BASF
We create chemistry

Ultramid® Expand

Polyamide based particle foam

Expand your ideas

Ultramid® Expand

Polyamide based particle foam with unique properties

- High heat deflection temperature
- High temperature resistance
- Excellent mechanical properties at temperature >120 °C
- Chemical resistance against automotive liquids
- Drop-in solution in EPP tooling (steam chest molding)
- Recyclability
- Simulation models available
- Processable via cathodic dip coating

Product	Bead size	Bulk density	
Ultramid® Expand D4S2925 UN	2.5 mm	290 g/L	Uncolored
Ultramid® Expand D4H2925 BK23381	2.5 mm	290 g/L	Heat stabilized
Ultramid® Expand **Experimental** D4H3510 BK23381	1.0 mm	350 g/L	Heat stabilized

Ultramid® Expand

Different bead sizes that fits for your requirements

Ultramid® Expand D4S2925 UN

Bead size: 2.5 mm

Ultramid® Expand D4S2925 BK23381

Bead size: 2.5 mm

Ultramid® Expand Experimental D4H3510 BK23381

Bead size: 1.0 mm

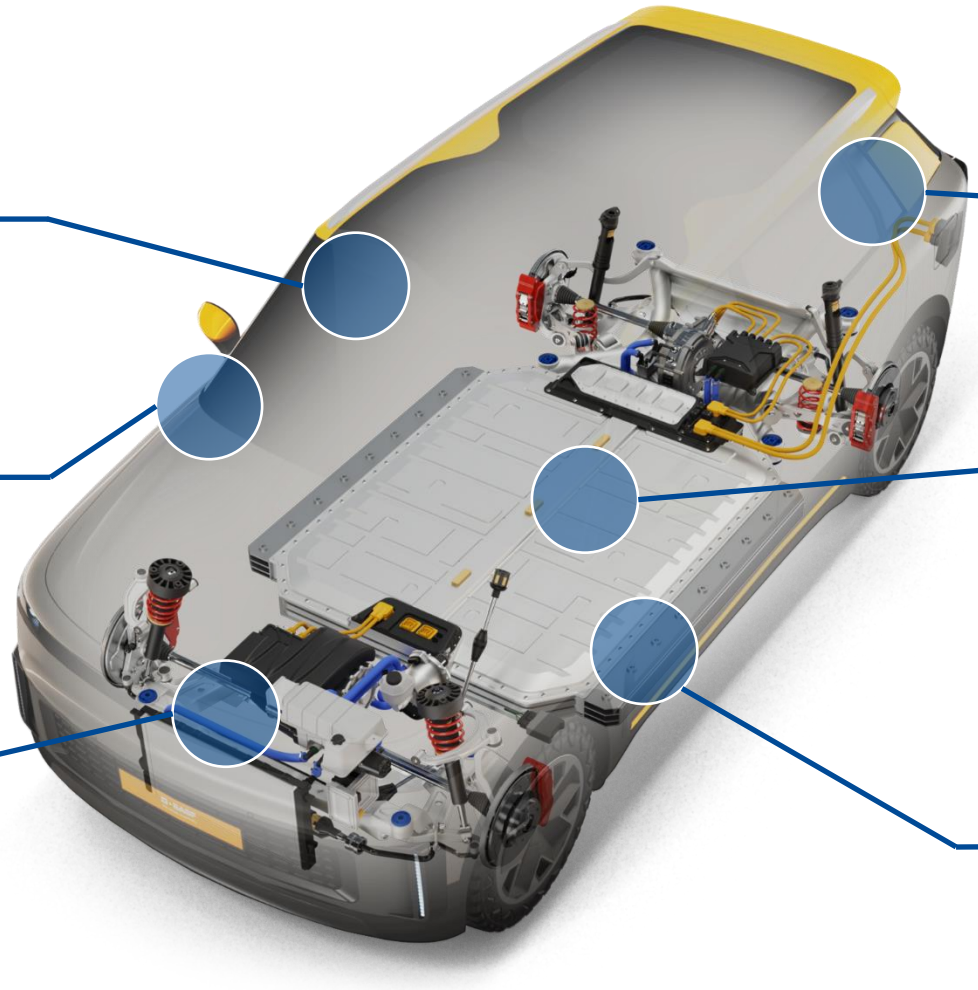
Ultramid® Expand

Potential applications

Passenger protection

Structural inserts

Heat deflection



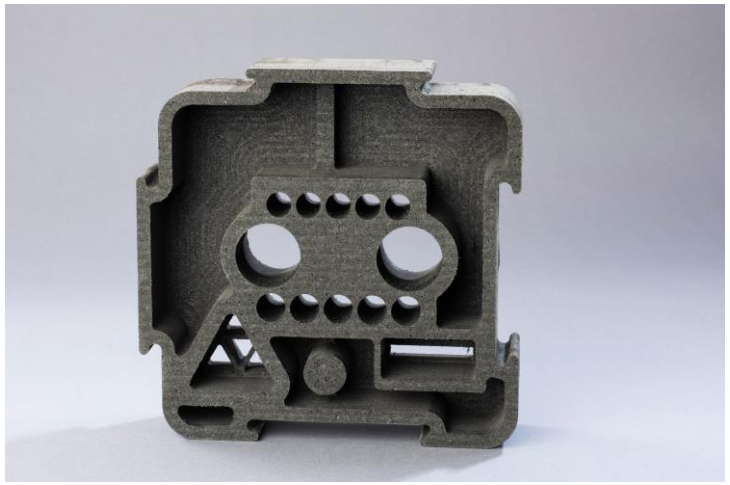
Complex 3D shapes

Cell holder

Battery protection

Ultramid® Expand

Potential applications: Cell Holder Demonstrator



Demonstrator shows the versatility of Ultramid® Expand

- Different cell sizes
- Snap hooks
- Laser markable
- Threaded inserts
- Breakthroughs

