FACHVERBAND BERGBAU-STAHL

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Response of the Austrian Association for steel and mining to ECHA public consultation regarding (Zr) ALUMINOSILICATE REFRACTORY CERAMIC FIBRES (RCF)

The Association of the Austrian Mining and Steel Industry comprises among its members steel companies as well as one global supplier of refractory materials. Our association responds to the public consultation regarding ECHA´s recommentdation to prioritise (Zr) Aluminosilicate RFC for their inclusion in Annex XIV of REACH Regulation as follows.

USES:

Both, the steel and refractory industry, use Alumininosilicate Refractory Ceramic Fibres (Al-RCF) and Zirconia Aluminosilicate Refractory Fibres (Zr-RCF) (**both, Al-RCF and Zr-RCF, are hereinafter** referred as **RCF**) for various high-temperature industrial applications. High-temperature applications are those in the temperature range of above 1100°C and up to about 1600°C.

In the steel industry Zr-Al-RCF are used for high-temperature applications in heat treatment furnaces. For temperature applications below 1100°C, steel industry has replaced almost all RCF by bio-degradable ceramic fibres. In the hot dip galvanizing furnaces also Al-RCF are used for temperature applications up to around 1350°C.

The advantage of RCF fibres is that they demonstrate high-temperature and thermal shock resistance as well as low thermal conductivity. Due to its unique combination of desired characteristics, RCF are still the best solution in many high temperature applications. For a number of applications, no adequate substitutes are yet available despite recent developments of alternative fibres materials (see below at “substitution”).

The uses of RCF covered by our member companies include inter alia the lining of metallurgical vessels as well as the insulation, gasket and fire-protection applications in the steel industry (steel treatment ladles, ladle covers, tundish, isostatically pressed products, pipe lining, furnace`s door gasket, etc.).

Our members do not use RCF as such, but in most cases use them in form of mats and blankets, which are both regarded as articles under the REACH Regulation. Suppliers of such mats and blankets containing RCF are predominantly European manufacturers of RCF.

High temperature processes are often unique, using highly customized equipment with 20-30 years of service life.

SUBSTITUTION:

It is important for us that authorities recognise our member companies` commitment and efforts to find technically and economically feasible alternatives to RCF. Substitution efforts by industry have been driven in the past by existing workers´ protection legislation. The Carcinogens and Mutagens Directive 2004/37/EC requires carcinogens to be replaced by other substances which are non-dangerous or less dangerous to workers health or safety.

Consequently, our member firms have tried to replace RCF products by adequate alternatives. In various applications they have succeeded to find suitable substitutes, while for some applications further development of fibre materials is necessary. For temperatures up to 1100°C, the steel industry has to great extent replaced RCF by bio-degradable ceramic fibres, for example Alkaline earth silicate wool (AES). Although AES do not tolerate as high temperatures as RCF, the difference between the possible application temperatures is decreasing, or in some cases does no longer exist, due to extensive AES product development.

Geschäftsführer: DI Roman Stiftner | Wiedner Hauptstraße 63 | 1045 Wien | Austria
T +43(0)5 90 900-3310 | F +43 (0)5 90 900-113310 | E roman.stiftner@wko.at | W www.bergbaustahl.at
DVR 0455393 - Bank Austria Creditanstalt AG - BLZ 11000 - Kto.Nr. 0121-01705/00 - BIC: BKAUATWW - IBAN: AT42 1100 0012 1017 0500

However, there are for technical reasons still a number of applications where no adequate substitutes are available. The reason is, that these substitutes cannot withstand the high thermal and mechanical stresses and general harsh environment experienced in the iron and steel production processes. RCF have the advantage of being very light and flexible. Mainly for high-temperature applications, RCF are up to now the best option. In economic terms, the use of alternatives replacing RCF can increase operation cost resulting from higher energy cost, longer downtime and reduced flexibility. Linings would have to be renewed more often because no substitute can match the life-length of RCF. It would increase the need for maintenance and thus expenses. Since RCF have good insulation properties there is also risk of higher energy consumption in the steel processes if they are to be banned. Firelight bricks for example, when being used as substitute, have a lot more standstill periods in different types of furnaces than RCF due to lower workability and lower thermal shock resistance. In other cases, like polycrystalline wool (PCW), it is the high price and the lack of availability from a quantitative point of view what would put our steel industry in a disadvantage position in terms of competitiveness.

