



ECFIA

REPRESENTING THE HIGH TEMPERATURE INSULATION WOOL INDUSTRY

HIGH TEMPERATURE INSULATION WOOL

A BRIEF OVERVIEW

ECFIA

ECFIA is a trade organisation representing the **High Temperature Insulation Wool (HTIW)** industry in matters relating to Health, Safety and the Environment in Europe. It was created in 1979 as the European Ceramic Fibre Industry Association and is based in Paris, France.

WHAT IS ECFIA'S MISSION?

We promote improved standards and practices for the manufacture, use and handling of HTIW based on sound scientific research, and we advise on workplace programmes designed to protect the health and safety of workers. ECFIA also serves as an expert resource for regulatory and other bodies, and supports appropriate legislation.

WHO ARE ECFIA'S MEMBERS?

ECFIA members manufacture a range of HTIW products and other traditional refractories for various industrial applications. Our members are: **Morgan Thermal Ceramics Ltd** (Great Britain); **Morgan Thermal Ceramics de France S.A.**; businesses of Morgan Advanced Materials; **Rath GmbH** (Germany); **SAFFIL Ltd**, being part of **Unifrax** (Great Britain); and **Unifrax France SAS**. Our associate members are: **Denka Company Ltd** (Japan); **IBIDEN** Hungary Kft.; **ITM Co Ltd** (Japan); **Mitsubishi Plastics Inc.** (Japan); **Nutec Procal, S.L.** (Spain); **Promat International NV** (Belgium); and **M.E.SCHUPP Industriekeramik GmbH & Co. KG** (Germany).





IRON & STEEL



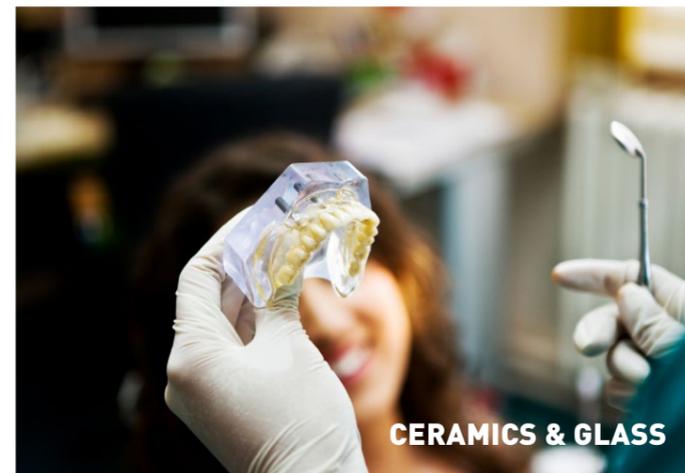
CHEMICALS & PETROCHEMICALS



NON-FERROUS METAL



POWER GENERATION



CERAMICS & GLASS



AUTOMOTIVE INDUSTRY



SHIP BUILDING



AEROSPACE



CONSTRUCTION

WHERE IS HTIW USED?

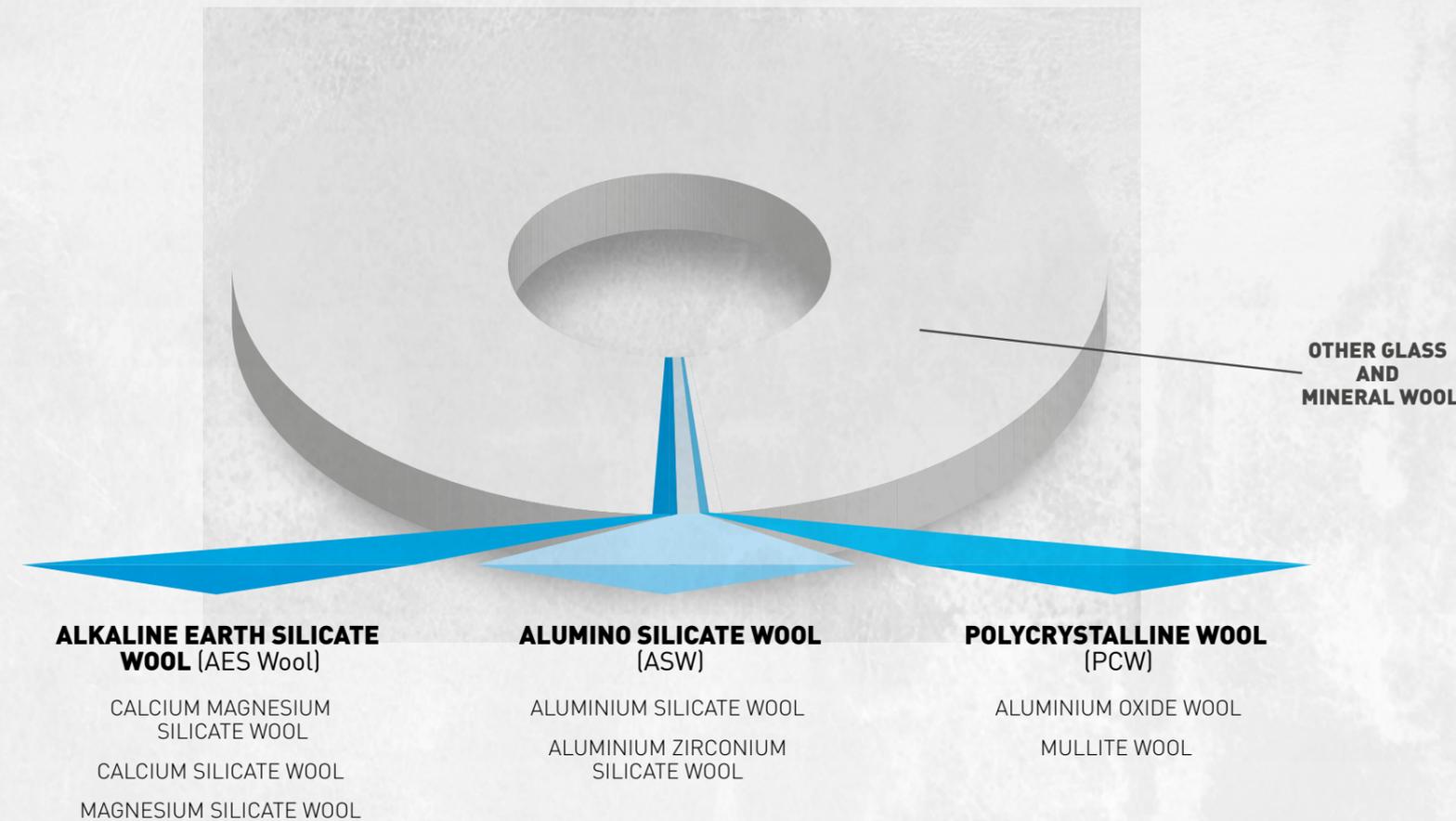
HTIW is used in high-temperature industrial applications, for example in iron and steel and non-ferrous metal manufacture, chemical and petrochemical industries, ceramics and glass production, power generation, domestic appliances, and the automotive industry. HTIW products are also used in fire protection applications and, very rarely, in the construction industry.