Ultramid® Expand
Production process

BASF Process

Ultramid granulate

BASF Foaming Process

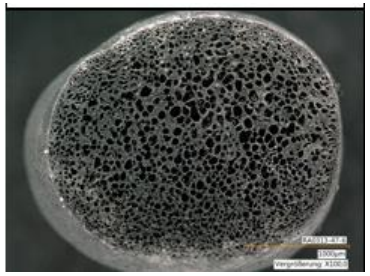
Ultramid® Expand

Customer

Ultramid® Expand

Steam molding technology

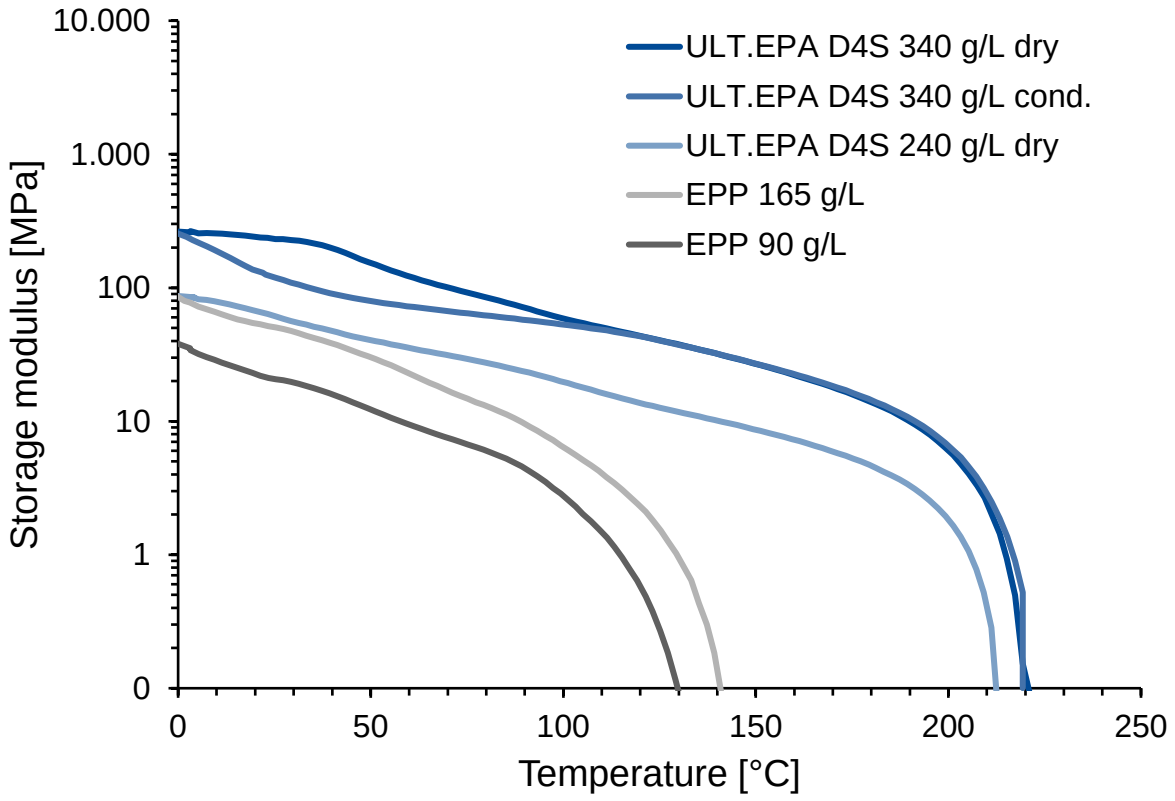
