



KEIM Mineral Paints – Technical Digest

Paint Saponification

1. What is Saponification?

Saponification is a process that is commonly used to manufacture hand soap. Vegetable oils and animal fats are the main materials that are saponified. These greasy materials (fatty acids) are treated with a corrosive alkaline substance, usually Lye (sodium hydroxide) and mixed with water resulting in the soap we use today. Soap manufacturers then add various fragrances.

Saponification is also known to occur in the decomposition of corpses. Commonly known as 'grave wax' it is the result of the body being buried in alkaline soil and reacting with body fat and moisture.

2. Why do Conventional Paints Saponify?

Film forming coatings have a pH value of between approximately 7 - 7.5 and typically mineral surfaces have a much more alkaline value (approximately pH 11). If there is moisture present in the substrate this can result in a chemical reaction between the alkaline surface and a slightly acidic oil based coating. This moisture carries the alkalinity to the surface, just under the coating, causing this chemical reaction known as Saponification. This reaction results in the formation of a soap like substance which causes a decomposition of a paint's acrylic binder. If saponification occurs it will deposit a scum/soap or grey dust on the underside surface of a film forming paint coating making the paint film unstable resulting in paint failure. Manufacturers of film forming coatings often recommend alkaline resistant primers to combat this problem.

3. Examples of Paint Saponification



These photographs show where saponification has occurred and the binder in the paints has been broken down resulting in unsightly paint failure.

4. Remedying Saponification

There is no way to stop or reverse the saponification process and complete removal of the decomposed paint film is required.





5. Avoiding Saponification

Mineral paint coatings cannot saponify when they are applied onto mineral substrates as they have no petrochemical additives. Mineral paint coatings are alkaline so there is no conflict between the alkaline surface and paint coatings, eliminating the need for alkaline resisting primer.

As with all redecoration onto existing coatings there is an element of risk, and in regard to paint saponification this risk relates to acrylic and alkaline materials coming into contact. Moisture levels should be assessed to ensure suitability prior to any redecoration to reduce the likelihood of paint saponification between the paint coatings, or any other moisture related problems common in decorating and redecorating buildings.

Using Keim Mineral Paints significantly reduces the risk of saponification as well as providing the following inherent features and benefits:

Keim Mineral Paints are:

- Extremely long life and durable, sustainable materials
- Highly breathable
- Environmentally Friendly – made from all natural materials
- Waterbased
- Low VOC and Solvent free
- UV stable and fade free
- Highly light reflective
- Non-flammable
- Odourless
- Available in a wide range of colours, including colour matches
- Resistant to mould and fungal growth
- Carbon neutral in manufacture
- Suitable for unpainted and previously painted surfaces

For further information regarding the features and benefits of Keim Mineral Paints please contact our sales office sales@keimpaints.co.uk or 01952 231250.

