

**Committee for Socio-economic Analysis**  
**SEAC**

**Addendum to ECHA's opinion on the Use of  
chromium trioxide by Hapoc GmbH & Co. KG  
adopted on 14 September 2018**

**ECHA/SEAC/AFA-O-0000006669-58-02/D**

**Adopted**  
**9 June 2021**

## OPINION

Pursuant to Article 77(3)(c) of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (the REACH Regulation), the Committee for Socio-economic Analysis (SEAC) has prepared an assessment of further information submitted by HAPOC GmbH & Co KG on 10 September 2020 as regards application for authorisation CT\_Hapoc and integrated it into the opinion N° AFA-O-0000006669-58-02/D on an application for authorisation adopted on 14 September 2018.

### I. PROCESS FOR ADOPTION OF THE OPINION

On 5 October 2020<sup>1</sup>, the Executive Director of ECHA requested SEAC to assess and provide its opinion on the following:

- A. Credibility and completeness of the substitution plan, where submitted; and
- B. Technical evaluation of the justification that there are no suitable alternatives available in general, where submitted.

Rapporteur, appointed by SEAC: **FANKHAUSER Simone**  
Co-rapporteur, appointed by SEAC: **JOYCE John**

In accordance with the mandate from the Executive Director of ECHA, the rapporteurs developed an *ad hoc* addendum to the concerned opinion.

The 4-week consultation was held between 21 October 2020 and 18 November 2020.

The draft opinion together with the *ad hoc* addendum to the opinion dated 17 March 2021, were sent to the applicant for written comments on 19 March 2021.

Applicant's comments were received on 26 April 2021.

The view of RAC on the substitution plan was not considered necessary, as it does not contain information on risks of the alternatives.

The opinion was adopted by **consensus** on **9 June 2021**.

Consequently, opinion N° AFA-O-0000006669-58-02/D, dated 14 September 2018, is amended with this opinion and the *ad hoc* addendum in Annex 1, dated 9 June 2021.

---

<sup>1</sup> [https://echa.europa.eu/documents/10162/13555/seac\\_mandate\\_afa\\_sp\\_evaluation.pdf](https://echa.europa.eu/documents/10162/13555/seac_mandate_afa_sp_evaluation.pdf)

## **II. OPINION OF SEAC**

On the basis of this additional information submitted by the applicant, SEAC is of the opinion that:

- The substitution plan was not credible.

To arrive at this conclusion, SEAC has neither taken into account nor re-evaluated the original application for authorisation AFA-O-0000006669-58-02/D and the corresponding opinion. Therefore, SEAC's conclusion is based solely on the additional information submitted by the applicant on 10 September 2020 and should be considered as a complementary element in the decision-making process, alongside its conclusions on the original application for authorisation presented in opinion AFA-O-0000006669-58-02/D

## ANNEXES

### Annex 1 *Ad hoc* addendum

## 1. JUSTIFICATION

### **Use and utilisations covered by the Substitution Plan or by the justification on the absence of suitable alternatives available in general**

The applicants apply for the following use: Use of chromium trioxide in solid form and its aqueous solutions of any composition to modify the properties of surfaces made of metal or plastic, with or without current flow.

The wide range of applications of the original application makes the applicant's focus to be on the use of the substance, so that, for example, a distinction is made between functional (hard-chrome) and decorative applications. For this reason, the applicant considers the first prerequisite for the preparation of a substitution plan to be the grouping of the applications (utilisations). The formation of utilisations creates homogeneous groups, with comparable requirements for key functionalities and supply chains. The applicants proposed the following 5 utilisations: hard chrome, decorative bright chrome plating, pre-treatment of substrate (especially plastics), black chrome plating, other applications. These will be explained in detail later in this addendum.

The Substitution Plan (SP) presents an overview of the substitution activities to be performed by the downstream users, in order to replace Cr(VI) technology.

