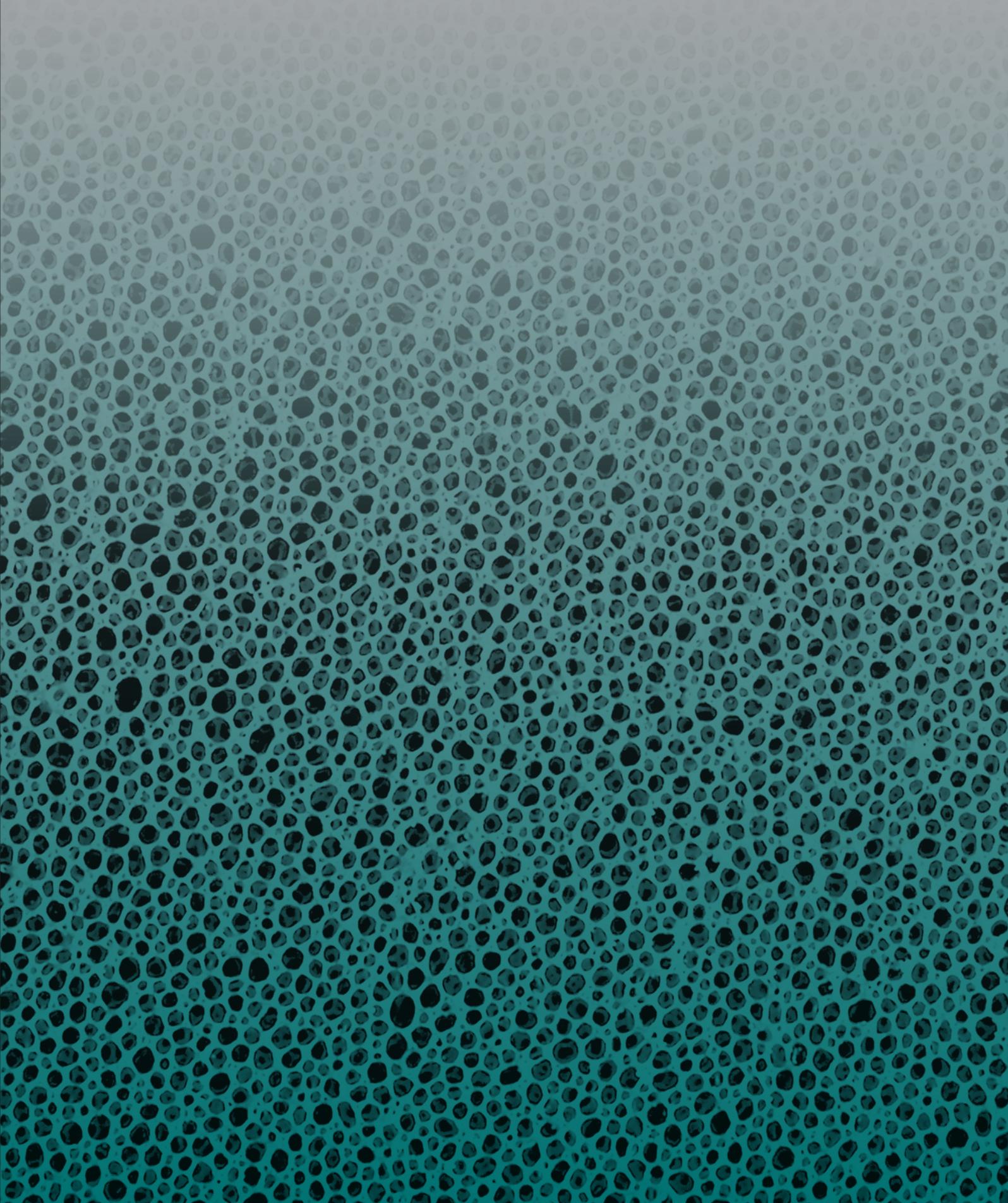


Polyurethane Foam Systems

zelu 



Zelu is the one-stop manufacturer of high-grade adhesives and polyurethane foam systems, providing you with “quality made in Germany” wherever you may be in the world, coupled with prompt delivery, reliability and expertise.

We have an in-depth knowledge of the manufacturing of customised solutions – each and every one of which is guaranteed to be optimally tailored to suit the desired application. From large-volume orders to special formulations, we can make it happen.

PUR foams are incredibly versatile and the manufacturing requires a high level of expertise. Zelu offers you tailor-made solutions from soft to hard. Individually adjustable system parameters such as good flowability, high process stability and fast reaction enable short cycle times. Ensuring ease of use and efficient production for a huge range of applications in the automotive & transport, sport & leisure, filtration, furniture and industry & construction. Zelu has the solution.