The following examples describe in more detail where our member firms have already performed substitutions successfully in the steel industry or where alternatives are being actively evaluated.

Steel treatment ladles: Good insulation is an important part of the layered refractory lining in a ladle. The steel shell has to be protected from high temperatures coming from the liquid steel inside the ladle. If the insulation does not work properly there is a risk of the steel shell being deformed, added maintenance for the shell, loss of containment, and disruption of operations. RCF/ASW-Carton material with a temperature resistance of up to 1250° C, has been one of the best choices for this application in the past. Up to now, a biosoluble version of this type of material has not been able to achieve the same resistance against the combined high thermal and compressive loads. The main alternative is currently a vermiculite-based brick, but it has a higher thermal conductivity.

Ladle Covers: In the case of ladle covers and roofs for ladle preheaters, easy installable KONTIBLOCK fibre bricks are a popular choice. However, especially in the case of ladle covers where there is minimal distance to the liquid steel and slag, a layer of high-alumina mix is recommended to protect such biosoluble materials from disintegration. Alternatively, lining with high- insulating castables can be performed.

Tundish: In regard to the achievable sequence length and process safety, tundish insulation is of major importance to prevent heat loss. An appropriate insulation design results in slower heating up of the steel shell and efficient tundish use. RCF/ASW boards are well established for this application because they are quick and easy to install. However, biosoluble fibre materials can also be considered for the tundish application because typical temperatures in the installation area are below the application temperature of bisoluble fibre materials.

Insostatically pressed products: thermal insulations and preformed gaskets for isostatically pressed products, used in the steel continuous casting process, are characterized by their high-temperature stability, low thermal conductivity, and required flexibility. Traditionally, RCF/ASW has been the base material for blankets and formed shapes utilized for:

- sealing between the steel ladle collector nozzle and ladle shroud
- insulation of submerged nozzles
- sealing between the tundish nozzle and submerged entry shroud

RCF/ASW-containing insulations and formed shapes can be replaced by fully biosoluble AES (DELTEK Eco Insulation, DELTEK Eco Gasket) without showing any deficiencies regarding high-temperature performance.

These examples show that our member firms are willing to provide environmentally and user-friendly alternatives to RCF, provided they are economically and technically feasible, although European regulators must acknowledge that for some applications, suitable alternatives are not yet available.

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ADEQUATE CONTROL

RCF are used in industrial applications under controlled conditions.

Workers operating with RCF articles are either own staff or in some cases, workers of external contractors to whom installation work is outsourced. In both cases, the workers exposed to RCF articles, have to comply with a set of strict rules. These include:

- workers protection law (e.g. Chemical Agents Directive, Carcinogens Mutagens Directive)
- internal directives implementing risk management measures (use of protective equipment, undergo trainings, other protective measures, etc.)
- information on safe use provided by suppliers.

Besides, only a small fraction of the total volume is potentially hazardous (ie. of respirable size). The risk is related to the dust, which is a tiny part of total tonnage. During exposure of RCF all safety measures are taken. In the case of insulation of furnaces, RCF are incapsulated inside the furnace walls, therefore usually no workers are exposed, except for maintenance personnel, which is protected and trained.

In our view, existing (workers protection) legislation sufficiently copes with the risks of workers being exposed to RCF.

