

Foamed RAU-SIK (Silicone rubber)

Chemical structure

Foamed RAU-SIK is a high polymer, cross-linked polysiloxane with added inorganic fillers produced using foaming agents. Depending on the type and quantity of fillers and foaming agents, the vulcanisates are given special physical properties.

Characteristic properties

Foamed RAU-SIK is characterized by a closed cell pore structure and a solid outer skin.

Outstanding resistance to high and low temperatures, outstanding resistance to weathering and ageing, excellent electrical properties, very good heat and cold insulating properties.

Thermal properties

Resistance in dry heat

The long-term temperature resistance of foamed RAU-SIK ranges from +180°C to +200°C. A heat resistance of up to 220°C - for short periods up to 250°C - is obtained if special additives are used.

Low-temperatures resistance

Vulcanisates made of foamed RAU-SIK show excellent resistance to low temperatures. This resistance is inherent in the molecular structure and is not obtained by the addition of plasticizers. Generally, foamed RAU-SIK vulcanisates retain their elasticity down to approx. -60°C.

Thermal insulation

Thermal conductivity of foamed RAU-SIK is very low and the material is therefore excellent for high- and low-temperature insulating purposes. The thermal conductivity of a 10 mm thick sheet of RAU-SIK 8030 is

$$\approx 0.075 \frac{\text{W}}{\text{K} \times \text{m}} \text{ (at } 100^\circ\text{C)}.$$

Mechanical properties

Because of its softness foamed RAU-SIK is used as sealing material mainly to seal large, often irregular gaps, where only limited pressure can be applied.

The physically measurable values depend on the shape of the article.

Foamed RAU-SIK has good recovery properties and elasticity after minor deformation up to ~ 10% with low compression forces.

Types

	Shore A hardness to DIN 53505)	Density (g/cm ³)
RAU-SIK 8030	5- 8	approx. 0.33-0.55
RAU-SIK 8014	9-13	approx. 0.41-0.65
RAU-SIK 8040	14-20	approx. 0.50-0.80
RAU-SIK 8050	21-29	approx. 0.85-0.95
RAU-SIK 8020	30-35	approx. 1.00

Electrical properties

Foamed RAU-SIK possesses excellent electrical properties which are only marginally dependent on temperature, frequency and humidity.

Chemical resistance

Foamed RAU-SIK has a good water resistance up to 100°C. Its resistance to low pressure steam up to approx. 2 bar is also satisfactory. Steam of higher temperatures, however, destroys the vulcanisates especially with prolonged exposure. Foamed RAU-SIK has good resistance to weak acids and alkalis. However, the vulcanisates are destroyed by strong acids and alkalis, especially at higher temperatures. Its resistance to mineral oils at room temperatures and at moderately higher temperatures can be compared with that of chloroprene rubber.

At oil temperatures above 100°C the stability of foamed RAU-SIK surpasses that of oil resistant organic foamed rubber types.

Foamed RAU-SIK swells in many organic solvents. Foamed products are more affected by chemicals than solid materials are since the porous structure allows faster and more pronounced swelling.

Foamed RAU-SIK is largely unaffected by polar solvents, except for chlorinated aliphatic hydrocarbons and aromatic hydrocarbons.

Non-polar as well as chlorinated and aromatic solvents cause moderate to severe swelling. This swelling is at its highest with low-boiling solvents and decreases with high boiling solvents. In most cases, the swelling is reversible since foamed RAU-SIK does not contain soluble plasticizers.

Weathering and ageing resistance

Foamed RAU-SIK has excellent weathering resistance, is not affected by oxidation, humidity, ultra-violet rays or ozone and can therefore be used successfully where other elastomers are subject to rapid ageing as a result of such influences.

Combustibility

Foamed RAU-SIK is a material of low to medium flammability.

Physiological suitability

Special food grade material types are available on request.

Colouring

Using colour-fast inorganic pigments, foamed RAU-SIK can be coloured to virtually any required shade.

Bonding

Foamed RAU-SIK may be bonded to itself as well as to other materials. We refer to our instructions for the bonding RAU-SIK products print no. AV 038E.

Applications

The excellent stability of the electrical and mechanical properties in a wide range of temperatures (-60°C to 200°C) opens up special fields of application for foamed RAU-SIK in the form of tubing, profiles, sheets and mouldings where other elastomers fail. Foamed RAU-SIK is an indispensable material in the electrical and mechanical engineering industries, in the automotive industry, in industrial plants, for industrial presses, for sealing traffic lights, in aircraft construction, in laboratories and for the sealing of heating cabinets.

Our verbal and written advice relating to technical applications is based on experience and is to the best of our knowledge correct but is given without obligation. The use of REHAU products in conditions that are beyond our control or for applications other than those specified releases us from any obligation in regard to claims made in respect of the products. We recommend that the suitability of any REHAU product for the intended application should be checked. Utilization and processing of our products are beyond our control and are therefore exclusively your responsibility. In the event that a liability is nevertheless considered, any compensation will be limited to the value of the goods supplied by us and used by you. Our warranty assumes consistent quality of our products in accordance with our specification and in accordance with our general conditions of sale.