

EUROFER position paper on the registration duties for downstream users of multi-constituent substances (MCS) in the steel industry

Summary

Ferro-silicon (FeSi) is an “alloy” of iron and silicon in which the constituents are bound primarily by metallic bonds. Both Ferro-silicon and Calcium-silicon (CaSi) are produced by smelting, where metallic oxides are reduced to form a mixture of metals. As both Ferro-silicon and Calcium-silicon are reaction products, they meet the definition of a multi-constituent substance and, as such, have been registered as multi-constituent substances by the suppliers.

This paper establishes the procedure to be followed by downstream users (DU) of these multi-constituent substances that are used in the steel industry.

Argumentation

Ferro-silicon:

In steel production, FeSi is primarily used as an alloying element and, in some cases, as an energy carrier (reducing agent).

When FeSi is used as an alloying agent, it is dissolved in the steel mixture (i.e. there is no chemical transformation). Hence, there are no registration duties.

When FeSi is used as an energy carrier (reducing agent) a chemical reaction takes place. The iron is dissolved in the mixture, but no chemical transformation occurs. Therefore there is no registration obligation for iron. On the other hand, when this reaction takes place, the Si is oxidized and silicon dioxide is formed as reaction product of silicon with oxygen. Silicon dioxide becomes part of the slag and is therefore covered by the registration of the slag.

Calcium-silicon:

During the steel production, this substance can either be used as a conditioner or as a slag forming agent.

CaSi is used in very small quantities as a conditioner to enhance the flow characteristics of steel in the converter. When this use is given to the substance, it remains as CaSi in the steel. As no chemical transformation occurs during this process, there are no registration duties.

In some cases the CaSi can be used as a slag forming agent. During this process, oxidization takes place. The chemical reaction products, calcium oxide and silicon dioxide, become an integral part of the slag and they are therefore covered by the registration of the slag.

Note: Slag is a co-product of the steelmaking process. During steel production, slag floats on top of the molten steel and acts as a barrier against oxidation of the constituent substances in the steel bath. At the end of the production process, the molten steel and slag are tapped separately. The steel is cast into shapes and solidified, while slag is rendered suitable a range of applications.

Conclusion

Steel producers, acting as downstream users, have no registration duties with regard to FeSi and CaSi. As explained above, there is no reason that these MCS should be registered as they are dissolved in the mixture with no chemical modification and no new substances are created. Even where a chemical reaction does take place (in the cases of energy carrier / slag forming agent), the reaction products are fully covered by the registration of slags.