Flexible sealants

There are several different categories of flexible sealants, with separate rules for each depending on their chemical composition. The foremost consideration with PU sealants is the ban on HFCs, and care should also be taken with regard to dangerous diisocyanates. Oxime cure silicone sealants and acrylic sealants containing phthalates may only be used if no technical alternatives are available.

The following notes are based on Criteria List 08009 Flexible sealants and pertain to services listed in a large number of Service Groups, as set out in the specifications for building construction.

Polyurethane (PU) sealants

are one- or two-component flexible sealants and adhesives. They are good insulators and are used in a multitude of different trade applications (construction and plumbing work, window and door leaf installation). They cannot be painted over and may yellow.

Polyurethane sealants cure in moist air, giving off carbon dioxide. During curing, polyhydric alcohols are cross-linked with diisocyanates, highly reactive substances that pose a serious health hazard to users (toxic on inhalation, allergenic). They are the main component of the curing agents in two-component products.

PU foam fillers are usually sold in aerosol cans. CFCs and HCFCs used to be used as propellants, replaced by HFCs when the former were banned; nowadays HFCs are increasingly being replaced by carbon dioxide or volatile hydrocarbons (propane, butane, pentane).

HFCs are to be avoided because of their damaging effect on the climate.

For further information, see the “ÖkoKauf Wien” information sheet “HFCs”

Silicone sealants

These products are usually of the one-component type and are based on organic elastomers whose chain-forming element is silicon instead of carbon. Silicones can be coloured with pigments, but they cannot be painted over. During curing they release low-molecular-weight substances; according to the pH of the latter they are classified as acidic, neutral or base (alkaline) silicones.

Base silicones are rare, and the amines they emit are usually hazardous to health. Acidic silicone sealants are always of the acetoxy cure type and give off acetic acid during curing, so they are easily recognised by their vinegar smell. It goes without saying that it is important not to inhale the acid fumes and to ensure adequate ventilation, but otherwise acetic acid poses a very low risk. Neutral silicones are usually of the oxime cure type, which means they give off the health-damaging substance 2-butanonoxime (suspected carcinogen, allergenic) during curing. Neutral silicones that do not pose a health risk are those of the alcoxy or benzamide cure types (release alcohol and benzamides, respectively).

Oxime cure silicones may only be used if no technical alternatives are available.

Acrylic sealants

Acrylic sealants can be painted over, but they do not adhere as well and are also less elastic and water repellent than silicones.

Acrylic sealants do not give off any harmful substances during curing. However, some products contain extender oils (plasticisers) that are problematic, especially the group known as phthalates. A number of phthalates have been proven to have a pseudo-hormonal effect and many others are suspected of having such an effect, which is why they are to be generally avoided in building construction.

MS polymer sealants

Sealants based on modified silane polymers have similar properties to silicones; during curing they release relatively harmless alcohols. Thanks to their good adhesive properties and elasticity they are coming into more widespread use. Like acrylic sealants, however, they may contain phthalate plasticisers, which can impair fertility; such products should be avoided.