POSITION PAPER

CTACSub Consortium applications for authorisation to use chromium trioxide under the REACH Regulation –

CEIR contribution on Substitution Plan for Use 3 "Functional Chrome plating with decorative character"

Brussels, 5 June 2020

CEIR – the European Association for the Taps and Valves Industry – gathers together a large number of European manufacturers of sanitary, building and industrial valves. CEIR welcomes CTACSub's intention to develop a substitution plan for chromium trioxide, covering use 3 "Functional Chromium Plating for Decorative Purposes", as well as the questionnaire set up for this purpose.

In addition to the replies received by the Consortium, CEIR would like to further contribute on the importance of granting an authorisation of Use 3, as full alternatives to chromium trioxide are not available yet.

CEIR members' faucet manufacturers can be divided into two categories:

- *Those subcontracting chromium plating (a large majority);*
- *Those having their own surface treatment line (a few very large companies in Europe);*

As a result, a large part of the manufacturers we represent are not downstream users, making it complicated for some members to answer to the questionnaire. Nevertheless, we believe it is important for the applicants to take our concerns into consideration, as a successful substitution plan will need to take into account the specificities of the products using this surface treatment.

Currently, one of the main research areas for an alternative is chromium 3 electroplating. However, the main ingredient of this process, boric acid, is on the SVHC Candidate List with a probable expiry date of 2 to 3 years after chromic acid. Since no substance can be removed from the Candidate List, it seems unlikely that chromium 3 electroplating is a long-term alternative. Therefore, it is difficult to invest in expensive research and equipment to explore this route.

Acknowledging that chromium 3 electroplating is as of today the most advanced technology, at the moment it seems that it cannot yet be considered a perfect alternative to the use of hexavalent chromium in the sanitary tapware sector. We provide below a short analysis explaining the different aspects to take into consideration:

- ***TECHNICAL ASPECTS***

- Wear resistance: currently, the wear resistance is not equivalent to the one obtained with the use of hexavalent chromium[1].

[1] Based on members feedback, the tests show that this is at least 30% lower.

- Unstable colour: trivalent chromium plating always presents a small percentage of iron which is co-deposited together with the metallic chromium. This tends to increase when the bath ages. The oxidation of the iron determines a yellowish tinge of the deposit (instead of blue as in the hexavalent chromium plating) which may be different from plant to plant or even in the same plant after some time (difficult pairings).

- Moreover, with trivalent chromium plating, the deposit obtained is microporous bringing as a consequence that it tends to slightly darken over time. The "age tests" or aging tests performed so far have shown this trend. The deposits obtained from trivalent chromium also showed a lower chemical resistance, especially with respect to acid-based detergents that could be used for common cleaning.

- The co-deposit of iron together with the metallic chromium together with the microporosity of the obtained deposit determine a corrosion resistance lower than the one obtained when using a hexavalent chromium bath.

- ***ECONOMIC ASPECTS***

- Higher management costs. Trivalent chromium baths normally consist of a solution containing six or seven components which must always be in the right proportions inside the bath to ensure effective storage. This operation and maintenance require frequent analysis resulting in higher costs.

- Trivalent chromium baths suffer from the presence of organic substances, generally coming as a residue from the previous treatments of the process. For this reason, it is necessary to provide a treatment with activated carbon which will cause periodic plant shutdown with consequent increase in costs.

- The trivalent chromium baths are sensitive to the pollution of metals such as iron, copper and zinc. Therefore, suppliers suggest installing a system using ion exchange resins which allows the continuous purification of the bath (electrolyte) to ensure high standards. Due to their complexity, a consistent higher percentage of waste is expected compared to bathrooms that use hexavalent chromium. The installation of new tanks and the general modification of the plants would have rather high costs without counting the plant shutdown necessary to carry out the required works.

- The amount of energy and electricity currently needed for the trivalent chromium plating process is much higher (around 40% or more) than what is required for hexavalent chromium plating. The chromium sulphate baths operate at temperatures above 50 degrees Celsius and must be kept just below this temperature even when production is stopped in order to avoid the precipitation of the components contained in them. In addition, the cost of procurement of raw materials is approximately 10% higher than the purchase of chromium trioxide and the related catalyst used in the process that uses hexavalent chromium.

Regarding other alternative processes, although they exist, these are not yet available at a large scale. The conversion of treatment lines or plants to a new process will require heavy material and human investment. Regarding this aspect, while it is true that this step has been known for a long time, in the next months financial and human resources will be focused on company recovery related to the COVID-19 crisis.

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Furthermore, once the process will be developed and implemented, tap manufacturers will have to re-certify their products, using different laboratories for several requirements on:

- Performance: plating resistance to abrasion, colour stability, chemical resistance to various cleaning products, corrosion resistance, etc;
- Sanitary: problems due to the greater release of nickel into the water, requirements of chemical inertia with respect to the drinking water conveyed, etc.

These certifications need to be carried out on average 5 times due to health regulations, which are often a matter of national competence and impose different certification schemes depending on the country of destination of the products.

Finally, our member companies expect to be able to change their main processing lines within 3 to 4 years from the day an alternative process is considered stable on a large scale. This leads us to recommend an authorisation period of not less than five years from the date of the decision.

Significantly shorter periods will force industry to seek alternative supply chains in countries not affected by REACH.

About CEIR

The European Association for the Taps and Valves Industry (CEIR) was formed in 1959 as the European federation of national manufacturer associations. CEIR gathers together a large number of European manufacturers in the field of valves and fittings. CEIR is composed of 12 national associations and 13 European corporate members: CEIR represents over 300 taps and valves manufacturers. CEIR supports the principles of a free economy and private enterprise in Europe as well as on a global basis. CEIR represents the common economic, technical and scientific interests of the European valve industries, towards international authorities and in economic and commercial circles.

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