### **1.1. Background and contextual information**

The original AfA was submitted in September 2015, and the RAC and SEAC opinions were adopted by consensus in September 2018.

SEAC confirmed that there appear not to be suitable alternatives in terms of their technical and economic feasibility for the applicant. SEAC concluded that benefits of continued use outweigh the risk.

The following is an extract of the main alternatives (substances and techniques/systems) which were shortlisted by the applicant:

- Electroplating coatings based on Cr(III) salts.
- Technology replacement alternative 1: Thermal spraying
- Technology replacement alternative 2: Physical Vapour Deposition
- Alternatives to non-chrome plating utilisations using Cr(VI)

The applicant requested a review period of 12 years and SEAC recommended 4 years, mainly based on underlying uncertainties (broadness of the scope of the use applied for and uncertainties about potential alternatives becoming suitable in a short period of time for some applications covered by the authorisation).

## **2. Summary of substitution plan by the applicant and of the comments received during the consultation and other information available**

### **2.1. Introduction to Utilisations**

In this section, the utilisations as grouped in the SP are described. The SP defined applications (utilisations or clusters) as homogenous groups with comparable requirements for key functionalities and supply chains. The SP grouped applications to allow for an analysis of substitution possibilities. For example, for the black chrome plating (utilisation), they discussed the large number of special applications and considered that limited grouping is possible. In contrast, for decorative bright chrome plating (utilisation), the importance of the substrate to be used (e.g. plastic, metal, etc) was raised as a cross sector challenge and this criterion was used by the applicant to evaluate the feasibility of the substitution plans. In the next section, the choice of alternative technology is presented separately in summary form for each utilisation. Companies in HAPOC are job platers and their business model is characterised by a diverse and fluctuating product portfolio.

#### **Summary of Utilisations**

##### **1. Hard Chrome**

- The applicant discussed that to replace hard chrome, a job plater needs 2-3 alternative technologies (which may not be financially feasible).
- The SP evaluated the 'most important' alternative technologies including Cr(III); PVD; Thermal spraying; and Nitriding.
- The SP considers Cr(III) as a realistic option (but with some R&D and production engineering needs).
- Each technology is discussed in terms of economic aspects and costs, risk assessment and technical issues.

##### **2. Decorative bright chrome plating**

- The following technologies are described as being "generally available" in the case of decorative bright chrome plating: Cr(III); PVD; Painting; Application of stainless steel.
- A distinction was made between general (e.g., automotive) and special applications (e.g., optical, medical, electrical, security technology) and the need for further development in special applications.
- The analysis in the SP identifies Cr(III) as the most promising alternative, noting the other technologies are only applicable under special conditions.
- The SP cites further developments needed to achieve broad implementation in the electroplating industry, with several technical issues highlighted.

##### **3. Etching (particularly of plastic substrates)**

- Technologies evaluated as being "generally available" are: Mn(III)-based process; Potassium permanganate with phosphoric acid; Permanganate with organic pickling

solutions; Change in the surface structure – Biconex process; and Sulphonation and use of peroxides.

- The SP describes all of these as still being at a relatively early stage and prior to practical implementation, i.e., either prototype that has been demonstrated in an operational environment or there has been component validation in a relevant environment.
- The applicant does not settle on a preferred alternative itself, and instead merely notes that potassium permanganate with phosphoric acid is “currently being most extensively tested”.

#### **4. Black Chromium**

- Evaluated potential alternative technologies for black chromium: Cr(III); PVD and Painting.
- Cr(III) is not considered a viable alternative and is not being developed in the black chrome sector.
- PVD and painting are considered feasible for some, but not all applications. Special finishes are required for specific applications.
- It is unclear what is happening with the development of alternatives where substitution to PVD or painting is not considered feasible.

#### **5. Other uses (Anodizing and stainless-steel colouring)**

- Anodizing – alternatives under development include sulphuric acid (GS process) and chemical deposition processes (e.g., electroless nickel)
- Stainless steel colouring – possible alternatives include colour deep etching, black nickel plating, highly alkaline bronzing, pad plating with high performance electrolytes and plasmatic coatings.