Industrial thermal processes represent about 40% of EU industries' entire energy consumption. The insulation material used is an important and integral element of the equipment since it drives process design and determines performance

characteristics. The selection of the best combination of refractory materials is a challenging engineering task that cannot be generalised.

Modern technologies combined with the utilisation of HTIW products allow industrial high-temperature processes to use resources more efficiently. The low mass and resulting good thermal insulation properties of HTIW products allow for significant energy savings in industrial thermal processes, thereby making an important contribution to global CO₂ reduction and climate protection.

HTIW FORM PART OF THE WIDER FAMILY OF MAN MADE MINERAL WOOLS



WHAT IS HTIW?

HTIW is synthetic mineral wool used in high-temperature industrial applications where heat containment is required, typically used in the temperature range 600 °C to 1800 °C. They include three different types of wool: Alkaline Earth Silicate (AES) Wools, Alumino Silicate Wools (ASW) also known as Refractory Ceramic Fibres (RCF) and Polycrystalline Wools (PCW). HTIWs are specialised materials and account for only about 2% of the total synthetic mineral wool production in Europe.

WORKPLACE SAFETY

Many HTIW products can release inhalable fibres during handling. Proper workplace protection measures and good working hygiene practices should therefore be used when working with any HTIW products. When recommended work practices are adhered to, HTIW are safe to manufacture, install and use.

REGULATORY STATUS OF HTIW

AES have been exempted from classification based on animal testing (Note Q of Regulation (EC) No 1272/2008).

ASW/RCF have been classified as a cat 2 carcinogen following the EU Classification 67/548; translated under CLP Regulation (EC) No 1272/2008 into a carcinogen category 1B.

PCW are not classified following ECFIA members' self-assessment according to CLP.

COOPERATION WITH THE SCIENTIFIC COMMUNITY



ARE ALL FIBRES EQUALLY HAZARDOUS?

Inhaled fibres can be dangerous because they may be breathed deep into the lung and resist the body's attempts at removal. If they persist in the lungs for a sufficiently long time and in sufficient quantities, they can cause damage by irritation and inflammation and eventually scarring or even cancer. There are three important characteristics – the '3 Ds' – that determine the degree of hazard posed by a fibre:

- Dimension – fibre length and diameter
- Durability (better referred to as biopersistence) – the property that determines the extent to which a fibre will withstand the lung's natural removal processes
- Dose – the number of fibres reaching the deep lung (alveolar region), determined predominantly by exposure concentration and fibre diameter

These characteristics vary between fibre types, meaning that fibres are not all the same with respect to their ability to cause harm. Long, thin, biopersistent fibres are the most dangerous.

HTIW's tend to have large diameters and low biopersistence, making them considerably less hazardous than natural mineral fibres, for example. If exposure to fibrous HTIW dust is kept low, the risk to the worker and the possibility of any adverse health effects is extremely small or non-existent.

