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SZFG position paper on Alumino silicate RCF-Aluminosilicate wool (ASW)

Dear Sir or Madam,

the production of substances and products by the German and European steel industry is mainly based on high-temperature processes. In the plants of the steel industry, such as coking plants, steel works, rolling mills and forging, refractory and insulation materials must be used, which make it possible to handle these processes safe and energy efficient. Different materials are used that have been developed specifically to the respective application processes to get there.

The Salzgitter Flachstahl GmbH is an integrated metallurgical plant with following process steps: sintering plant, blast furnace, coking plant, steel mill, hot and cold rolling mill as well as power plant and ancillary units. At a steel production of approx. 4.6 million tons of crude steel about 30,000 to 40,000 tons of refractory materials will be consumed (yearly average).

Thus, for plants that are in direct contact with liquid pig iron / steel, such as steel converters, metallurgical vessels, blast furnaces and coke ovens in the brickwork, massive refractory materials are used.

In addition to a number of other insulating materials at temperatures up to 1200 ° C, the iron and steel industry uses aluminum silicate wool in the temperature range above 1200 ° C. As a light-weight and flexible materials these contribute to a significant energy savings, which is not possible with other materials. This applies particularly for furnaces in the range of hot-rolling processes that require a low density of the insulation materials used. The density also has a direct influence on the static, to the dimensions of the equipment and the physical structure of the foundations.

Another application of aluminum silicate wool is the use as gasket material of coke oven doors, where flexibility is required in conjunction with good sealing performance and durability. Substitute materials with comparable impermeability effect are not existing. Without alumina silicate wool increased emissions of pollutants leading to non-compliance of licensing rules would occur. Additionally increased burdens of employees and the environment would result.

An additional advantage of alumina silicate wool is the low heat capacity and high thermal shock resistance, which enables a flexible application even with varying operation cycles.

Under production conditions that are characterized by many successive heating and cooling processes, the expansion and shrinkage associated with the heating cooling and would lead to the destruction of alternative massive refractory.

Alternative materials have been investigated, but so far no suitable material has been found, corresponding to the thermal and mechanical requirements. With poorer insulation and higher energy consumption such materials may lead in addition to significantly reduced maintenance intervals associated with shutdowns and correspondingly higher costs with increased environmental pollution, energy consumption and CO₂ emissions.

Within the last years a number of tests had been carried out at the metallurgical plant to exchange or substitute these fiber material. Examples: Substitution of lightweight refractory concrete or insulating bricks in ladle heating plant, annealing hood and heated boxes. These measures have proven to be uneconomical in terms of energy and endurance and hence in regard to availability or productivity and have shown to be technically not feasible. Where possible the critical fibers within the plants are substituted by fiber materials which are classified to be harmless.

Possibilities for substitutions are checked regularly in the operating units and departments. In addition, suitable exchange possibilities (e.g. for expansion joint material) are not available at the present time.

The use of conventional refractory materials would lead to a technological step backwards and thus have a negative influence on the competitiveness of German and European steel industry.

In the steel industry the protection of workers is of first priority, regardless if it is related to conventional refractory bricks, alumina silicate wool or other fiber materials. Aluminum silicate wool products are used under controlled conditions, such as described in the German TRGS 558 (Technische Regel für Gefahrstoffe 558. Tätigkeiten mit Hochtemperaturwolle = Technical Rule for Hazardous Substances 558, Activities involving high-temperature wool). Reports of occupational diseases related to aluminum silicate wool products are not available.

The effect on the employees is classified as negligible as in the surrounding of the aforementioned units no permanent working places exist or installation or removal as well as disposal of these materials are executed by competent specialist companies in respect to the safety requirements of the respective material safety data sheet.

The facts described above lead to the conclusion that the industry has reached a good performance in worker safety in combination with environment protection. Alumina silicate wools are not made for private end use, only for industrial high temperature processes. End products of the steel industry do not contain Alumina silicate wools. Therefore the inclusion into Annex XIV of the REACH Regulation does not improve worker safety and environment protection. It therefore does not make sense.

Yours sincerely,

Salzgitter Flachstahl GmbH
Arbeitssicherheit



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i. V. Dr. Rupp-Brunswig