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Executive Summary for application for REACH Authorisation Pigment Yellow 34 and Pigment Red 104

Uses

Pigment Yellow 34 (PY.34) and Pigment Red 104 (PR.104) are key products in the following industries:

- Coatings
- Plastics
- Road marking

The uses in these industries covered in DCC's application for Authorisation for PY.34 and PR.104 **are only for** industrial and professional uses **and do not** include applications that would result in consumer exposure (for example the application **does not apply for** use in decorative paints or children's toys).

The uses applied for in the Authorisation request cover **high added value industrial and professional applications** bringing measurable large benefits for the whole of the European economy whilst being safe for workers and non toxic to the environment.

Rationale

The major reasons for continued use of these two pigments in these applications include:

- Worker safety is not compromised due to low worker exposure
- The pigments are demonstrably non impacting on the environment
- The socio-economic analysis clearly describes the major benefit to the user industries as proposed alternatives are not direct replacements resulting in:
 - Significant cost increases
 - Reduction in overall performance
 - Loss of colour space
 - Reduction in heat stability
 - Often requiring the use of more toxic or difficult to obtain intermediates
 - Toxic breakdown products



Worker Safety

The chemical safety report thoroughly examined the exposure of workers to both PY.34 and PR.104. These valuable pigments are produced by the applicant outside of the European Union and only exported to specialized companies that use them for either transformation into paint/coating, plastics (masterbatch) or road marking. The only stage at which there is possible workplace exposure to the pigment is at the formulation stage when the paint/coating, plastic or road marking is initially prepared. However, even very conservative analyses of the exposure show only minimal hazard or risk due to:

- the nature of the pigments:
 - they have very low solubility and thus low bio-availability reducing risk to workers
 - they are heavy and do not 'dust';
- the specialized nature of the companies handling the substance; handling is done in equipment with worker protection ventilation systems or even in totally closed systems using the required personal protection. The high level of awareness of the potential risks results in sufficient care in handling the substance;
- The high level of worker protection, already standard in the production sites for all work given that most pigments are sensitizers, reduces the risk well below the level that any occupational exposure expert would recommend taking action

REACH is not the only legislation applicable to workers and environmental safety. The general demands from the market have driven an increasing number of producers to use specialized tolling producers to handle the first and only stage of the process where risks might occur (but do not).

DCC workers producing the pigments as well as customers using these pigments in an industrial setting have been part of periodic bio monitoring for lead and chromium exposure for years. Blood levels of lead and chromium are generally in line with those of a non exposed reference value.

Environmental Safety

The restricted use of these pigments in an industrial and professional setting ensures an awareness of the protective measures surrounding their use. Generally no water is used during the formulation into coatings or plastics so the emission to wastewater is negligible. Ventilation systems to prevent dust inhalation for workers may lead to atmospheric emission of airborne dust, but due to obligatory filter systems the release is negligible. Release to soil may occur only from outdoor painting during maintenance. Due to the very low solubility in water, the pigments will not easily move through the water and soil compartments. In ecotoxicity test with the pigments, no effects were observed. Small amounts of chromate and lead ions are formed that spread through the environment. As a worst case, the emission of lead was taken to assess the environmental risks related to the uses of the pigments covered in this application. In all exposure scenarios the risks were negligible (RCR < 0.01), thus there is no concern for the environment.

Plastics applications

The Socio Economic analysis clearly demonstrates the value of these pigments to the plastics industry. The pigments provide plastics with unique characteristics which cannot be achieved by any alternative without compromising product quality. Furthermore the plastics market is subject to extreme price elasticity so that the added cost of the less performing alternatives will simply drive production out of Europe altogether. The finished products will, instead, be



imported from China and other non-EU countries, with only job losses and a poorer trade balance sheet as a consequence for Europe.

It is foreseeable that the European plastics producers that have managed to remain in the market with higher added value products, will suffer the most. At the lowest end of the market European plastic industry is not competitive but through innovation and high quality products some companies have managed to keep the upper hand over Chinese and other non-EU competition. If the use of the pigments in Europe is lost, a key market will be lost to China or other non-EU countries who will take the opportunity to buy one of the lesser European players to acquire technology and sales network and then shut down production in the EU. This would mean the end for the other European players as well. Countries especially affected would be Belgium, Italy, Greece and Eastern Europe.

The analysis of alternatives provides a comprehensive overview and assessment of the most likely alternatives to PY.34 and PR.104. It is clear there are no direct replacements for PY.34 and PR.104, each alternative requiring a reduction in performance, or the use of other hazardous substances and always a significant increase in cost. In addition there often is not enough availability of the alternative in the market place to replace the pigments. The assessment included direct discussions with downstream users who confirmed the analysis.

In conclusion there is an extremely high cost to replace both PY.34 and PR.104 in the plastics market. All alternatives result in negative compromises and lower performance which will have a significant negative impact on small and medium sized enterprises who do not have the resources to compete.

Coatings applications

PY.34 and PR.104 account for a small-fraction of the total coatings market that is dominated by a few large players. However there is a very large group of medium sized companies selling specialty coatings. As a result of the general drive to eliminate lead in paints where possible, the applications remaining and applied for in the authorisation process can truly be said to be irreplaceable for the purposes of quality and durability.

Substitution by less performing alternatives will cause massive cost increases due to additional coating layers, endangered safety to the public, reduced durability of large installations or even worker accidents. Given the extremely small risks associated with the continued use of the coatings containing PY. 34 and PR. 104 there is no sense in forcing them out of the market. The end result will severely impact the small and medium pigment and coatings producers who do not have the R&D resources to effectively compete against larger volume producers.

The analysis of alternatives describes a number of possible pigments used in the coatings industry as possible PY.34 and PR.104 alternatives. All lead to a reduction in performance in areas such as durability, hiding power, increased solvent usage and often a negative impact on the environment and safety to workers. Often the alternatives require multiple coatings which leads to higher requirements for solvents and energy compared to the use of PY.34 and PR.104. In addition the alternatives have lower durability meaning that coatings have to be re-applied again much sooner than if PY.34 or PR.104 is used. Thus again impacting the environment. PY.34 and PR.104 are often used in areas that alerts for safety reasons and in hard to reach areas. As such, any re-application places risk on the safety and protection of workers.



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As with the plastics applications, it is clear there are no direct replacements for PY.34 and PR.104, each alternative requiring a reduction in performance, or the use of other hazardous substances and always a significant increase in cost. In addition there often is not enough availability of the alternative in the market place to replace the pigments. The assessment included direct discussions with downstream users who confirmed the analysis.

In conclusion, similar to the plastics applications, there is an extremely high cost to replace both PY.34 and PR.104 in the coatings market. All alternatives result in negative compromises and lower performance which will have a significant negative impact on small and medium sized enterprises who do not have the resources to compete.

If you have any questions, please do not hesitate to contact me directly.

Kind regards,

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