## **2.2. Summary of the SP**

### **1. Generic Approach**

The SP presents an overview of the substitution activities to be performed by the downstream users to replace Cr(VI) technology (from the perspective of the applicant, not based on a survey of DUs, however, webinars were held). Due to the large number and variety of DUs, the analysis is presented in high-level terms for groupings of DUs expected to undertake similar substitution activities.

The general approach to substitution (across all utilisations) takes the following steps:

1. Identification of key applications
2. Identification of key functionalities
3. Identification of product portfolios
4. Improved evaluation of product functionalities
5. Definition and selection of further necessary R&D developments

The approach to financing and monitoring is similarly consistent across all sub-uses. The

section on financing presents some hypothetical and estimated investment costs for different technology scenarios with return on investment estimates.

## 2. Timescales

In terms of **timescales** to completion of substitution, the SP presents generic timelines for four different scenarios:

1. Technology-determined: where the technology is not already mature and its development is the constraint on adoption of alternatives
2. Product-determined: where the output of an existing Cr(VI) process is part of a broader product range with a specific lifecycle, and the constraint is therefore the introduction of a new product range
3. Small companies – customer driven: where the ability to switch to alternative technologies is determined by the customer and their willingness to accept parts based on alternative technologies
4. Large companies – customers and products: these companies have much more freedom and control over the switch to alternative technologies, as they are less dependent on customer demand than smaller firms.

In addition, the SP provides detailed generic **timescales** in the form of a series of Gantt charts, which break down the overall substitution objective into a series of tasks and actions. There are separate Gantt charts for each sub-use (broken down by technology), as well as for project management functions conducted centrally by the applicant. It should be noted, however, that these timescales are generic and not based on any company in particular. They mainly show a 10–15-year time period to full adoption of alternative technologies, depending on scenario.

The section on **monitoring** describes clearly the framework for collaboration and joint assessment of progress between HAPOC, VECCO companies<sup>2</sup> and academic and journalistic partners.

## 3. Consultation comments

Several consultation comments were received from the downstream users and an NGO. The comments from the downstream users varied in the level of details provided. A few downstream users provided detailed company (and customer) specific issues with alternatives and the process of substitution. Such detailed information could be regarded as supporting information to the main HAPOC substitution plan. The consultation comments mainly focused on two areas, the engineering based technical challenges and compatibility with customers' needs. NGOs mainly expressed the view that the information provided in the substitution plan is too general in order to properly evaluate the situation. They state that the substitution plan lacks clarity on what specific uses are covered. Overall, NGOs said that the information provided does not allow SEAC to perform a proper assessment. Furthermore, NGOs believe that the substitution plan fails to meet the Court's requirements in several ways (for instance, by challenging the existence of feasible alternatives with weak evidence, or presenting a substitution plan that lacks completeness) the Court's decision being the basis for the European Commission to request substitution plans from certain applicants.

In his response to the comments, the applicant states that it has long been accepted that

---

<sup>2</sup> Association of companies in the electroplating industry in Europe

the broad range of applications and the requirements of the different supply chains require a general but specific consideration. The applicant also elaborates on how this can be done by an adequate grouping. Especially for this purpose, the applicant continues, the substitution plan offers a basis for further developing the substitution possibilities on the one hand technically and on the other hand to implement the applicability for products and supply chains together with the customers.

### **3. SEAC's evaluation/view on the substitution plan**

#### **3.1. STRUCTURE OF THE SP**

The applicant has generally followed the available guidance on how to structure the substitution plan, with the result that the rapporteurs are able to navigate the document largely without difficulty. The different sections are clearly labelled, while there are breakdowns provided by utilisation and sector, where relevant.

