

Position paper

Determining the borderline between mixtures/articles for steel and steel products

Publication date: 28 April 2024

Background

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 (REACH), is a regulation on substances¹. *This Regulation lays down provisions on substances and mixtures² within the meaning of Article 3. These provisions shall apply to the manufacture, placing on the market or use of such substances on their own, in mixtures or in articles and to the placing on the market of mixtures.*

Save where this Regulation provides otherwise, any manufacturer or importer of a substance, either on its own or in one or more mixture(s), in quantities of one tonne or more per year shall submit a registration to the Agency.

This paper establishes the borderline between steel alloys ('special mixtures') and steel products in the form of articles. In this paper, it will be shown that *slabs, bars, billets and blooms* made of steel alloys³ have article status under REACH. The argumentation has been developed in close co-operation with the International Iron and Steel Institute (IISI) and is supported by the global steel industry in so far it applies to European law. Furthermore, this paper is based on a legal opinion received from the law firm "Mayer Brown International LLP".

Main Steel process stages

There may be up to four main stages in steel processing. Overall, the first three stages are aimed to change and/or refine the shape and size of the material to progressively bring it closer and closer to its final main shape, as illustrated in the flow diagram on page 6 of this position paper.

Stage 1: cast ingots

In the first stage, liquid steel is poured into moulds having the shape and surface appropriate to the subsequent processing regardless of the chemical composition. The shape generally resembles a truncated pyramid or truncated cone, but cast ingots with additional shapes are also produced.

¹ Definition of substance out of the REACH Regulation (Article 3 (1)): means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition;

² Definition of mixture out of the REACH Regulation (Article 3 (2)): means a mixture or solution composed of two or more substances

³ Definition of alloy out of the REACH Regulation (Article 3 (41)): means a metallic material, homogenous on a macroscopic scale, consisting of two or more elements so combined that they cannot be readily separated by mechanical means

Trade literature and standards make a distinction between cast slab ingots of rectangular cross section of width twice the thickness or over, and other cast ingots having a cross section that may be square, rectangular (of width twice the thickness), polygonal, round, oval or shaped according to the profile to be rolled.

EN 10079⁴ gives the following definition for cast ingots: products obtained by pouring liquid steel into moulds of a shape appropriate to the subsequent processing into semifinished products, or flat or long products, generally by hot rolling or forging

Stage 2: semi-finished products

The second stage is reduction or pressing at primary/roughing mills or reducing press facilities. The cast ingots are heated to make them "workable" and are then rolled/forged to obtain semi-finished products with different shapes and sizes. These vary depending on the technical specifications set by the customer, which include strict requirements on other external characteristics of the products, such as precise length, width, thickness and surface. Trade literature and standards classify these semi-finished products according to their specific shape into 4 main categories, as follows:

1. Slabs: a long, thick, flat piece of steel, with a rectangular cross-section;
2. Bloom: a long piece of steel with a square cross-section;
3. Billet: like a bloom, but with smaller cross-section;
4. Other semi-finished products (of circular or polygonal cross-section)⁵

These products may also be obtained through continuous casting of liquid steel, which includes support during solidification and cutting to length as final stages of the continuous casting production process. In certain cases, these products do not need further processing and have an end-use function, e.g., slabs for the defense industry, counterweights for cranes. The continuous casting process provides substantial added value to semi-finished steel products and requires use of sophisticated and expensive production equipment.

EN 10079 gives the following definitions for various semi-finished products:

Semifinished products of square cross section: semifinished products with sides of 50 mm and over, generally described as blooms if the sides are greater than 200 mm, or as billets if smaller
Semifinished products of rectangular cross section: semifinished products of cross section area 2500 mm² or over of width up to twice the thickness, generally described as blooms if the cross section is greater than 40 000 mm², or as billets if smaller
flat semifinished products: products of thickness generally 50 mm or over of width twice the thickness or over, generally described as slabs
round semifinished products: continuously cast or forged semifinished products of circular cross section blanks for section: semifinished products intended for the manufacture of sections that have been performed for that purpose

Stage 3: refined semi-finished products

The next stage is reduction at special mills, during which the specific shape, size and surface of the

⁴ EN 10079:1992 E, "Definition of steel products"

⁵ E.g. machined and dressed ingots

semi-finished products (e.g. slabs, blooms, etc.) is further refined to varying degrees, which in certain cases is the final shape, e.g. sheets, which only need cutting and other minor processing not affecting the general shape. Again, the products obtained from this processing stage are classified according to their general shape into flat or long products and, within these two main categories, into further sub-categories, according to their specific shapes and other technical specifications.

