Q Expansion characteristics of joint sealing tapes

greenteQ joint sealing tapes and their expansion characteristics under certain physical and chemical conditions.

Explanation:

Why is it difficult to define exact expansion times for joint sealing tapes, and which factors influence their expansion characteristics significantly?

Pre-compressed, impregnated joint sealing tapes made of soft polyurethane foam have been used for many years as a versatile sealant in building expansion joints. The primary advantage of these sealing tapes lies in their long-term flexibility and their capacity to absorb movements.

The joint sealing tapes must fulfil defined properties according to DIN 18542:2009-07 such as the a value, protection against driving rain, building material class B1/B2, the sd value, etc. and must undergo comprehensive testing in order to demonstrate that the properties remain constant at high and low temperatures.

The delay of expansion is only required as a mounting aid for the mounting process itself. For the actual function of the joint-sealing tapes, a delayed expansion is not desirable. Therefore, manufacturers set the expansion characteristics to an average value that functions in hot, medium and cold temperature ranges.

The expansion characteristics of the joint sealing tapes are not constant, however, and are influenced by a variety of physical and chemical factors.

The most important influencing factors include:

- Temperature of the joint sealing tape
- Ambient temperature
- Relative humidity
- Material temperature of the surrounding construction materials
- Storage conditions/environment (damp/warm/dry/cold)
- Storage time
- Age of the material
- Tape dimensions
- Weather conditions (wind/sun/rain)

The aforementioned properties include tolerances which do not permit time periods for the expansion of the joint sealing tapes to be defined precisely. A material that is newly manufactured will expand to fill the joint more quickly at warmer temperatures than the same newly manufactured material at cold temperatures, even when additional influencing factors remain constant.

Expansion characteristics:

At ambient and material temperatures above 25°C, the expansion characteristics are accelerated, and it is recommended to store the joint sealing tape in a cool box. This reduces the expansion time.

Faster	Normal
Warm, sunny	23°C ± 2°C
New	At least 7 days
Thick	Various
High air humidity	50% rel. humidity ± 5%

Expansion times

In general, the following applies: Heat accelerates the expansion; cold delays the expansion. In addition to the ambient temperature and the subsurface temperature, the temperature of the joint sealing tape itself also plays a role, here. For this reason, the tape should always be stored under standard climatic conditions.

For expansion joints, the largest expected joint width should be taken into consideration when determining the tape thickness.