SOCIO-ECONOMIC IMPACT:

The non-availability of EU manufactured RCF fibres and articles will negatively impact our industry:

- in order to meet energy and resource efficiency targets set out in the EU 2020 programme.
- in terms of global competitiveness of the European industry as a whole

Due to its energy intensiveness, the steel sector is facing energy cost that can represent up to 40% of total operational costs. The reduction of energy cost is one of the main challenges of the steel sector. Today's high energy prices and the need to reduce greenhouse gas emissions are driving our member companies to review all aspects of their energy use. They face increased pressure to improve energy efficiency and reduce carbon emissions. One key area is the efficiency of the refractory and insulating systems in their high temperature processing equipment. In this respect, RCF are highly energy-efficient and thus, an optimal solution to rationalise energy use. Using high performance insulation like RCF is crucial to sustain high-furnace efficiency and keeping fuel expenses at a mininimum. They enable users to increase manufacturing process efficiencies and make significant cost savings associated with energy usage. In this way, RCF also contribute to meet CO2 reduction and energy efficiency objectives set by the EU 2020 programme. The EU is willing to transforming Europe into a highly energy-efficient and low greenhouse gas emitting economy and committed itself to achieve at least a 20% reduction of greenhouse gas emissions by 2020 compared to 1990. We would also like to stress that the recently published Steel Action Plan, COM (2013) 407, recalls the key role of the European steel sector to contribute to EU´s climate and resource efficiency goals.

Subjecting RCF fibres to the authorisation requirement under REACH, will negatively impact not only EU manufacturers of RCF fibres and articles, but also downstream users like the steel and refractory industries. The reasons are:

- in case EU-manufactured RCF articles are still available on the EU market:
    - higher prices for EU-products
- if EU-manufactured RCF articles disappear from the European market:
    - loss of know-how provided by EU manufacturers, from which downstream users benefit today
    - less product choice
    - higher important dependence
    - distortions in the supply chain might occur

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REGLUATORY EFFECTIVENESS

We believe, that authorisation under REACH

- is not an effective tool to meet the regulatory objective of substitution.
- is a disproportionate measure to achieve the legal objective.

The aim of REACH is to substitute substances of very high concern by less dangerous substances. Substitution is today already taking place, key driver for this being workers protection legislation. Subjecting RCF fibres to the authorisation under REACH, will only double the substitution obligation without adding any further to the improvement of workers protection.

Our members in the steel and refractory industries mainly use RCF in the form of mats or blankets. These are regarded as articles under REACH and are not subject to a potential authorisation requirement. If prices of EU-manufactured RCF-articles increase, we assume, that downstream users will not buy substitutes, but cheaper RCF-articles from outside the EU. Import articles would have the advantage of lower cost (Non-EU manufacturers have no cost for authorisation) and of guaranteeing best material properties (high-temperature; thermal shock resistance; low thermal conductivity). This would put European RCF-manufacturers in a competitive disadvantage with the serious risk of disappearing from the EU market or relocating the RCF-production outside the EU. In both cases, the aim of REACH, to promote substitution and enhance the protection for human health will not be achieved.

The authorisation tool under REACH poses a “heavy burden” for industry and negatively impacts its competitiveness. On the other hand, the ability to achieve the regulatory goal (substitution, workers protection) is low. The authorisation requirement is therefore a disproportionate measure to achieve the legal objective. In our view, there exist less stringent measures which are less burdensome for industry, but can achieve the aims set under REACH in an equal manner.

Therefore, the Association of the Austrian Mining and Steel Industry urges regulatory authorities

- to refrain from prioritising (Zr-) Aluminosilicate RFC for their inclusion in Annex XIV of REACH Regulation and
- to consider other measures than authorisation under REACH (e.g. existing workers protection) which are more effective to achieve the regulatory goal and less burdensome for industry.

For further information contact: Julianna Karall, Austrian Association of Non-Ferrous Metals, Wiedner Hauptstraße 63, 1045 Vienna, Austria, julianna.karall@wko.at, tel. +43 (0) 5 90900 3306