

SCHOTT AG response to the public consultation: Recommendation for inclusion of Zirconia-Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) in Annex XIV REACH

Zirconia-Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) are very important for the production of special glass by SCHOTT AG. The material – in the form of formed shapes, boards, blankets and mats – is used in the glass melting process as high temperature insulation material for moulds, mould release agents, transport media and tool protection since more than 50 years.

In the glass melting process Zr-RCFs are needed as electrical and thermal insulation of platinum components as well as sealing of floor drains in the glass melting tank and for sealing of electrode feeders and permanent insulation of the expansion joints between the melting tank and the plate block. Zr-RCFs are also used to insulate the glass feeder, the stirring unit and various parts during hot repairs. Furthermore it is used for temporary repairs such as covering small holes in the roof or crown of a melting tank, and gaps in the rear and side wall. These types of insulation materials are also applied in laboratory furnaces for glass melting research & development. Zr-RCF products are the best solutions for many industrial insulation needs over 900 °C and the production of many glass types is currently not possible without products based on Zr-RCF as insulation material.

For producing special glasses and glass ceramics it is vital that the heating and cooling equipment after the glass melting in the furnace are of the highest quality. In the past the use of Zr-RCF has been replaced wherever it was possible. However, for most precise optical glasses it is absolutely necessary to have exact conditions for cooling down the glasses. For example the glass ceramic ZERODUR® has a large variety of applications because of its material properties and it is well-known to very high precision and with a 45years experience in many application fields. This glass ceramic has its precise properties because of the controlled embedding of micro crystals of well-defined size and number per volume in residual glass. This is achieved by melting the base glass with a process derived from optical glass manufacturing. In a subsequent tempering process first crystallization nuclei are created and secondly crystals are grown to the required size. For this complicated melting and cooling process it is essential to use Zr-RCF.

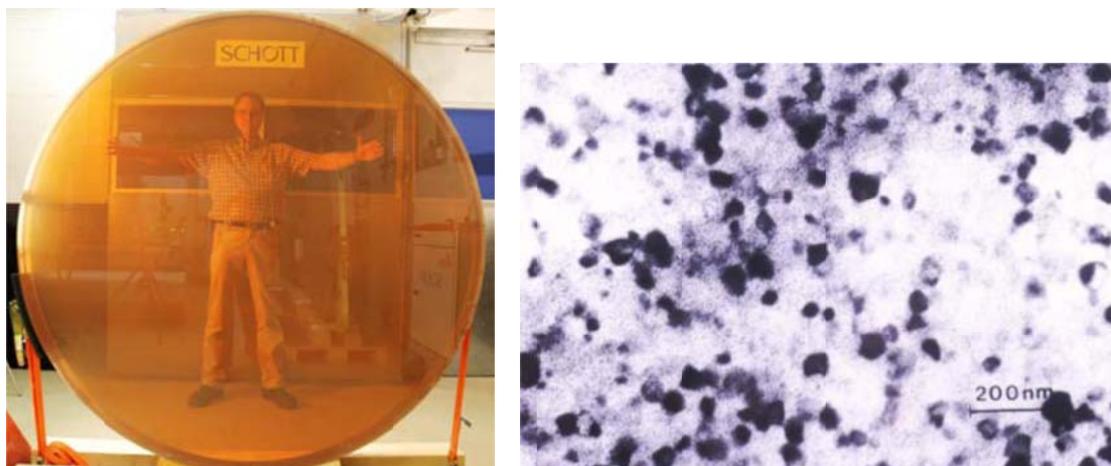


Fig. 1: ZERODUR®: 2 m glass ceramic disk (left), micro crystals embedded in residual glass (right)

The use of RCF products is restricted to an absolute minimum since substitution became mandatory after classification in 1997. The places where these materials are used are mostly inaccessible during normal operations, since they will be located inside the glass tank or otherwise inaccessible locations. Therefore, contact of Zr-RCF products (specifically exposures to fibrous dust) with workers is only possible during furnace construction and repairs. In these situations, glass industry employees, employees of furnace construction companies or demolition companies are concerned. These employees are experienced and trained in dealing with Zr-RCF products. The working places are monitored regularly by the competent authorities, e. g. the German Employer's Insurance Association (Verwaltungs-Berufsgenossenschaft VBG) in Germany. No occupational diseases have been recorded.

Zr-RCF products are used only under controlled conditions. Risk assessment and the implementation of suitable risk reduction measures (RRMs) are applied. Employees installing or removing these products are obliged to use protective clothing, sealed gloves and respirators. Those workers are periodically submitted to medical surveillance to monitor their health. Workplaces, where the moulds are lined up with Zr-RCF mats for the casting process are enclosed separately to exhaust released fiber fractions from the ambient air.

In conclusion, Schott AG opposes the prioritisation of Zirconia-Aluminosilicate Refractory Ceramic Fibres and its inclusion in annex XIV REACH. Where the Zr-RCF products are still used, substitution is not possible, as described above. Worker safety is ensured without further regulation beyond the existing rules. The prioritisation with the consequence of authorisation would be tantamount to a ban on production of these special glasses in the EU. That would affect a wide range of industrial uses.

Optical systems provide key functions for research, diagnosis, surveillance and quality assurance in medicine, scientific research, general industry, safety installations, environment monitoring and a vast amount of other applications. For example without leading edge microscopes progress in medicine and microbiology is impossible. The applications of optical systems reach far beyond the classical fields of microscopic and telescopic viewing. All industry relies on the function of high end optical systems. Automotive, aviation, ship building industry, road and building construction, even food industry need optical measurement equipment for machine alignment and for quality inspection. Theodolites and laser trackers provide precision measurement capabilities for large objects.

The above mentioned ZERODUR[®] for example is a vital material for all high technology applications, where temperature difference induced length changes and resulting warp pose the final limit for the achievable precision: Structural elements in microlithography equipment, optical elements for flat screen lithography, ring laser gyroscopes for airplanes, linear scales for precision length measurements, extreme precision measurement devices, calibration standards and mirrors in weather satellites, for earth observation and for astronomical research. For example, the semiconductor industry is producing chips using microlithography techniques and devices made of ZERODUR[®] traditionally used to fabricate integrated circuits. This means that this type of glass ceramic affects a semiconductor market worth 5 billion of a total of 30 in the EU alone.

21.08.2013