

Classification of titanium dioxide – the white elephant

A costly but pointless exercise

Heike Liewald, Verband der Mineralfarbenindustrie e.V., Frankfurt Main/Germany

Facts and figures about Titanium Dioxide

Titanium dioxide is the “elephant” (heavy weight) in the world of pigments. In nearly every product of our daily life TiO₂ is incorporated/included – and this not only in the white ones. With production capacities of more than 7 million tons worldwide, 1.4 million tons in Europe and nearly 0.5 million tons in Germany, it represents more than 50 % of the world-wide production of all pigments and is the most common used pigment in the world.

Large quantities of TiO₂ are used in technical applications like paints, coatings and printing inks (in total more than 50 %), in plastics (nearly 23 %) and paper (about 10-12 %).

The reason for the unique position of TiO₂ is its excellent characteristic: TiO₂ is chemically and biologically inert; it has extrem light fastness, a high refractive index and a very high light scattering capacity. From the coloristic perspective it has, therefore, the highest opacity among all white pigments.

Toxicology

TiO₂ is an inorganic, crystalline, white solid; it shows so called overload effects in rats. These typical effects in rats are well-known and cannot be transferred 1:1 to humans. In workplace conditions workers are protected by complying with the general dust limit.

Classification proposal

In 2016 the French authorities ANSES started a discussion about the classification of TiO₂ under the CLP Regulation (EC No 1272/2008) based on only one study showing effect under overload conditions in rats. The Risk Assessment Committee (RAC) of the EU Commission confirmed that only (no substance specific) particle effects can be observed for TiO₂. Nevertheless/However in October 2019 – after 3 years of discussion – the EU Commission decided to classify TiO₂ as “suspected carcinogen by inhalation” (carc cat 2) under the CLP Regulation, not taking into consideration that only intrinsic

properties should be covered under CLP. This classification is scientifically unfounded and does not improve health protection or the environment.

Huge consequences – costly but pointless

The consequences of a classification of TiO₂ are tremendous: for consumers, for workers and especially for downstream users.

In consumer applications like toys or cosmetics the use of TiO₂ is doubtful. Due to the excellent characteristics actual there is no equivalent alternative available.

Impacts on the waste sector will be considerable: All TiO₂-containing waste with a share of $\geq 1\%$ will be treated as hazardous waste and, as a result, its disposal will be subject to stricter conditions – even though no respirable dusts form, as is true for dried coating residues or painted wallpapers. According to a recent study, 50% of all waste generated in Germany in the plastics sector will be affected.

Instead of extending this protection to all workers by harmonizing the occupational exposure limits in Europe, a precedent of consequence was set: if the reasoning of the Commission is followed, many other insoluble substances will need to be classified as well.