



KEIM Mineral Paints – Technical Digest

KEIM Ecosil-ME, Photocatalytic Reduction of Formaldehyde and Acetaldehyde Gases

1. The Issue

Formaldehyde and acetaldehyde are common chemicals which are classified as volatile organic compounds (VOC). VOCs are chemicals which become a gas at room temperature. As a result, products made with formaldehyde and acetaldehyde will release the gas into the air as they are used. This is called off-gassing. If high concentrations of formaldehyde and acetaldehyde are off-gassed and breathed in, it can cause health problems.

The health effects of formaldehyde and acetaldehyde exposure vary from one person to another. The most common symptoms are eye, nose and throat irritation, coughing, headaches, dizziness, and nausea. Human eyes are especially sensitive to formaldehyde. The effects of long-term exposure are not well known but both chemicals are listed as probable human carcinogens (likely to cause cancer).

2. The Solution

Whilst measures can be taken to ventilate internal areas, it is also possible to use paint as a part of the management of the solution. Conventional acrylic paints themselves contain a range of VOCs which can be harmful to humans and detrimental to the environment, whereas mineral paints, such as Keim Ecosil are made with only natural materials, do not contain any additional petrochemicals or solvents and are both environmentally friendly and sustainable.

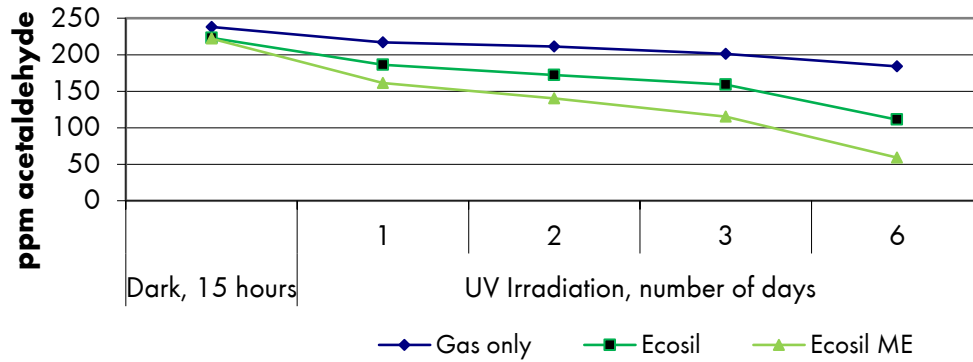
Keim Ecosil-ME is a photocatalytic variant of Keim Ecosil, a high quality interior paint. Photocatalytic paints contain a catalyst, in this case titanium dioxide, which when activated by light, enables a reaction converting harmful air pollutants into harmless substances. The pollutants which Keim Ecosil-ME helps to reduce include formaldehyde and acetaldehyde, as well as other VOCs such as benzene and toluene. Nitrogen oxides, ammonia and surface bacteria are also reduced by the photocatalytic reaction.

3. The Results

Photocatalytic activity evaluation result - Glass plates coated with photocatalytic TiO₂

Samples	Acetaldehyde gas (ppm) - Initial gas concentration: 250 ppm				
	Dark	UV Irradiation (day)			
	15 hrs	1	2	3	6
Gas Only	238	217	211	201	184
Keim Ecosil	223	186	172	159	111
Keim Ecosil-ME	222	161	140	115	59





As these results show there is a significant reduction in the concentration of acetaldehyde gas, up to 68% reduction after 6 days, and even a 7% reduction in the dark, when there is no light to activate the reaction.

For further information regarding Keim Ecosil-ME and its features and benefits please contact our sales office sales@keimpaints.co.uk or 01952 231250.