Final shaped part



Cellular structure results in drastic weight-reduction with high mechanical properties!

Ultramid® Expand

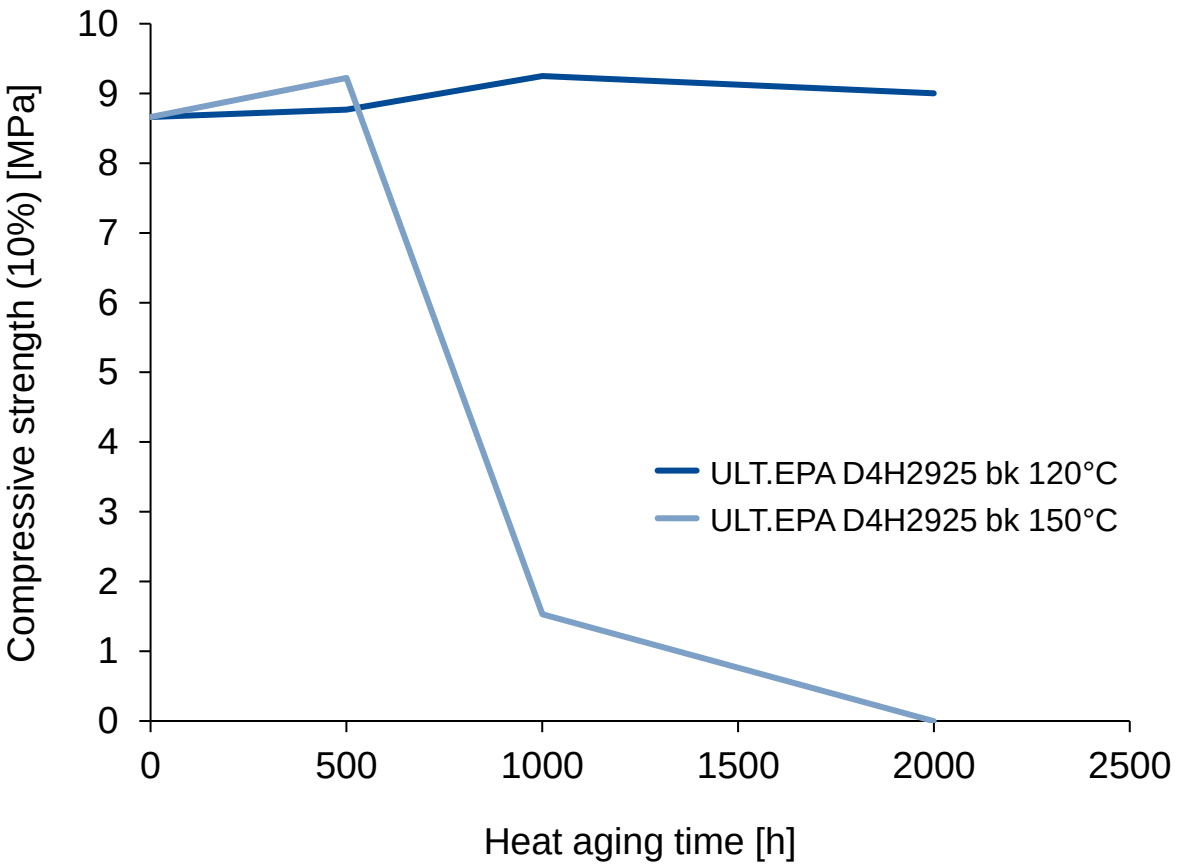
Superior mechanical properties at elevated temperature



