

# Introduction - (E171) Executive Summary

## In this guide

### [In this guide](#)

1. [Introduction - \(E171\) Executive Summary](#)
2. [Characterisation and ADME considerations](#)
3. [Review of toxicity for the endpoints identified by the COT](#)
4. [Establishment of a Health-Based Guidance Value \(HBGV\)](#)
5. [Exposure Assessment - \(E171\) Executive Summary](#)
6. [Risk Characterisation - \(E171\) Executive Summary](#)
7. [COT Overall Conclusion and References](#)



1. Food grade titanium dioxide (TiO<sub>2</sub>) was an authorised Food Additive (E171) in the EU but from the 7th of August 2022 it is no longer permitted following the publication of Commission Regulation (EU) 2022/63, amending Annexes II and III to Regulation (EC) No 1333. Since August 2022, manufacturers in Northern Ireland have not been permitted to produce goods containing titanium dioxide according to EU legislation. It currently remains authorised in Great Britain. Food grade TiO<sub>2</sub> comprises a mixture of micro and nanosized particles and is used in food as a colour (white pigment) to make food more visually appealing, to give colour to food that would otherwise be colourless, or to restore the original appearance of food. It is commonly used in products such as bakery products, soups, broths, sauces, salad dressings, savoury based sandwich spreads, processed nuts, confectionary, chewing gum, food supplements and cake icing. Titanium dioxide is also widely used in cosmetics and medicines.

2. Titanium dioxide has been the subject of multiple safety evaluations including three recent evaluations by the European Food Safety Authority (EFSA) in 2016, 2019 and 2021.
3. In their most recent Opinion (2021), EFSA considered that some findings regarding immunotoxicity, inflammation and neurotoxicity with respect to TiO<sub>2</sub> nanoparticles, which are present in food grade TiO<sub>2</sub>, may be indicative of adverse effects. On the basis of the currently available evidence and the uncertainties, in particular a concern regarding genotoxicity which could not be resolved, the EFSA Panel concluded that E171 could no longer be considered as safe for use as a food additive.
4. Following this, in 2021 the COT published an interim position on titanium dioxide (COT, 2021) capturing the outcomes of discussions and outlining the next steps. A review has now been undertaken by the COT, which includes the conclusions on mutagenicity from the Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment (COM), to assess the safety of TiO<sub>2</sub> as a food additive. This review is summarised below.
5. Since the EFSA and COT publications in 2021, reviews of TiO<sub>2</sub> have also been carried out by Health Canada (2022), Food Standards Australia New Zealand (FSANZ) (2022) and most recently by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) (FAO/WHO, 2024).