

Starting at
EUR 2.400

Lattice Engineering Offer

FEA Simulation – Enabled by BASF Ultrasim®

Lattice structures are very common in nature as well as in technical foam structures. The microscopic geometrical structure of the underlying lattice unit cells as well as their material define the macroscopic behavior, properties and performance envelope of lattice-structure components.

Until now, identifying the right type of lattice for a component required time- and cost-intensive “design-print-test-redesign” iterations. To solve this issue, BASF has optimized and enhanced Ultrasim®, a digital geometry-design service that enables a smart search for the optimal lattice geometry to fulfil a specific component’s unique mechanical performance requirements. Ultrasim® applies precise digital simulation methods coupled with 3D design-optimization tools to identify the best-possible lattice structure much faster by automatically varying the topology and geometry parameters of the individual lattice cell. Ultrasim® is rapid, precise and reliable, accelerating your design and test iterations, shortening concept-to-component time and thus achieving major cost savings.



You can send us your request here:

<https://move.forward-am.com/lattice-simulation>

Benefits at a Glance

- Cuts development time and cost by minimizing design and test iterations
- Quickly identifies the optimal lattice structure for your new component design
- Identifies the optimal balance of component performance and weight

Example of test & norms

- Impact testing for sports equipment, e.g. 5 kg at 4 m/sec
- Protective gear for motorcyclists, conforming to DIN 1621-2
- Compression performance fulfilling ISO 3386
- Rebound performance conforming to DIN 53512
- Shore hardness, derived from ISO 7619-1

Price	Starting at EUR 2.400
Supported Products	Ultrasint® TPUs (further materials on request)
Lattice Design Format	Ultrasim® is compatible with most commonly used lattice design programs
Deliverables	Lattice Cell description (Lattice Type, Beam Diameter, Aspect Ratio, etc.) and printed test parts for validation

Process



Application Example: Impact testing for protective gear

- Goal: Find the lightest and thinnest lattice fulfilling Level 1 and/or Level 2 CE protection for motorcycle clothing DIN1621-2
- Design Variables e.g. Diameter, Thickness, Lattice Type
- Simulation provided a design space revealing the parameters for which the lattice can fulfill the DIN 1621-2 requirements
- Next Steps: Lattice validation by real world testing