#### **3.2. CATEGORISATION OF UTILISATIONS**

In its letter to the applicant, the European Commission explains utilisations as "*certain applications of the use applied for*". SEAC acknowledges the heterogeneity of sectors, products, types, and structure of companies (job platers, in-house platers, etc.) covered in the substitution plan. As a result, arriving at a definition for utilisation is challenging. SEAC considers that the substitution plan lacks a more sector and/or product-specific discussion on substitution, based on the fact that utilisations were defined on the plating processes (pre- and main process) and the substrates to be treated. SEAC does not consider that the approach to utilisations in the substitution plan allows for a full evaluation of substitution possibilities, as different sectors and types of companies are facing different challenges (e.g., food industry vs. medical technology vs. aviation, etc.) regarding many aspects, e.g., customer acceptance, financing, product design or competition effects.

#### **3.3. REPRESENTATIVENESS OF FEEDBACK (DU survey)**

The substitution plan is based on analysis done by the applicant on a product level as well as on feedback provided by member companies of VECCO. VECCO/Hapoc carry out a regular survey in order to evaluate current developments and their feasibility. SEAC acknowledges the value of a top-down survey as an instrument to understand the state of play in regard to the substitution progress across the companies. However, to improve the information and conclusiveness of the substitution plan, a bottom-up or more granular analysis of the companies' substitution progress across a range of parameters would be necessary and would provide the SEAC with complementary information to support the overall evaluation. As it stands, SEAC considers that it is difficult to judge the representativeness of the information provided for the broad range of companies and products covered. SEAC notes that at a general level, in the absence of any specific company-level data, SEAC cannot confirm the representativeness of the information given or the assumptions made by the applicant. The substitution plan does present a distinction between SMEs and larger companies, which is relevant because many of the factors

affecting substitution can be seen as more significant for SMEs than for larger companies. From the perspective of the representativeness of the data, this is appreciated by SEAC.

### 3.4. FACTORS AFFECTING SUBSTITUTION

SEAC acknowledges the usefulness of the survey information on the factors affecting substitution (at a general level). However, without further detailed analysis at a company level, SEAC is not in a position to conclude on the extent of the effect on companies from these challenges. As it stands, the factors affecting substitution were presented in general terms (i.e., not specific to individual utilisations). Notably, factors include:

- **Market acceptance/customer interest:** the applicant discussed that successful communication with and inclusion of the value chain (i.e., customers and end users) in the substitution process is a critical constraint for substitution. In part this is to ensure that there is an explicit customer demand for modified products and that the modified products meet customer standards. This necessitates customer engagement and joint ownership in the innovation processes. SEAC considers this argument to be reasonable: the applicant mentions positive steps being taken to foster collaboration through the VECCO association and with a joint innovation platform, while the discussion points to an understanding that the customer requirement may be a dynamic rather than a fixed concept, hence the need for closer on-going collaboration.
- **Operational challenges:** the application plan highlights the operational challenges and risks to substitution, in particular the management of the change process and the planning of subsequent production. Substitution requires time, new investments and a temporary halt in existing production, so adequate financing, and some guarantee of continued supply to customers/demand from customers are essential. The challenges are compounded for companies that produce multiple products that may require multiple new processes, or where companies are tied into multi-year contracts with different customers and varied end dates, thereby requiring some dual-running of production systems. SEAC agrees there are likely to be considerable operational challenges, although this will likely manifest itself as a financial issue. Moreover, the impact of such challenges is likely to affect SMEs and larger companies in different ways.
- **Financing:** the applicant writes that “the financial effort regarding Cr(III) is deemed critical but feasible”. Later in the SP, the applicant presents some illustrative scenarios, showing investment amounts, turnover and Return On Investment (ROI) based on a 4.5 % sales return. While interesting as hypotheticals, these scenarios offer little useful information on the financial constraints of firms. This is a shortcoming in the substitution plan. SEAC is sceptical that the four scenarios presented can reasonably represent the wide range of affected DUs, for example given the limited range of turnover presented and fixed sales return.

