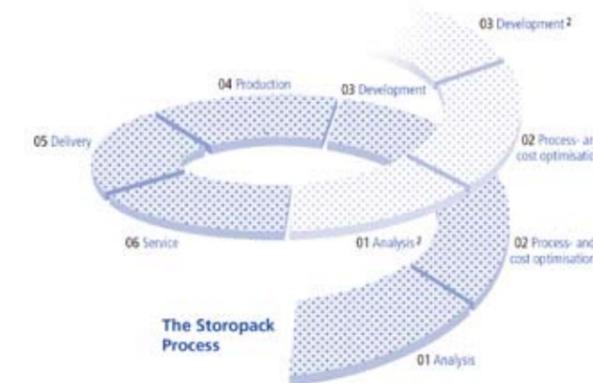
2. Process and cost optimization: Molded parts with optimal geometry and density, adapted according to the technical application and integrated in the workflows of the customer for maximum value creation.

3. Development: The idea takes shape. Storopack offers the complete range of facilities for a successful development: CAD workplaces, prototyping and test laboratory.

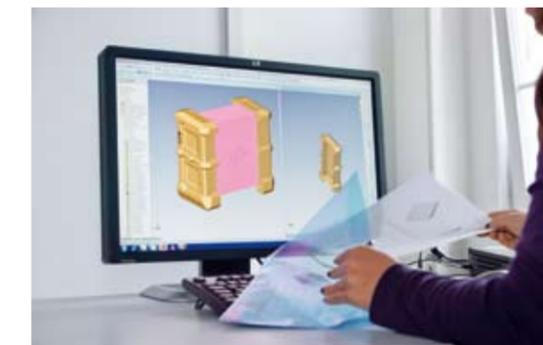
6. Service: Making additional services available. Personal consultation and continuous follow-up. As a partner for new ideas, Storopack accompanies innovations in technology and new developments.

5. Delivery: The place and time is decided by the customer. Storopack ensures delivery with its own fleet of 70 HGVs. Just-in-time and if required several times a day.

4. Production: Making the optimal molded part and additional services. Storopack has locations in Europe and China. Transnational project management.



Climate chamber



CAD development



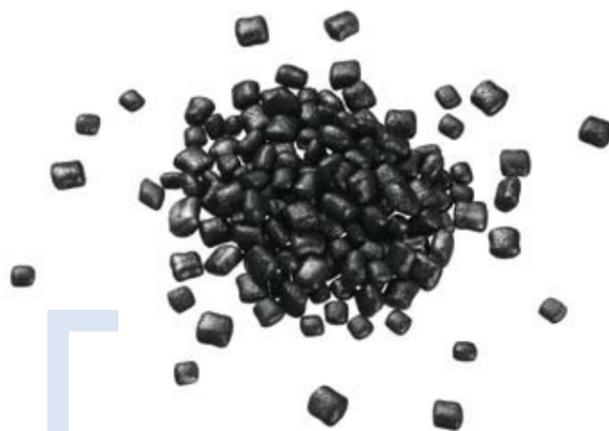
Material Properties of Expandable Foams



Expandable Polystyrene (EPS), also known under the brand name Styropor®, can be used in many ways and is particularly light because it consists of 98 percent of air. EPS absorbs impact energy and is a good insulator against heat and cold.



Neopor® is a variant of Styropor® mixed with graphite. It has the lowest thermal conductivity among all expandable foams. Neopor® is used when one of the main requirements of the molded part is its insulating effect.