- Ultramid® Expand shows significant advantages compared to EPP
- Excellent mechanical properties at high temperatures

Ultramid® Expand

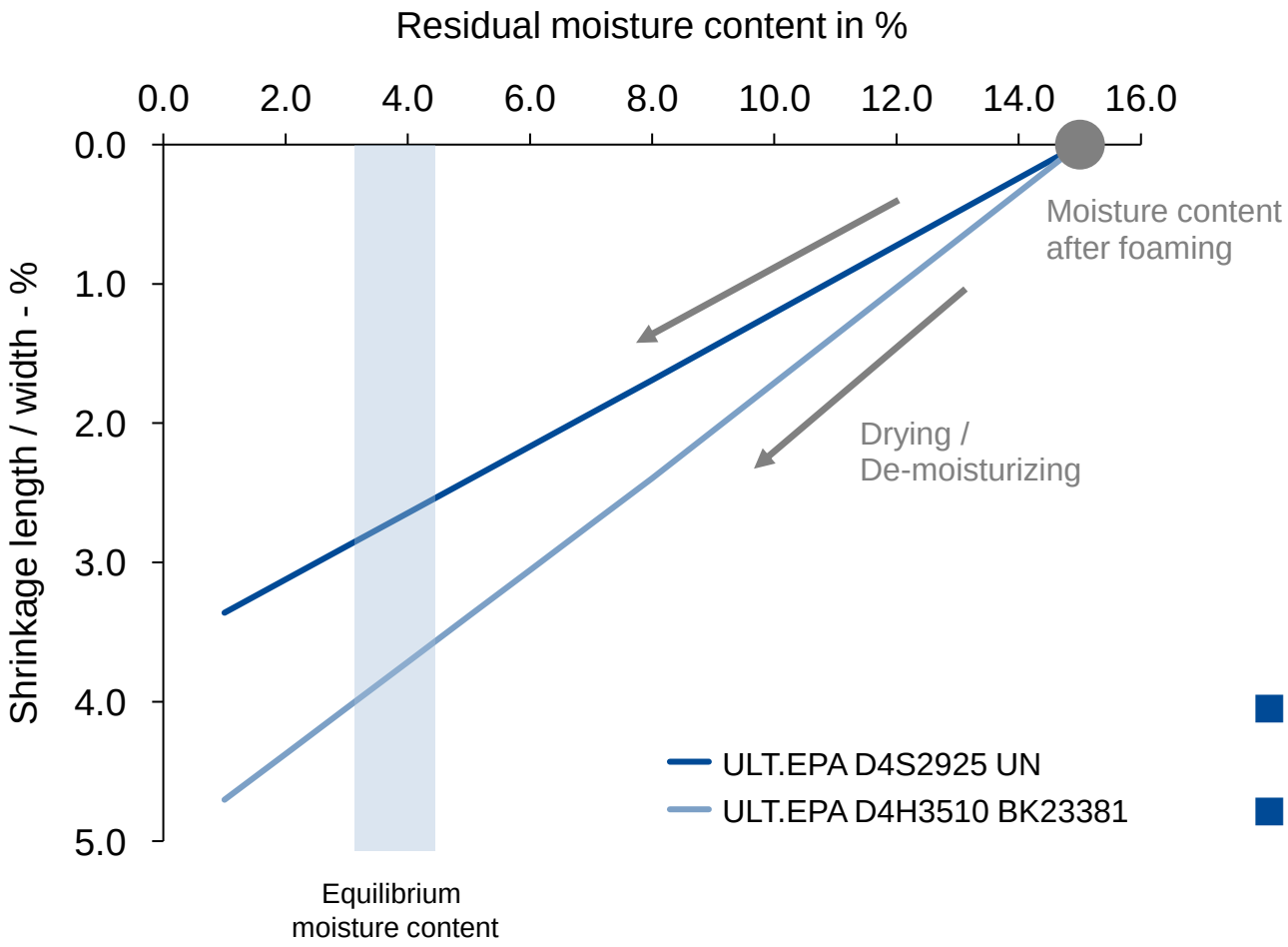
Compressive strength (10%) after heat aging