- **State of transition:** the degree of overall progress towards substitution to Cr(III) is an important, if obvious, constraint. As the underlying technology develops, it may give companies and customers more confidence to work towards this transition. Setbacks in the development of the general technology will slow the progress to eventual substitution. While this line of argument is hard to dispute, it may not be relevant to all sub-uses/sectors, as in general Cr(III) is now considered in the SP to be technically mature in most of the sectors. In this context, the focus of substitution has shifted more to testing/certification and industrialisation, where issues such as customer acceptance and financing are likely to be more significant constraints.
- **Size of company:** as mentioned above, financial (and other) constraints are likely to be more significant for SMEs compared to larger companies. Investment costs are less likely to be affordable for SMEs; they may have more difficulty accessing external financing, they are more likely to be “price takers” unable to pass on increased costs to consumers, and they may also have less capability to handle significant production process challenges. SMEs are often more “local”, with a small number of locations in a single EU country. They generally have less ability (or willingness) to move operations outside the EU, which is often an option available to larger firms. This means SMEs are more likely to face a higher burden from substitution and less able to avoid it by moving overseas. SEAC agrees with the broad argumentation here, although again it is unclear what the degree of difficulty faced by SMEs is likely to be without further contextual information on their financial position.
- **R&D capacity of companies and collaboration:** the resourcing and know-how of individual companies is expected to be a constraint on their ability to complete R&D projects on their own. Knowledge gaps can to some extent be bridged by engaging in collaborative R&D projects, which is why the applicant has launched a collaborative R&D platform and is encouraging co-operation between companies in the VECCO network. SEAC considers that the applicant has demonstrated a strong awareness of the issue here.
- **Relationship between product design (customers) and companies (job platers):** with better co-ordination and smarter product design, there may be the possibility to allow for easier substitution in the design stage (e.g., hollow parts). More up-front collaboration might allow job-platers to substitute in Cr(III)-based parts without having to go through extensive recertification and testing processes. As mentioned previously, the launch of a collaborative R&D platform, encouragement of co-operation with the Vecco network, and the co-ordination role taken up by the applicant signal to SEAC a reasonable understanding of the need for collaboration at product design stage.

### 3.5. COMPLETENESS OF INFORMATION AND TIMESCALES

SEAC acknowledges the value of the information provided by the applicant on the status across the companies on substitution progress. The overall SP appears to be coherent in general terms, at the level of an “upstream application”. The overall approach to substitution (identification of key applications, key functionalities, product portfolios, evaluation, definition, and selection of further R&D) presented in the SP appears reasonable, while the discussion shows consideration has been given by the applicant to the most appropriate alternative technologies per broad utilisations. The SP also appears

to be complete in general terms. The plan includes detailed Gantt charts that break down overall objectives into work packages and tasks, split by technology, which set out quite clearly (for a generic/illustrative case) what activities would need to be completed and when. Taking such a generic approach may have been a necessary action by the applicant, in order to summarise the diverse range of DUs covered by this applicant without becoming lost in unnecessary levels of detail. However, in the public consultation, a few downstream users provided company-level data on some elements of the substitution processes. These DU's alluded to several obstacles to substitution including, financial constraints and competitiveness, which confirms the overall argumentation of the applicant in both, the original authorisation application and the substitution plan. Furthermore, in SEAC's view, the extent of the variety in companies and sectors covered by the substitution plan is not properly considered by the applicant as it is believed by SEAC that substitution challenges will differ (partially and substantially) amongst sectors and companies affected. These challenges are likely to be not only process-related (hard chrome plating, decorative plating, etc.), but also product-related.

SEAC notes that at a general level, in absence of any specific company-level data, SEAC cannot confirm the completeness of the information given or the assumptions made by the applicant.