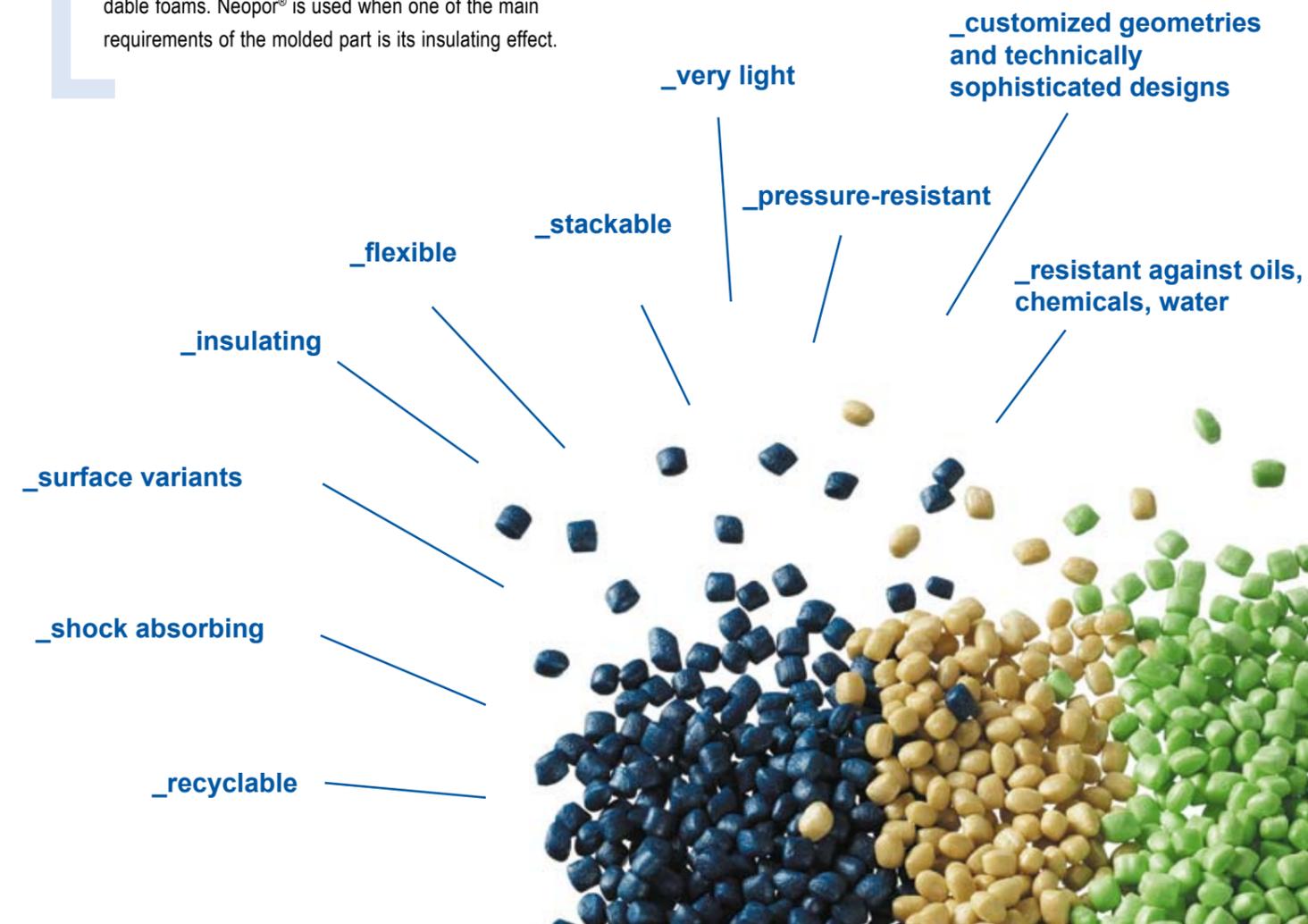


Expandable Polypropylene (EPP) makes the products durable and resistant; it is extremely tough and absorbs the incident energy very well. Molded parts made from EPP contain 95 % air. They are therefore very light and are advantageous on account of the low weight.

Which materials are used?

Storopack processes three synthetics in the form of expandable foams. They have several characteristics in common and on account of their properties they are commendable in many ways as the material for technical molded parts.

These materials can be used with different densities so that the physical properties of the molded parts can be varied according to the volume weight.





