



## Temporary binders

# MORMATE, OPTAPIX

### Application

Temporary binders are responsible for **increasing the edge strength** as well as the **green and dry breaking strengths**. This is especially necessary for the subsequent green processing of shaped parts in the manufacture of structural ceramics.

In addition, **the product is less susceptible to damage** during transport within the factory.

Temporary binders can be applied in plastic shaping processes using extruders, in dry pressing as well as in the production of spray and build-up granulates.

### Mode of action

**Polyvinyl alcohols** mainly form the raw material basis for temporary binders from Zschimmer & Schwarz for technical ceramics. In addition, **synthetic or natural polymers** are used.

The contact between the ceramic particle and the temporary binder is a result of **adhesive forces**. An appropriate ratio between binder and water allows **binder films** to develop, which then agglomerate around the particles.

In case of low pressing moisture, the water content in the batch is not sufficient to guarantee complete dispersion of the powdery additives. In these cases, it is recommended to use a ready-to-use liquid preparation. This eliminates work for the manufacturer in producing a stock solution for homogeneous incorporation.

A **homogeneous distribution** guarantees that the binder is present at all contact points in equal amounts, leading to an optimal temporary binding.

When preparing oxide ceramic products, the **burn-off properties** of the temporary binder is, in addition to the desired mechanical properties, a further selection criterion.

The oxidation ability of an organic compound determines the amount of oxygen needed during the burning out. An insufficient amount of oxygen permits only a partial pyrolysis of the additive, which can lead to defects in ceramic products, such as larger gas escape pores on the component surface, or the formation of "black cores".

**Good oxidation ability** and thus **complete debinding** in the sintering process, together with **low emission values** are the required properties that can be obtained from binding agents from Zschimmer & Schwarz when maintaining oxidizing furnace conditions.

The addition of a temporary binder to the slip can have a possible influence on the slip rheology, which must then be re-adjusted.