SEAC notes that in the section on **financing** the applicant presents some hypothetical investment costs for different technology scenarios with return on investment estimates. SEAC is sceptical that the scenarios presented can reasonably represent the wide range of affected DUs, for example given the limited range of turnover presented and fixed sales return. In addition, the section on financing ignores starting cashflow position or the possibility of raising external financing when discussing the number of years needed to fund new investment. SEAC does not consider this to represent a credible assessment of what is likely to be a complex and nuanced financing situation, although SEAC notes the view of the applicant that the financing is likely to be "feasible", at least in many cases.

SEAC notes, regarding the section on **timescales**, that a generic timeline for completion of substitution was presented, across four different scenarios (technology determined, product determined etc.) and not based on any particular company. SEAC considers there to be a high degree of uncertainty over the credibility of the specific actions and timings detailed in the SP.

SEAC notes, regarding the section on monitoring, that the process of **monitoring** was described clearly for the framework for collaboration and joint assessment of progress between HAPOC, VECCO companies and academic and journalistic partners.

SEAC notes that, in terms of the distinction between **SMEs and larger companies**, SEAC agrees with the broad argumentation presented, although it is unclear what the degree of difficulty faced by SMEs is likely to be without further contextual information on their financial position.

SEAC notes, in terms of **awareness of substitution**, that the applicant has demonstrated a strong awareness of the substitution issue and the need to seek alternatives to Cr(VI) technology.

SEAC notes, in terms of customer **collaboration**, that the launch of a collaborative R&D platform, co-operation with the Vecco network, and the co-ordination role taken up by the applicant signal a reasonable understanding of the need and willingness for collaboration at product design stage.

The applicant has demonstrated **commitment to substitution**, even if there are some questions about the reliability of the generic timescales for specific actions. This plan, along with the launch of an innovation platform, and the stated role of the applicant in overseeing collaborative R&D and fostering co-operation within the VECCO network, suggests a reasonable commitment to substitution by the applicant.

## 4. Conclusions of SEAC on the substitution plan

The SP was developed at the upstream level. The utilisations were presented as subgroups of applications that allow for specific substitution analysis in homogenous groups without providing detailed analysis at the company level. Several utilisations were discussed in the SP. For each utilisation, the applicant evaluated the alternative technologies, indicating the main alternatives available and whether they are general available. Distinctions were made in some utilisations between general and specific applications. The readiness of the alternatives was also described. Technical/engineering challenges and customer related challenges to substitution were also discussed. In terms of an assessment of credibility, SEAC considers that:

**In terms of definition of utilisations**, SEAC doubts that the way it was set up in the substitution plan report allows for a meaningful evaluation of the above-mentioned substitution possibilities. It is not clear to SEAC for which products or applications substitution is already feasible to date or will become so earlier than the requested Review Period and for which continued use still is required.

**In terms of representativeness of DU feedback**, while acknowledging the benefits of an upstream level application, the absence of any specific company-level data makes it impossible for SEAC to properly scrutinise the information given and test the assumptions made. Regarding the distinction between SMEs and larger companies, the identification of SMEs is relevant because many of the factors affecting substitution can be seen as more significant for SMEs than for larger companies. However, the lack of financial, market and production data, makes it impossible for SEAC to properly scrutinise the information given and rigorously test the assumptions made.

**In terms of Factors affecting substitution**, as far as **financing** is concerned, SEAC does not consider that the information provided represents a credible assessment of what is likely to be a complex and nuanced financial analysis related to transitioning to new technology, including the extent of financial constraints on DUs. As far as the **diversity of sectors and companies** affected is concerned, the applicant did not adequately evaluate the heterogeneity of companies and sectors covered by the authorisation application. SEAC believes that substitution challenges might differ partially or substantially amongst sectors affected (e.g., food industry, vs. medical technology, vs. automotive) and such a differentiation has not been captured by the applicant.

**In terms of completeness of information on actions and timescales**, SEAC considers there to be a high degree of uncertainty over the credibility of the specific actions and timings detailed in the SP. In addition, there is no systematic assessment of actions/requirements by utilisation, taking a summary of the survey results for relevant groupings and turning these into concrete steps for particular sectors. Without more granular detail on what specific actions are to be taken to achieve substitution, and over what timescales, SEAC are not able to conclude that the substitution plan is complete –

because it is not sufficiently detailed. A lack of a clear pathway to substitution could be seen as indicative of a lack of focus on substitution.