Production of molded parts

Production and Project Management

The aluminum tool is constructed with the highest precision so that accurately fitting molded parts can be produced in molding machines for use as automobile fittings, Lost Foam models, insulations or design elements.



Filler in aluminum tool

International production locations

Storopack's production facilities are located in Europe and China. In the project teams, extensive knowledge about the local conditions, national regulations and knowledge of the language for the project work are available.

The machinery is compatible with the molding machines at other locations. This supports the customer in securing his supply chain for all imaginable scenarios.



Pre-expander

The EPS raw material is expanded in the pre-expander up to 50 times of its original volume before the actual production process. In contrast to that, EPP is expanded by applying pressure directly in the tool. In order to obtain the desired geometry of the molded part, both materials are heat-sealed in the machine by steam.



Production of molded parts



Molding machine

Certificates

Storopack is certified by TÜV, AFAQ and LGAI according to DIN ISO 9001:2008 and ISO/TS 16949:2009.

The quality management systems are constantly developed, our employees keep their know-how updated through regular participation in training courses.



Loading of the molded parts in own HGVs

Data exchange

In order to organise the inventory management and ordering processes efficiently, our customers have the facility of software-based organisation of the inventory and delivery call through SAP and EDI linkage.



Automobile Fittings and Carriers

As a globally acting company, Storopack is a qualified partner for the automobile industry.



Overview of EPP fittings

Molded parts made from EPP find applications as fitted components at different positions in cars. They serve the purpose of passive safety and passenger protection. Due to the light weight of EPP, the car makers find use of particle foam in cars easier for making it lighter and thus reducing the fuel consumption.

In reference projects Storopack has furnished, among other things, bumpers in the front of the vehicle, absorbers, head rests, seat inlays, foot pads, sun shades, interior linings and diverse impact absorbers. An example in the visible area is a tool box for the trunk.



Crash Pad

Automobile fittings made from EPP

- energy absorbing, good elastic behavior
- combined with metals, EPP absorbs more energy
- moldable in many ways: for discerning, novel types of designs
- mold density of approx. 25g/l to approx. 180g/l
- attractive in visible part: with different surface variants and laminations



Crash pad with metal insert

For the automotive industry, Storopack also produces carriers made from EPP, with which electronic components or car body parts can be transported safely. EPP is very robust and, as a stackable multiple use solution, it can function through several cycles.



Carrier



Crash pad

Storopack as production partner

- Certifications according to ISO 9001 and TS 16949
- Quality and accuracy of the mold during the entire life cycle of the model series
- Selection of production location in several countries
- Capacity and competence for large lot sizes
- Reliable delivery as a member of a supplier cluster or directly to the manufacturer



Casting cluster



Terminal strip

Optimal design of the foam module

The design of the lost mold is decisive for the quality of the cast parts. Smooth curves ensure a steady flow and help achieve a casting with quality. Sharp corners and edges are to be avoided as they disrupt the attachment of the layer. Auxiliary holes ensure that during the back-filling with sand, shadow regions are filled up and the sand is condensed. The separation joints of the foam module must be situated in such a way that they do not spoil the cast.

Lost Foam: An Alternative Casting Method

The „Lost Foam Casting“ is a full mold casting process. Foam models made from EPS are embedded in a casting vessel in molding sand. The metal melt introduced in to it replaces the plastics and fills out the cavities of the mold.

The Lost Foam method is an economic manufacturing technology for complex components, because the foam model can reproduce the undercuts, angular channels and contour-optimised cavities. The casting tolerances are lower by approximately two thirds compared to the conventional sand cast. Designers have more liberty for composition than in the case with casts in permanent molds.



Cover pump (foam model and casting)

Foam module producer and process consultant

Storopack has been producing Lost Foam models for practically all casting materials since 1981. Filigree, rich in details and complex: Storopack has already mastered many such challenges.

