

**EIP**

# Exhaust gas clarification patent found valid and infringed

**Anan Kasai Co. Ltd & Rhodia Operations S.A.S v Molycorp Chemicals & Oxides (Europe) Ltd [2018] EWHC 843 (Pat).**

**Exhaust gas clarification patent found valid and infringed in claim by Solvay (formerly Anan Kasei) against Neo Chemicals (formerly Molycorp).**

Ceric oxide, an oxide of the rare earth metal cerium, is used in catalytic converters found in the exhaust systems of most internal combustion engines. It operates as an absorber/desorber of oxygen – i.e. it absorbs oxygen from an oxygen rich environment, and re-emits it in anoxic conditions. This property of ceric oxide means that products of incomplete combustion (hydrocarbons, carbon monoxide, various oxides of nitrogen) may be converted into benign products (water, carbon dioxide, nitrogen) via the uptake, and reaction with, the emitted oxygen.

The efficiency of this process is governed by the specific surface area of the ceric oxide composition, expressed as an area per unit mass. Specific surface area is known to reduce at high temperatures, making a composition which eliminates or manages this effect a desirable contribution to the art.

Following cross examination of the experts and fact witness, the Deputy Judge found that use of mixed ceric oxides with other oxides, particularly cerium zirconium mixed oxides, to increase thermal stability formed part of the common general knowledge

The Patent (EP 1 435 338) claims a composition of ceric oxide which maintains a specific surface area above 30 m<sup>2</sup>/g when subjected to a temperature of 900°C for five hours. An example describes a process of sequential heating in the presence of oxygen (calcination)

at several different temperatures, resulting in a powder.

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Neo alleged the claims were invalid because the skilled person would find it obvious to synthesise pure ceric oxide using a method described in US Patent '5712218 ("Chopin"). The Deputy Judge determined that, while Chopin disclosed an improved composition including ceric oxide, it was more particularly directed at producing a composition of ceric oxide mixed with some other oxide.

Rhodia (the Second Claimant and exclusive licensee of the Patent) submitted that Neo's expert witness testimony was tainted by hindsight. The Deputy Judge apparently agreed, commenting that it "... appears that he had the Patent in front of him when he prepared [his report]." The Deputy Judge considered whether the skilled person would be motivated, on the basis of Chopin, to try a pure ceric oxide composition for lower temperatures applications. He concluded that, despite being taught a method for preparation of pure ceric oxide, the skilled person would not be led to believe that this product was of interest beyond being a precursor in the production of the mixed oxide compositions which are the primary focus of the document.

The Deputy Judge also found that the patent withstood sufficiency attacks. First, as to the phrase "... consisting essentially of ...", he proceeded on the basis of the accepted meaning at the EPO; while on the facts that might mean a fuzzy boundary to the claim this was not a true insufficiency. Secondly, the breadth of the claims did not exceed the technical contribution of the invention. An attack based on lack of an upper numerical limit also failed.

Neo accepted the product falls within the numerical limits of the claims. The Deputy Judge found there were no relevant other additives so infringement was established.