Therefore, on the basis of this additional information submitted by the applicant, SEAC is of the opinion that:

- The substitution plan was not credible.

To arrive at this conclusion, SEAC has neither taken into account nor re-evaluated the original application for authorisation and the corresponding opinion.

## **5. Comments on the draft addendum**

### **Did the applicant provide comments on the draft addendum?**

☒ Yes

☐ No

#### **5.1. Comments of the applicant**

Was action taken resulting from the analysis of the comments of the applicant?

☒ Yes

☐ No

☐ Not applicable – the applicant did not comment

#### **5.2. Reasons for introducing the changes and changes made to the addendum**

SEAC recognises the additional efforts and commitment to substitution made by the applicant to implement a new survey.

Regarding the applicants' comments in the table at the end of their document ("In addition, we like to point out some comments on special passages of the opinion"), SEAC made changes in the document with regard to:

Remark 1: change in section 1 Justification, to indicate that a distinction is made between functional and decorative applications.

Remark 4: change in section 2.2 Summary of the SP, introducing the relevant text "however webinars were held" to show that the applicants took specific actions to ensure specific discussions.

Remark 5: change in section 2.2 Summary of the SP, introducing the relevant text "and estimated" to show that the investment costs presented in the substitution are not hypothetical but mentioned by the companies during the webinars.

Remark 6: change in section 2.2 The timelines are confirmed by the companies in the survey. The data presented in the substitution plan are based on the information of the

companies during the webinars, therefore SEAC will not refer to them as hypothetical, SEAC will instead describe them as generic.

For the remaining remarks in this table, SEAC did not make any changes as the essence of the underlying arguments by SEAC remains the same.

### 5.3. Reasons for not amending the addendum

SEAC acknowledges the additional information (in the form of a new survey carried out among their companies) provided by the applicant. SEAC notes that the information provided supports in general the assumptions made in the SP. Below are the main elements covered by the applicant's comments, which are followed by SEAC's response:

- A. Distinctions of companies in terms of market and customers. The applicant schematically showed the allocation of the companies involved based on a survey that they have carried out. It confirms that the main applications are hard chromium and decorative-functional chromium.

SEAC response: no change to addendum as the essence of SEAC's arguments remain the same, i.e. without further detailed analysis at a company level, SEAC is not in a position to conclude on the extent of the substitution possibilities for different types of companies within these categories of applications.

- B. Financial. The applicants present information compiled in a survey to show the companies' possibilities to build up financial reserves for substitution.

SEAC response: no change to addendum as the essence of SEAC's arguments remain the same. While SEAC acknowledges the value of this additional piece of information to support the financial analysis related to substitution, SEAC considers this as one possible factor in what is likely to be a complex and nuanced financial analysis and possible financial constraints related to transitioning to new technology by DUs.

- C. Products that can be substituted- status of substitution. The applicant presented results summarised in charts and figures showing the share of products that can be substituted in cooperation with customers and under consideration of the end use produced for.

SEAC response: no change to addendum as the essence of SEAC's arguments remain the same. SEAC considers that this is complementary information to information initially submitted, and further emphasises the role of DUs engagement with customer and technology providers.

- D. Timeline and current activities. The applicants present the generic expected timescale for substitution for hard chrome plating and decorative-functional chrome plating

SEAC response: no change to addendum as the essence of SEAC's arguments remains the same. SEAC considers that there remains a high degree of uncertainty over the credibility of the specific actions and timings detailed in the SP.

SEAC also notes that this addendum evaluates only one part of an application for authorisation, i.e. a substitution plan. SEAC has not re-evaluated its conclusion on

suitability of alternatives for the applicant nor its recommendation for a review period of four years.