Water permeability

Infiltration is active environmental protection

Permeability is used in geotechnical engineering to measure the permeability of soils and rock for liquids or gases (e.g. groundwater, crude oil or natural gas).

Environmentally friendly construction and ecological action are a central concern in our towns and municipalities in order to create an environment worth living in. Historically evolved town and villagescapes should be preserved, leisure and recreational areas created and biotope systems developed that are effective beyond the local area. The result of increasing sealing is primarily an increase in surface runoff. During heavy rainfall, there is a risk of flooding and the sewer systems are overloaded. This has a negative impact on the water quality of our rivers and lakes. Rainwater is a vital resource and belongs back in the natural environmental cycle, not in the sewer system. The alternative to the conventional drainage of rainwater is its retention and infiltration, an environmentally friendly, effective and cost-efficient solution: rainwater is absorbed by infiltration-capable paving systems and passed on directly to the soil and groundwater. On private properties, a sustainable contribution is made to the environment through infiltration-capable paving of surfaces, subsequent disposal and near-natural rainwater management. Functional and attractively designed surfaces for paths, terraces or driveways do not have to be sacrificed.

The permeability coefficient or hydraulic conductivity is a calculated value that generally quantifies the permeability of soil or rock for water.

Water permeability according to DIN 18130:

Very highly	permeable from 10 m/s^{-2}
Highly permeable	10-2 to 10 m/s^{-4}
Permeable	10-4 to 10 m/s^{-6}
Low permeability	10-6 to 10 m/s^{-8}
Very low permeabilityunder	10 m/s^{-8}

The grain is crucial!

A synthetic resin-based pavement jointing mortar always consists of two components. One component is the binder, which is responsible for curing and stability. The other component is the filler, which is crucial for water permeability. The filler component is a washed, fire-dried quartz sand in different grain sizes. The quartz sands do not have a zero content, as is the case with cement (cement dust). When jointing, microscopically small cavities are created through which the water seeps downwards. The size of the cavities, which depends on the grain size, determines the degree of water permeability. The great advantage of cavities is particularly evident in winter. Water that is still in the joints when the ground freezes can expand in the cavities. This prevents cracks or fractures in the joints.

The capillary effect

The capillary effect is the behavior of liquids when they come into contact with capillaries, e.g. narrow tubes, gaps or cavities, in solids. Example: If a glass tube is immersed vertically in water, the water in the tube rises a little against the force of gravity. This effect is caused by the surface tension of liquids themselves and by the interfacial tension of liquids with the solid surface (in the example: the glass). For the construction industry, i.e. synthetic resin-based pavement jointing mortar, this means that the capillary effect can be observed in the joints of paving surfaces that are jointed with a synthetic resin-based pavement jointing mortar, because the joint mortar used allows moisture to rise against gravity to varying degrees, depending on the pore content or sand grain size, so that the water can evaporate from the surface. This means that even if the substructure is only slightly permeable to water, there is no water in the joint in the long term. ROMEX® systems help to protect the environment, as most ROMEX® products reinforce surfaces, paths and squares without sealing them!

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