

REACH:

Use of HT CTP as an “intermediate” in Søderberg electrodes

1. Background

ECHA Q&A number 1195 (dated 22/06/2016) deals with the question: „*Can the use of Coal tar pitch, high temperature (CTPHT) in the manufacture of coke electrodes for the aluminium industry be regarded as the use of an intermediate?*”

One of the evaluated uses is manufacture of Søderberg electrodes. ECHA finally concluded that the use of Coal tar pitch, high temperature (CTPHT) in the manufacture of coke electrodes in general may be considered an intermediate use. However, it was subsequently stated that „*whenever the mixing of CTPHT and filler grains is not carried out on the same site, this may indicate that the mixing step is not performed to facilitate/ensure proper chemical processing in the synthesis of the coke. In that case CTPHT cannot be regarded as intermediate.*“

2. Evaluation of Status Quo

Søderberg electrodes are manufactured directly in the electrolytic cell at the smelter site but mixing of the starting materials CTPHT and filler grains as well as shaping are usually not performed at the smelter site. Mixing and shaping is performed at a few sites in Europe only and the manufactured pellets or blocks are subsequently sold/delivered to the smelter sites where transformation into coke occurs in the electrolytic cell.

As described in Appendix 4 of the Guidance on Intermediates (page 35)¹ "due to the practical nature of manufacturing processes and to the fiscal attributes of manufacturing sites, one or more steps between the manufacturing of the substance (A) and its use in the manufacturing of substance (B) may be necessary to facilitate/ensure proper chemical processing in the synthesis of substance B." Furthermore, Article 3(15)(c) of the REACH Regulation does not require that the manufacture of the transported isolated intermediate and its use/synthesis of the new substance is done on sites operated by the same legal entity.

The fact that different stages of the manufacturing process of the Søderberg electrodes are performed at different sites owned by different legal entities consequently does not exclude the overall process from being in compliance with the intermediate definition according to Article 3(15)(c) of the REACH Regulation. ECHA’s note is in conformity with this conclusion as ECHA only mentions that local separation of mixing and baking *may indicate that the mixing step is not performed to facilitate/ensure proper chemical processing in the synthesis of the coke*. This sentence should not be misinterpreted as an indication that local separation of different stages of a manufacturing process regularly results in a loss of the intermediate status.

Only in case the mixing step is not performed to facilitate/ensure proper chemical processing in the synthesis of the coke, but for other reasons, this stage of the Søderberg electrodes

¹ <https://echa.europa.eu/guidance-documents/guidance-on-reach>



EUROPEAN CARBON AND GRAPHITE ASSOCIATION

manufacturing process would have to be considered non-intermediate and an authorisation may be required.

3. Justification for Intermediate Use

In the case of Söderberg electrodes, there is no reason to assume that mixing of CTPHT and filler grains is not performed to facilitate/ensure proper chemical processing in the synthesis of the coke. As acknowledged by ECHA, the result of the baking process (in case of pre-baked electrodes and Söderberg electrodes) is a homogenous coke displaying specific electrical conductivity, a required feature for the coke to be used as an electrode, and mechanical strength. CTPHT contributes to the structure of the coke substance intended to be manufactured and consequently its properties. The resulting coke would not have the chemical structure that would enable its use as a source of carbon in electrolytic processes without the combined use of CTPHT as precursor and readily available coke grains. This means that defined and precise mixing of the starting materials is mandatory to achieve the chemical coke structure required for the functioning of the Söderberg electrodes. It can be concluded that the mixing step is definitely required to facilitate/ensure proper chemical processing in the synthesis of the coke.

Page | 2

The question whether the required mixing is performed at the Söderberg electrode use site or at another site has no relevance for the overall process performance and in principle, mixing and shaping could be performed on site if it is done in an appropriate way. This however would require that every single smelter plant or site where Söderberg electrodes are operated installs its own equipment for mixing and shaping, including storage for raw materials (e.g. CTPHT) and the produced coke. In addition, employees trained to handle the hazardous raw materials and suitable risk reduction measures would be required at each single smelter site. This would require enormous additional efforts (investment costs, operational costs, labour costs, administration) compared to a situation where mixing and shaping is outsourced to a few European companies only. Taking into account the economic pressure European smelters are confronted with due to low cost non-EEA competition, it is clear that the reason for outsourcing the first stages of the manufacturing process to external companies first of all has economic reasons.

Furthermore, as mixing and shaping is currently done in high volumes by a few companies only, automation of most process steps is possible and exposure of workers as well as the number of workers exposed in Europe is reduced compared to a situation where mixing and shaping would be done at every single smelter site.

Last but not least, variation in quality of raw materials is less critical in case huge amounts of raw materials (different lots and origin) are used to produce the pellets and blocks subsequently used to manufacture Söderberg electrodes directly in the electrolytic cell.

4. Conclusion

The mixing step is outsourced from smelters sites, where the Söderberg electrodes are in use, to external companies due to the aforementioned business reasons. This has no relevance for the question why mixing and shaping is performed at all and also not for the overall process performance. It is clear that it would not be possible to achieve the required chemical structure of the coke without appropriate mixing and shaping independent from where it is performed. Consequently, the only reason why the mixing and shaping of the raw materials are performed



EUROPEAN CARBON AND GRAPHITE ASSOCIATION

during the overall manufacture of Søderberg electrodes is to facilitate/ensure proper chemical processing in the synthesis of coke. Therefore, according to our opinion CTPHT used in the manufacture of Søderberg electrodes is an transported isolated intermediate according to Article 3(15)(c) of the REACH Regulation and therefore exempted from authorisation.