SYNTHETIC INORGANIC FIBRES

The purpose of these instructions is to clarify the rules that apply when working with synthetic, inorganic fibres at ***INOVYN*** Sweden AB.
Applicable legislation:
AFS 2004:01 Syntetiska och oorganiska fibrer (Synthetic and inorganic fibres)
AFS 2018:1 Hygieniska gränsvärden (Occupational Exposure Limit Values)
AFS 2001:3 Användning av personlig skyddsutrustning (Use of Personal Protective Equipment)
AFS 2019:3 Medicinska kontroller i arbetslivet (Medical checks in working life)

General provisions
If it is possible to choose between different fibrous products, the aim should be to use those that emit the least fibrous dust, especially of respirable fibres.

Synthetic, inorganic fibres – general
Synthetic (man-made) fibres can be divided into two main groups, inorganic and organic.
Synthetic inorganic fibres include, among others, rock wool fibres, glass fibres, slag wool fibres, refractory ceramic fibres as well as graphite and carbon fibres.

Premises and equipment
At the entrance to areas where dust is created, there must be a sign with the text *”Warning. Fibrous dust”*

Technical equipment containing refractory ceramic fibres, special fibres or crystalline fibres must be marked stating that it contains such fibres and may produce fibrous dust.

Insulation and demolition work
When working with dust-producing loose-fill products and during dust-producing demolition work of materials containing consisting of synthetic inorganic fibres, extraction or other measure must be taken to prevent dust from spreading. Such work must take into account persons performing work in the vicinity of the workplace.

Sanitation
Cleaning must be performed in such a manner as to prevent spreading dust. Apparatus for collecting waste, spillages and similar materials containing synthetic inorganic fibres must be readily available.
Vacuum cleaners should be used in the first instance. Extract air from mobile vacuum cleaners must be cleaned so that at least 99.95 percent of the respirable dust is separated.

Personal protective equipment

- Full or half mask respirators with P3 dust filters must be used when working with synthetic inorganic fibres where it is not technically possible to maintain the concentration of fibres in the air at an acceptable level. NOTE! Short-term masks/filter masks do not provide adequate protection.
- Protective clothing (disposable overalls) must always be worn for work with high dust levels or when a risk assessment considers it necessary.
  Clothing must cover sensitive skin areas such as neck and forearms.
- Protective gloves suitable for the product must be worn.
- Heavily soiled clothing must be vacuumed before removal.
- Clothing and personal protective equipment used at work must be hung separately from private and other work clothes and in a special area immediately adjacent to the workplace.

Inspection and risk assessment

Risk assessments must be carried out where there is a risk of exposure to synthetic inorganic fibres
In the first instance, the risks must, as far as is technically possible, be eliminated or reduced. Alternatively, the option of personal protective equipment must be investigated.

Medical checks with service certification

A medical checks must be arranged with assessments for service certification for employees who, during their work, are exposed for more than 50 hours per year to
- refractory ceramic fibres
- special fibres
- crystalline fibres

The medical checks with assessments for service certification that concern synthetic inorganic fibres must be carried out:
1. Before the employee is engaged in the work and
2. Recurring at intervals of no more than 3 years after commencement of work or earlier if stated by service certification

Exceptions to medical checks

- Medical check requirements do not apply to work with rock wool, mineral wool or glass wool
- When working with materials containing less than 5% of synthetic inorganic fibres by weight

Checking air pollution

Exposure measurement must be carried out in accordance with AFS 2004:1 when working with refractory ceramic fibres, special fibres or crystalline fibres.
Exposure measurement is planned in consultation with the HSE department.

Examples and areas of use of synthetic inorganic fibres

Examples of places where you can come into contact with synthetic inorganic fibres at INOVYN:

- Insulation (Vitreous fibres)
- Cracking furnaces (Ceramic fibres)
- Gas burners (Ceramic Fibres)
- Secondary cells chlorine (Graphite, Applies to graphite dust)
- Glass fibre reinforced pipes mainly at the chlorine factory (goes under vitreous fibres)

Certain synthetic inorganic fibres, raw materials and examples of areas of use			
Synthetic inorganic vitreous fibres	Main raw materials	Nominal diameter	Examples of area of use
Mineral wool (glass wool, rock wool, slag wool)	Sand, soda, lime, scrap glass, broken glass (glass wool), the rock types diabase and basalt (rock wool), slag from iron and steel industry (slag wool)	4-5 µm	Intermediate product for producing insulating wool products for thermal and acoustic insulation. Intermediate product for producing wool products for reinforcement of composites. Friction material in brake linings. Gaskets. Fire protection.
Continuous glass fibre	Sand, soda, lime, scrap glass, broken glass	Approx. 10 µm	Glass fibre textile, e.g. wall coverings. Reinforcement or textile fibres. Intermediate product for the production of fibre-reinforced plastic composites used in construction materials for marine products and consumer goods. Glass fibre fabric for thermal and electrical insulation, paper sealing strips, tyres etc.
Refractory ceramic fibres	Aluminium oxide and silica or kaolin	1-3 µm	Insulation for intense heat e.g. in ovens. Friction material. Included in metal composites to reinforce engine components, catalytic converters, car heat shields, air bag systems for cars and space heat shields. During production of thermal insulation products. Fire and flame protection of buildings and ships.
Special fibres	Sand, soda, lime, scrap glass, broken glass	0.1-3 µm	Insulating fibres for aircraft and spacecraft. Battery separators, filtration, aviation aerospace insulation. Intermediate product during production of high performance insulating products
Graphite fibres	Tar, asphalt or synthetic inorganic fibres, e.g. rayon	Depends on production method	Reinforcement.
Silicon carbide fibres	Quartz sand, coke, graphite, sawdust, rice husks	Depends on production method (continuous fibres) <1 µm (whiskers)	Reinforcement. Refractory abrasive material.

Limit values: To see the limit values for the different productssee AFS 2005:17