**SAFETY
FIRST**



THE PRODUCT STEWARDSHIP PROGRAMME (PSP)

In the 1990s ECFIA proactively developed a comprehensive Product Stewardship Programme (PSP) in close co-operation with its American partner organisation, HTIW Coalition. The PSP is designed to assist HTIW manufacturers and end-users in the evaluation, control and reduction of workplace exposures. Recommendations stemming from the PSP help ensure the proper manufacture, storage, handling, use and disposal of HTIW products.

Workplace measurements show that airborne fibre concentrations have been reduced over the years and now average between 0.2 and 0.3 f/ml, although there is substantial variability in fibre concentrations even within a specific job category.

The programme, which continues to be implemented today, follows well-established principles of risk assessment and risk management. Its components are science-based, with human health effects research a priority. The PSP was initiated by industry; it preceded, and is independent of, regulatory drivers.



SCIENTIFIC STUDIES

HEALTH EFFECTS RESEARCH

One of the most important activities of the PSP is the design and sponsorship of health effects research programs. ECFIA's members are major sponsors of several studies designed to determine the potential long-term health effects of inhalation exposure to HTIW fibrous dust. Past studies sponsored by the industry include inhalation bioassays in rodents, short-term inhalation studies to measure biopersistence of fibres in vivo, durability measurements of new fibres in vitro, and risk analysis of occupational exposures. The industry has also sponsored epidemiology studies on HTIW workers to determine if long term occupational exposure leads to lung disease. All these studies constitute part of an ongoing risk assessment process, initiated by industry.

EPIDEMIOLOGY STUDIES

Epidemiology studies, beginning in 1987, were conducted in both Europe (Institute of Occupational Medicine, IOM, Edinburgh) and the United States (University of Cincinnati, UC). The Cincinnati studies are on-going and have, to date, provided over 25 years of data.

The statistical power of these studies is presently limited by small size of cohort, low cumulative exposure, and/or insufficient exposure duration relative to the latency of certain health effects. Despite these limitations, they provide key insights into possible effects on health, especially as the ongoing studies gain statistical power over time, and provide continuing reassurance that ECFIA's members are adequately protecting their workers:

- Historical exposures at the beginning of the studies were significantly higher than current exposure levels.
- The absence of disease in a comparatively high-exposed cohort suggests that human health effects are unlikely to occur at present workplace dust levels.



THE CONTROLLED AND REDUCED EXPOSURE (CARE) PROGRAMME

An important and integral part of the PSP is 'CARE' – standing for Controlled And Reduced Exposure. The CARE Programme combines the PSP elements dealing with developing improved engineering controls and handling practices to minimise the release of fibrous dust at the workplace.

EXPOSURE ASSESSMENT

The evaluation of workplace exposure levels includes the measurement of trends in worker exposures, the identification of jobs or tasks with elevated exposure to prioritise exposure control efforts, and studies to identify best practices.

STUDY OF WORKPLACE CONTROLS

Over the past several years, ECFIA has invested considerable effort in the evaluation of effective engineering controls and handling practices in its members' own production facilities to control the levels of airborne fibers. Many of these techniques can also be used economically and effectively in the user industries' workplaces.

WORKPLACE MONITORING

Workplace exposure potentials can vary widely, even for similar applications. It is important that users periodically monitor their workers and workplace areas to determine actual exposure levels. Such measurements are conducted in HTIW plants operated by ECFIA members and their customers.

COMMUNICATION

ECFIA has a comprehensive communication program to provide employees and users with up-to-date information on proper handling practices for HTIW products, health effects research and exposure guidelines. We share data and information with many different stakeholders including company employees, government agencies, and the broader scientific community.

ADDITIONAL GUIDANCE

ECFIA has produced a series of guidance documents for a number of different HTIW end user tasks. These CARE Guidance Documents form a comprehensive library of information on the safe handling and use of HTIW products. They have been written by industry experts and are designed to give customers of ECFIA members' helpful information to put in place effective controls to minimise exposure to airborne fibres.

AT A GLANCE

HTIW have a unique combination of properties, such as thermal and chemical stability, insulation performance, low density, thermal shock resistance and the ability to form a wide range of rigid and flexible products. Less raw material and energy are used in the manufacture of HTIWs than is the case for traditional refractory products.

Moreover, HTIW products contribute to more efficient use of energy in industrial installations through improved insulation. Also, being used in the manufacture of motor vehicle catalytic converters and particle filters, HTIW are an indispensable element of the environmental efforts of the automotive industry. Importantly, there are no health or environmental concerns regarding environmental releases of HTIW fibres.

The HTIW industry has instigated a comprehensive Product Stewardship Programme which includes an extensive workplace monitoring programme. Measured fibre concentrations have been reduced over the years and now average between 0.2 and 0.3 f/ml. Environmental measurements of HTIW (e.g. at the 'factory fence') are extremely low - generally below detection limits.

Based on an extensive ongoing exposure monitoring programme called CARE, ECFIA has developed a set of best-practice guidelines to help industrial users control and reduce worker exposure. These 'CARE Guidance' documents - as well as various leaflets, posters, etc. for use at the workplace level - are all available on the ECFIA website.

DO YOU WANT TO KNOW MORE? PLEASE VISIT

www.ecfia.eu
www.guidance.ecfia.eu
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OR CONTACT US

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