

MOULD & FUNGUS INFORMATION - MAXISIL SILICONE SEALANT

MOULD FUNGUS ON SEALANTS - CAUSES, COUNTERMEASURES AND PREVENTION

The attack on elastic sealants by mould is a constant concern. Mould attacks can be recognised from the incidence of mainly dark spots on the surface of the sealant. The spots are usually black, as in the case of the well-known mould "Aspergillus Niger," but can also be brown, yellow, violet, red or pink.

Fungi are a large group of micro-organisms. There are estimated to be about 250,000 different types of fungus with around 50,000 of them being mould fungi. The visible spots on the sealant are metabolic products of these micro-organisms.

For removal of mould, mildew and algae view our **Maxisil Mould Remover** product.

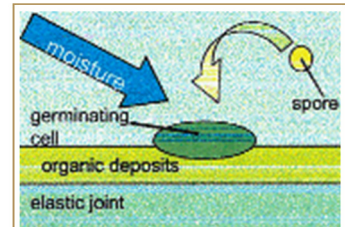


Illustration 2: Schematic representation of the agglomeration of a mould fungus on a sealant.

1. CAUSES

The following conditions help to form mould on sealants:

- High air humidity with little movement of air, eg: in bathrooms, showers, kitchens etc.
- Warmth
- Nutrients in the form of organic deposits. e.g. residues from body care materials such as soap, shower gel etc.

Since elastic silicone joints have low thermal conductivity they are the warmest part of a tiled surface and where mould thrives best, in combination with organic residues and moisture.

Mould fungus spreads through spores. Spores are mostly small round cells with a diameter of a fraction of a millimetre and a mass of a billionth of a gram. They are spread by the wind like dust particles and are very resistant and long-lived. When they first land on, for example, a silicone joint where the three factors for growth exist (humidity, warmth and nutrients), the spores initially absorb water and enlarge by swelling in volume (see illustration 2).

Then a thread-like filament grows out of the spore and spreads by lateral branching in a circle around the germinating spore. A network of filaments forms. These so-called mycelia (networks of filaments) can grow very rapidly and thrive under favourable conditions. If mould is only growing on the organic deposits on the sealant surface, it is called a primary attack (see illustration 3).

These mould fungi secrete a type of digestive juice which is able to break the sealant down into usable decomposition products for the mould. If this occurs, the mould can grow into the sealant. This is called a secondary attack, which in the end results in the unattractive spots on the silicone joint (see illustration 4.)

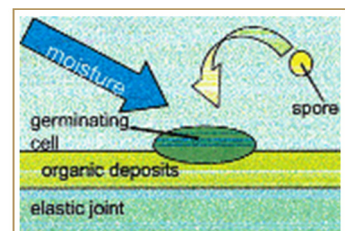


Illustration 2: Schematic representation of the agglomeration of a mould fungus on a sealant.

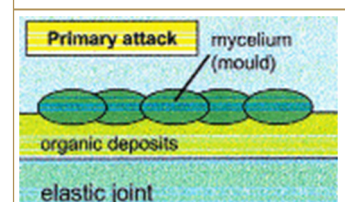


Illustration 3: Schematic representation of a primary attack.

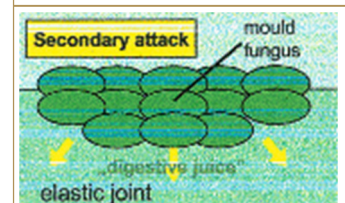


Illustration 4: Schematic representation of a secondary attack.

2. COUNTERMEASURES

Roberts Designs provides fungicidal (mould resistant) properties to the sanitary silicone Maxisil A Ceramic, to the swimming pool silicone Maxisil P and to the natural stone silicone Maxisil N.

By using a fungicidal formulation, mould attack is prevented as far as possible. To ensure the sealants are physiologically safe, Roberts Designs only uses fungicides that do not contain any toxic heavy metal compounds or any other toxic substances.

A problem in making fungicidal formulations of sealants by using additives is that the anti-fungal effect cannot be guaranteed to be long-lasting, since the protective agents can be consumed themselves (taken up by mould fungi) as a result of their mode of action.

3. PREVENTION

The best means of prevention against mould on sealants is good ventilation as well as regular cleaning and disinfection of the elastic joints. Nothing can be done about the spores occurring naturally everywhere in the air. However, the colonisation and multiplication of micro-organisms on the sealant can be prevented if the rooms are well ventilated and the elastic joints are properly looked after.

In addition to regular cleaning, the elastic joints should be treated at definite intervals (e.g. weekly) with a commercial disinfectant. For cleaning, preferably neutral or alkaline cleaning agents should be used, since mould spreads more vigorously under acid conditions.

If a mould attack occurs, as long as it is just limited to the surface (primary attack), it should be treated with anti-fungal spray from Roberts Designs. If the mould has already entered into the sealant (secondary attack), the sealant must be removed completely.

Before applying the replacement, the affected joint areas should be treated with anti-fungal spray in order to remove any fungus spores present. Otherwise, if any spores are still present around the joints, fungal attack may very rapidly reoccur in spite of the new sealant having fungicidal properties.

Should you have any further questions regarding this topic our technical department will always be at your disposal.