Flexible / Viscoelastic Foams

zelupur HR®

Products based on our flexible foam systems Zelupur HR® are exceptional in their outstanding elasticity while still maintaining good resistance to ageing, even under the sustained influence of heat and cold. This makes the Zelupur HR®-systems well-suited to a vast range of products. From foam lacquering rolls, highly durable rail car seats, motorcycle seats and office chairs through to flake composite foam. We customise our foam systems to suit every product and every production process.

Composition

For our flexible and viscoelastic foams we develop water-blown systems based on polyether polyol and methylene diphenyl diisocyanate (MDI) for processes using the low-energy cold-moulding foam method.

Processing

Mixing the two liquid foam components polyol (Zelupur HR®) and isocyanate (Zelunat®) triggers polymerisation to create foam. Foaming is a result of the chemical conversion of water to carbon dioxide and therefore does not release foaming agents that are harmful to the environment. They are processed with foaming machines using both a low-pressure and high-pressure method.

Properties and benefits

- good ease of flow and high process stability
- highly open-cell structure for air permeability ("breathable")
- high elasticity and low loss of hardness over long wear times
- choice of resilience from springy to viscoelastic
- good stability under stress from heat and moisture
- low odour and emissions
- flame-retardant versions available

Product	Zelupur HR® for furniture	Zelupur HR® for cars	Zelupur HR® for rail car seats	Zelupur HR® viscoelastic
Density [kg/m³] DIN EN ISO 845	> 40	> 40	> 80	> 50
Hardness [kPa] DIN EN ISO 3386	2 to 10	4 to 15	8 to 12	1 to 10
Tensile strength [kPa] DIN EN ISO 1798	> 85	> 100	> 100	> 70
Distension [%] DIN EN ISO 1798	> 80	> 90	> 60	> 80
Compression set (22 hrs, 70 °C, 50 %) [%] DIN EN ISO 1856	< 5	< 7	< 5	< 20
Meets the requirements of the following tests (selection)	BS 5852 Crib 5, EN 1021-1 and -2	VDA 270, VDA 278, ECE R-118-02 V1	DIN 5510-2, EN 45545 HL2	DIN 5510-2, EN 45545 HL2

Integral / Semi-Rigid Foams

zelupur SI® zelupur SF®

With their outstanding abrasion resistance, products based on our Zelupur SI® integral foam systems are especially suited to applications where the material is subject to high wear. For example as impact-absorbing protective sports gear, handles, knobs or office chair armrests. Integral soft foams are composed of a compact, elastic skin and a flexible, open-cell foam core. Depending on the application, we adapt our material to suit your specific production process.

Water is the only foaming agent we use for our semi-rigid Zelupur SF®-foams. These emission-optimised versions are particularly suitable for use in car interiors, for example as centre armrests.

Composition

We develop our integral foam systems on a polyether polyol and methylene diphenyl diisocyanate (MDI) basis using physical foaming agents for processes using the cold-moulding foam method.

Processing

The compacted surface zone of our Zelupur SI®-integral foams is created by using low-boiling liquids (so-called physical foaming agents) that vaporise and then condense on the inside of the mould during the foaming process. For our semi-rigid Zelupur SF®-foams, we dispense entirely with physical foaming agents and use water instead. In this case the effect of an integral skin is controlled by process additives. They are processed with foaming machines using both a low-pressure and high-pressure method.

Properties and benefits

- outstanding abrasion resistance
- surface hardness in the range of 10 to 90 Shore A
- flame-retardant versions available
- resistant against a wide range of chemicals, low-maintenance and easy to clean
- low water absorption
- unrestricted colour design using in-mould coating
- good ease of flow and high process stability

Product	Zelupur SI®-integral foams	Zelupur SI® flame retardant	Zelupur SF®
Density [kg/m³] DIN EN ISO 845	> 250	> 250	> 150
Surface hardness [Shore A] DIN 53505A	10 to 90	20 to 90	10 to 90
Tensile strength [kPa] DIN EN ISO 1798	> 800	> 800	> 200
Distension [%] DIN EN ISO 1798	> 150	> 120	> 100
Meets the requirements of the following tests (selection)	ECE R-118-02 VI	ABD 0031 7-1-2, DIN 4102-1 B2	VDA 270, VDA 278, ECE R-118-02 VI

Filter Foams

zelupur EL®

Our Zelupur EL®-systems are processed to lightly foamed, elastic PUR foams. Their range of application extends from basic industrial filters to automotive filters up to specific filters used in the electronics industry. For decades soft filter foams have been used as sealing lips in air filter elements. The function of the flexible sealing lips is to seal off the folded filter materials from the air filter housing.