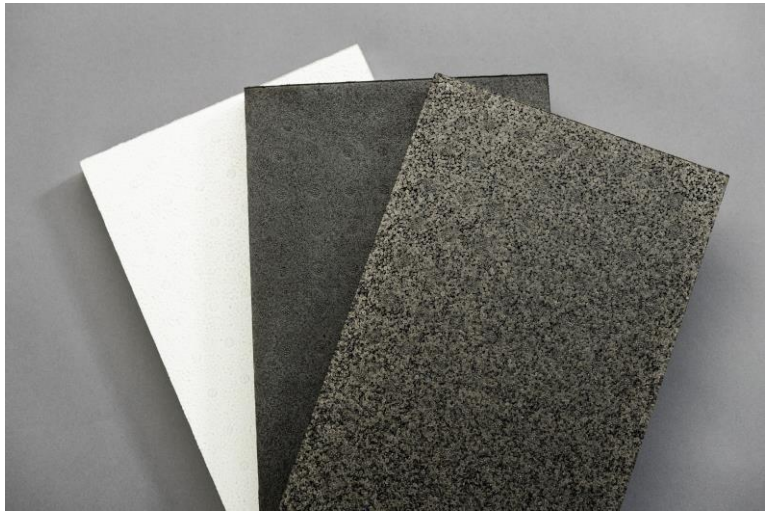


- Superior performance after heat aging

Ultramid® Expand

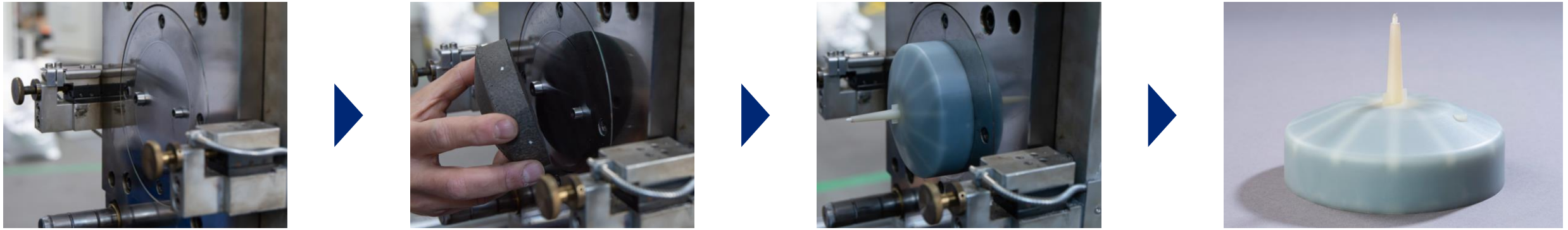
Water uptake vs. shrinkage



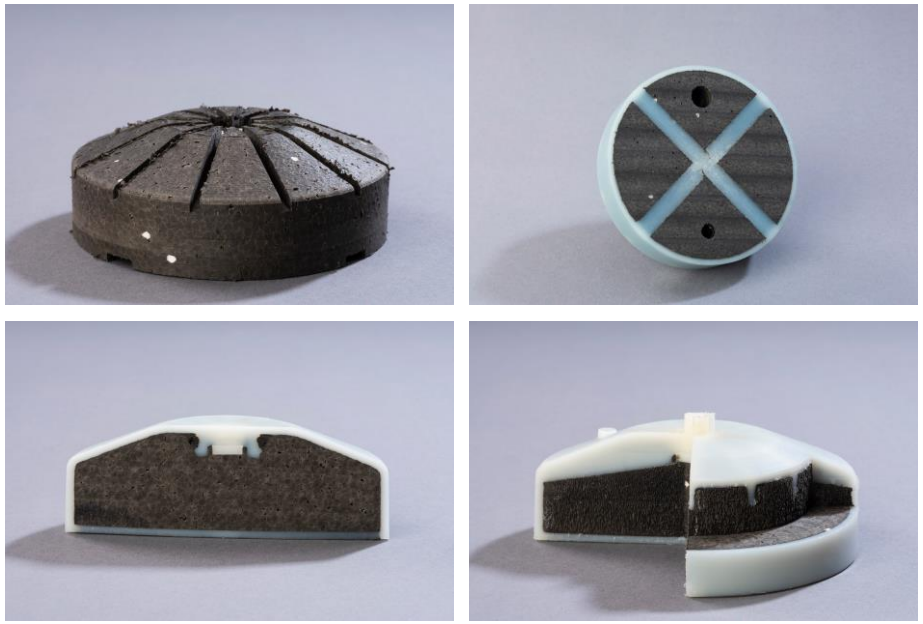


- 340 g/L sheets (300 mm x 200 mm x 25 mm)
- Drying at 80 °C after min. two days storage time