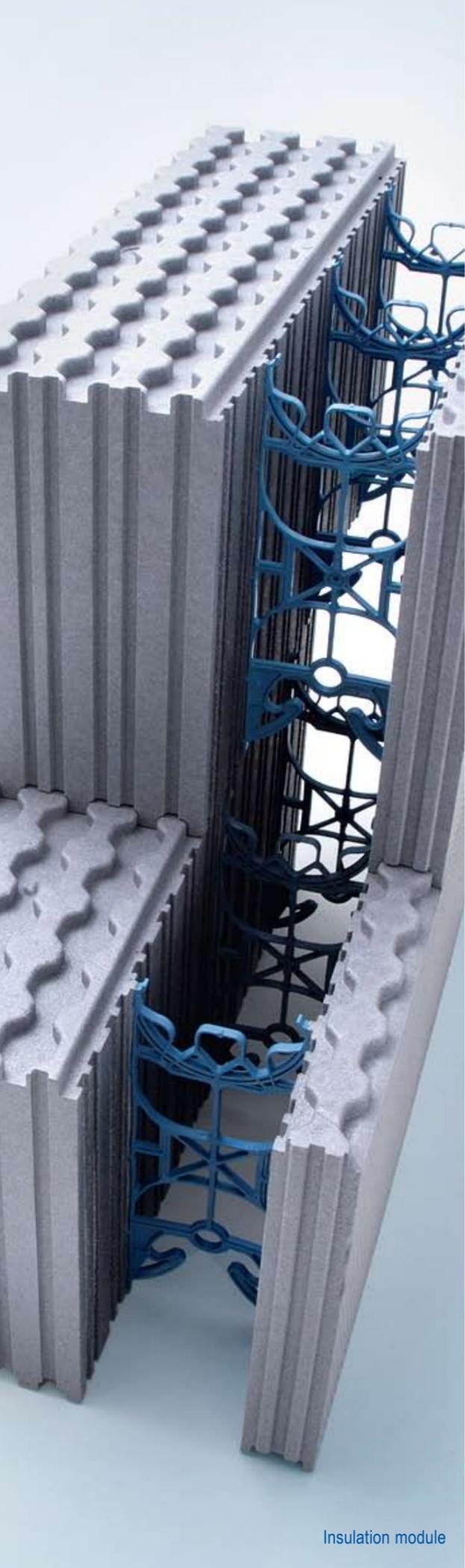
- Consultation in selection of appropriate casting pieces
- Support for Lost Foam appropriate design
- CAD development and prototyping of segmented foam model and casting cluster
- Design and construction of mass production tool
- Serial production of the molded part: uniform density, continuous particle sealing
- Neat adhesion of foam modules and casting cluster
- Just-in-time delivery according to DIN 9001:2008



Cylinder head foam model



Cylinder head casting



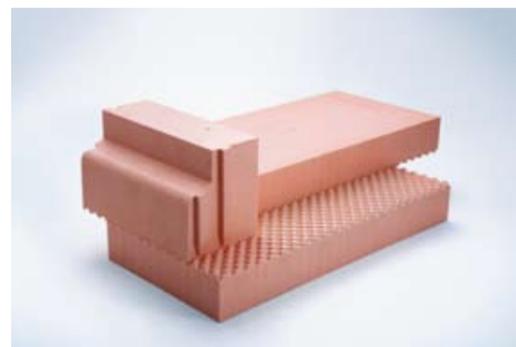
Molded parts for Buildings, Heating and Air-conditioning

Applications in the field of construction

Storopack manufactures insulation elements for various parts of buildings. Among those are solutions for ceilings and walls, perimeter base tubs as well as plates for laying floor heating. Apart from this, molded parts are also used as sheet elements.

Applications for heating and air-conditioning

With molded parts, energy-efficient solutions can be achieved in the area of heating and air-conditioning, for example by using insulations for pumps, heater circuits and boilers, as well as for the housing and the pipes for modern living room ventilators with waste heat recovery.