Composition

Our Zelupur EL®-products are liquid foam systems on a polyether basis which are processed with Zelunat® (MDI) using the cold foam method. Water is used as a foaming agent.

Processing

They are processed with foaming machines using both a low-pressure and high-pressure method. The mixed components are inserted into tempered plastic or metal foaming moulds and demoulded after adaptable reaction times.

Properties and benefits

- exceptionally high resilience at a low hardness range (13 to 30 Shore A) and at low and high temperatures (-40 °C to +120 °C)
- closed, high-density surface
- excellent distension and tensile strength to ensure long life
- high process safety
- allows the use of mineral fillers

Product	Zelupur EL® panel filter	Zelupur EL® round filter
Density [kg/m³] DIN EN ISO 845	350 to 550	400 to 800
Surface hardness [Shore A]	13 to 30	15 to 50
Tensile strength [MPa] DIN 53504_S3A	> 0,5	> 0,5
Distension [%] DIN 53504_S3A	> 150	> 150
Compression set (22hrs, 70 °C, 40 %) [%]	< 10	< 10
Meets the requirements of the following tests (selection)	Compression set (22hrs, 100 °C, 50 %): < 20 %	Compression set (22hrs, 100 °C, 50 %): < 20 %

Rigid Foams

zelupur RD®

Rigid foams based on Zelupur RD® are highly cross-linked foams with a large proportion of closed foam cells. The resulting low heat conductivity makes rigid foam the perfect insulation material. This material is also resistant to bending and pressure and can therefore be used wherever high shape and dimensional stability is required: this includes the construction industry, cold insulation of refrigeration equipment and facilities, filling hollow bodies with foam for stabilisation purposes, in apparatus and casing construction or for cushioning components, e.g. for protective helmets.

Composition

We develop our rigid foam systems on a polyether or polyester polyol and methylene diphenyl diisocyanate (MDI) basis using physical foaming agents or water.

Processing

They are usually processed with foaming machines using a high-pressure method. Special foam systems are also processed using a spray method or on batchers with static mixing systems.

Properties and benefits

- long life thanks to high shape and dimensional stability
- low heat conductivity
- good ease of flow and low cavity pressure
- allow self-releasing formulations (e.g. fire class DIN 4102-1 B2)
- can be coated following suitable pre-treatment
- flame-retardant versions available

Product	Zelupur RD® for insulation and cavity filling	Zelupur RD® for decorative elements
Density [kg/m³]	> 40	> 200
Heat conductivity [mW/(m·K)] DIN 52612	< 30	n. a.
Compressive strength [MPa] DIN 53421	> 0,3	> 2,0
Surface hardness [Shore A] DIN 53505A	> 20	> 35
Further properties	DIN 4102-1 B2	Can be coated following suitable pretreatment

Casting Systems

zelumer®

Our Zelumer®-casting systems involve reactive polyurethane resins with a broad range of properties. Thanks to their high resistance to temperature and ageing, they are mainly used as adhesive and sealing systems for end plate bonding on air, oil or diesel filters. This also enables the production of filter flanges or other moulded components that can be directly demoulded.

Composition

Our Zelumer®-casting systems are solvent-free, non-foaming or lightly foaming two-component casting compounds on a polyurethane basis. The active component of our Zelumer®-systems consists mainly of polyether or polyester polyols and can be processed either with or without fillers as required. Zelucure® uses purely MDI-based isocyanates as hardeners.

Processing

The liquid polyol and isocyanate components are processed on two-component batchers using a low-pressure method (static or dynamic mixer). The flow characteristics determine the processing time of these PUR systems and can be adapted to specific applications via the so-called pot life.

Properties and benefits

- resistant to a wide range of liquid and gaseous materials
- resistant to ageing
- variable hardness in the range from Shore A to Shore D
- customised processing parameters (pot life, viscosity etc.)
- good flow, wetting and adhesion
- solvent-free
- temperature-resistant

Product	Zelumer® (filled)	Zelumer® (unfilled)
Base	PUR	PUR
Density [g/cm³]	1,2 to 1,7	approx. 1
Viscosity [mPas]	1.000 to 30.000	400 to 1.500
Filler content	20 to 70	0
Pot life [min.]	1 to 40	1 to 40
Chemical resistance	Good	Good
Shore A/D	(D30-90)D	(A50-D80)A/D

Adhesives from Zelu

In addition to polyurethane foam systems, we can also provide you with a wide range of adhesives. Our strong, highly innovative adhesives are highly suitable for use in state-of-the-art production processes. Zelu adhesives are renowned for their efficiency, process security, flexibility and durability, meeting all requirements when it comes to product, process and occupational safety, along with environmental compatibility. They can even be used to bond complex geometries and material combinations without any difficulty.



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foam and adhesive expertise

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