Ultramid® Expand
Overmolding



- Overmolding with PA-GF
- Single-material recyclability
- Parts with undercuts possible
- GID/WID parts replacement potential

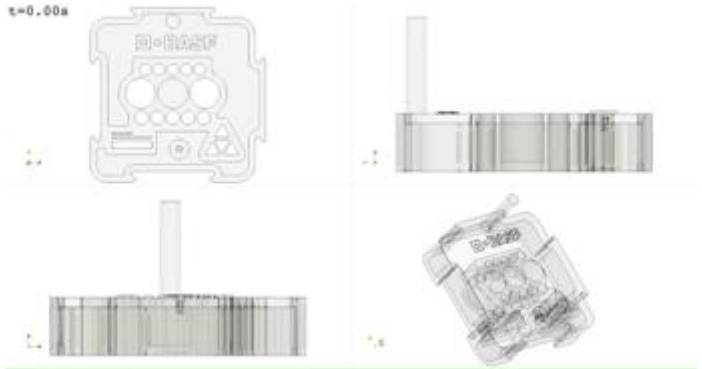


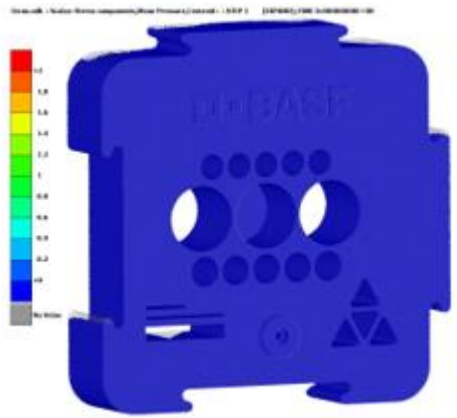
Ultramid® Expand

Full Ultrasim® CAE support available including particle filling simulation

Particle filling simulation

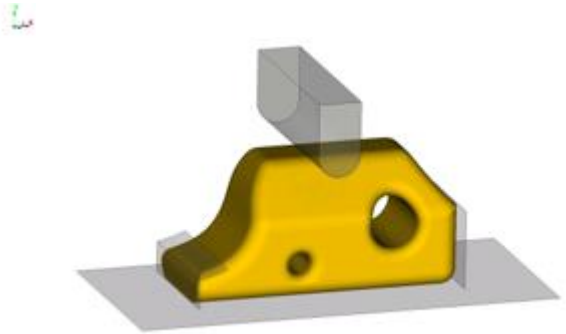
- Achieve best packing by optimizing:
  - Filler location, mold orientation, venting
- Coupled computational fluid and particle dynamics:
  - Predict fluid flow, particle trajectories
- Defect prediction:
  - Voids, packing inhomogeneities





Structural simulation

- Elastomeric foam model in Ultrasim® accounts for compressibility up to large deformations
- Perform virtual part testing and optimization
- Force-displacement curves for structural load cases
- Ultrasim® material cards available for different densities



Contact data

- Project leader contact for Ultramid® Expand particle foam:
  Dr. Patrick Spies
  Mobile: +49 173 3479970
  patrick.spies@basf.com

- Industry contact for Ultramid® Expand particle foam:
  Dennis Jopp
  Mobile: +49 172 7440205
  dennis.jopp@basf.com

- Simulation contact for Ultramid® Expand particle foam:
  Andreas Wüst
  Phone: +49 172 7470859
  andreas.wuest@basf.com

BASF

We create chemistry

Product disclaimer

- The data contained in this document as well as advice or other support services are based on our current knowledge and experience and are provided according to our best knowledge.
- In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for customer's specific purpose.
- Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product.
- It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.