Floor plate



Insulation module



Living room ventilation

Contribution to energy management

Molded parts made from expandable foams reduce the costs in operation of buildings and make a positive contribution to energy management. They insulate against heat and cold and are a part of the load supporting elements. Plastics are insusceptible to dampness. Their own low weight is an additional plus in the work done at a construction site.

With the heat insulations made from expandable foams, up to 70 % of the heating energy can be saved and a cozy and balanced living room ambience is created. The following applies: the lower the thermal conductivity of the insulating material, the better the thermal insulation properties. EPS and Neopor® have very low values of up to 0.032 W/(mK) and 0.030 W/(mK) respectively.

The molded parts are designed in such a way that the devices for repairs and servicing can be accessed easily. Plug-in connections and hinge joints remain fully functional. Contour-accurate foaming minimises thermal losses. Since the molded parts have a good padding effect, they also provide, depending on the design, the additional benefit of protection during transport.



Plate for floor heating



Armature insulation



EPP pedestal for perfume



EPP Box with snow flake effect

Snow flurry in retail sales rack

The idea of the designer was to create a promotion packaging for the Christmas business. A fragrance by Jean Paul Gaultier was to be presented in an EPP Box with snow flake contours. Upon the push of a button, the little beads were to blow up behind the see-through window and create an impressive flurry of snow drift. Storopack has provided the design and the production-related implementation. Despite the low wall thickness, the packaging is very stable. The details are worked out precisely and appear neatly styled with fine lines.

Leisure and Design Applications

Molded parts made from expandable foams have become prevalent in many everyday situations and their use is becoming something taken for granted: the cycle helmet made from EPS for safety in traffic, the EPS box for transport of chilled food products or the pizza box made of EPP, with which the delivery service rings the bell at the doorstep.

Storopack products can also be found in more unusual places, for example in film and television as backdrop scenery creating the impression of stone walls.

With expandable foams, the designer can let the familiar appear differently. For example, this effect finds use in retail packages. Storopack has provided such services in many projects including the field of cosmetics.



Perfume tray

Protection and insulation, this double use is exploited again and again. For example, a winery has packaged its sparkling wine in a shapely vessel, which doubles up as an insulating container.

Seating furniture, styling elements for discerning interior design and much more... Storopack accompanies the idea from the first inspiration to the mass production.



Designer seat

- Storopack offers material expertise: Which raw material should be used and how?
- Development partner with own technology center
- Production quality: for functioning effects and making the visible side attractive



Cycle helmet

Sustainability and Environmental Protection

Technical molded parts made from expanded foam plastics ensure that the utility of the products which are produced using diverse resources are maximised. Good products are made even more comfortable and safer; the processing offers increased efficiencies.

EPS (Styropor®), EPP & Neopor®

EPS and Neopor® consist of 98 % air and only 2 % of polystyrene; EPP consists of 95 % air and only 5 % of polypropylene.

The light weight of the technical molded parts made from expandable foams contributes, for example, towards making cars lighter and thus minimises fuel consumption. Used as insulators, it saves energy consumption and thus protects the climate.



Vision & Guidelines

Storopack's commitment to economic and social responsibility is derived from the corporate philosophy. „Vision & Guidelines“ contains the formally agreed principles applicable to all employees.



REDUCE

Expanded foams enable intelligently designed, individual technical molded parts using materials exactly where they are needed.

REUSE

Depending on the application, the technical molded parts can be used multiple times. This is true especially for Expanded Polypropylene (EPP), which is particularly resistant and robust.

RECYCLE

Used molded parts from expandable foams are completely recyclable and can be used again with high utilisation as a material, raw material and for energy. The material cycles for these substances are very well developed and contribute toward reducing the use of primary raw materials.

In the production of its technical molded parts, Storopack uses a production process with steam and improves the utilisation of the raw materials and energy consumption through continuous optimisation of the production process.

Storopack supports its customers in the fulfillment of their climate targets and develops together with them the solutions which are customised precisely according to their requirements.