Stage 4: final steel products

In the final stage, the products are given the end-use shape through light processing, which does not affect the general shape of the refined semi-finished products. Examples of final products obtained from processing of coils and sheets are welded pipes, cans, car bodies or car parts such as doors and bonnets, household appliance frames, doors and other parts.

Fulfilment of article definition under REACH

In Article 3 (3) of the REACH regulation the *definition for an article is given: means an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition.*

For an object to be considered an article, the following conditions should be fulfilled:

The shape, surface or design of the object must:

1. be obtained during production and be special;
2. be relevant for the function of the object;
3. be more important for the function than the chemical composition of the object.

Products obtained from **Stages 2 and 3 fulfill** the article definition. Below are the arguments in support of this conclusion.

1. Their shape and/or surface is given during production and is/are regarded as “special”.

These products are produced by specialised factories at the order of the customer. They have different dimensions and technical characteristics, which depend on the specific needs of the customer placing the order. Their surface is developed during production ensuring that the end product requirements are obtainable. Surface defects in the primary products cannot be eliminated in later process stages and therefore the surface finish of the primary product is fundamental to achieving the customer requirements.

2. The shape and/or surface is relevant to the function of the object.

Products intended for further processing are given their specific shape, surface and size to allow production of a specific category of products, whose shape overall reflects that of the intermediary product used for their production. This is also the reason why their shape is important for both the producer and the customer. A customer buys slabs to produce flat steel products, whereas billets and blooms are ordered and purchased for use in the production of long products. From a different perspective, it is worth noting that, unlike steel electro slag remelting electrodes, none of these products, are intended for remelting, during which their main structure and shape would be destroyed. This is further evidenced by the semi-finished products referred to in stage 2 above, where the surface also plays a role and where the degree of refinement of the shape is

lighter, showing a strong correlation with the products obtained from them in terms of shape and surface.

3. The shape is more important for the function than the chemical composition

Steel is produced in different grades and these play an important role for the product appearance, characteristics and expected performance. These requirements are achieved on a worldwide basis by national, European and, to a lesser degree, international standards for steel compositions. The chemical composition is established while the steel is in the molten state and, once solidified, the chemical composition is fixed. Therefore, for the products after solidification, the shape and dimensions and surface of these products determines their function to a greater degree than their chemical composition. As indicated above, the function of the (refined) semi-finished products is to provide the bulk structure and main shape of the final products that will be obtained from them. Although the function of the product depends on the chemical composition, this is accessory to that of the shape and surface in that it only confers the products specific physical properties required for it to meet the customer expectations for instance in terms of mechanical properties (hardness, rigidity, resistance to wear, etc.). Furthermore, the mechanical properties are function of both chemical composition (which is fixed upon solidification) and thermo-mechanical treatment. Thus, the shape⁶ and design of the steel semifinished product, irrespective of the chemical composition, determines the facility that can be used for further processing and it also determines the final steel product.

The ECHA guidance⁷ on requirements for substances in articles contains in Appendix 4 an example 16, shown for Aluminium products. At the beginning of page 79 of this guidance, the following is mentioned: “The example of aluminium processing shows the transition point in the processing of bauxite to final aluminium products. It should be noted that the processing of other metals (for example iron/steel) may show different transition points. The following figure shows the different processing stages and the respective status of the raw material.”

This document was updated according to current legislation in force. The position paper was reviewed based on the information and descriptions from the updated guidance.

Its wording is still considered to be relevant and valid in all its definitions.

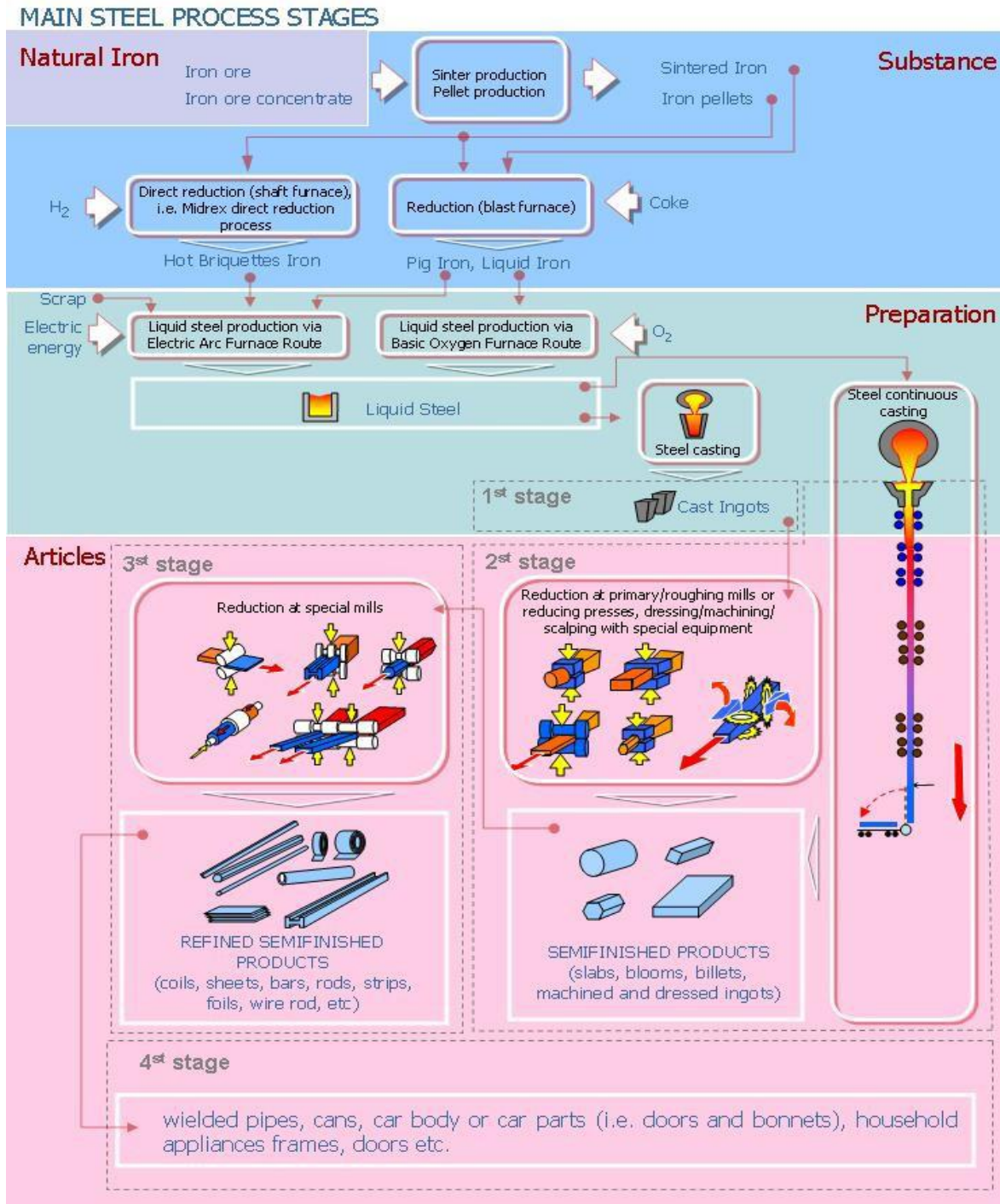
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⁶ Flat products (e.g. sheet, coil, plate etc.) and long products (e.g. bars, wire rod etc.)

⁷ [Guidance on requirements for substances in articles](#)



Important Notice: This position paper is intended as a supplement to the REACH Regulation and the official REACH Technical Guidance Documents published by the European Chemicals Agency (ECHA). It is provided as an advisory document and, as such, has no legal standing. Therefore, in conjunction with this position paper, users are advised to consult Regulation EC 1907/2006 (for the legally binding requirements of REACH) and the official REACH Technical Guidance Documents (for detailed information on REACH implementation). It may also be appropriate to seek independent legal advice on matters related to pre-registration and registration. While every effort has been made to ensure the accuracy of this document, neither EUROFER nor the authors of this document accept liability for its content or for the use which might be made of the information herein.

