GLOSSARY

Aerodynamic diameter: the diameter of a sphere with the density 1 (1 g/cm^3) which sediments at the same rate as the particle in still or laminarly flowing air. This definition also applies for fibrous particles.

Aspect ratio: the ratio of length:diameter of a fibre (see Fibre, for definition)

Binder: a substance that glues otherwise loose fibres together so that the product can be shaped. It is usually a phenol–formaldehyde or urea–formaldehyde resin.

Biopersistence: the ability of a fibre to remain in the lung. Biopersistence is a function of the solubility of the fibre in the lung, and the biological ability of the lung to clear the fibre from the lung.

Breathing zone: a person's breathing zone is described by a hemisphere of 300 mm radius extending in front of the face and measured from the midpoint of an imaginary line joining the ears.

Ceramic fibre: see Refractory ceramic fibre

Clearance rate: the rate at which deposited particles are removed by various processes from the respiratory tract. (This depends on both the physical and chemical characteristics of the fibre.)

Continuous glass filament: an extruded filament usually having a relatively large diameter, greater than 6 μm, and a very narrow range of diameter distribution. Typically formed from a glass melt

Fibre: a particle with a length to width ratio of at least 3:1

Fibre glass: see Glass fibre

Gamble's solution: a complex salt solution designed to mimic the salt balance of extracellular fluid

Geometric diameter: the geometric diameter of a spherical particle multiplied by the square root of the specific density of the material gives the aerodynamic diameter. For a non-spherical particle a shape factor also needs to be considered.

Glass fibre: may refer to reinforcing glass filament, glass wool or superfine glass fibre.

Glass filament: see Continuous glass filament

Glass wool: a fibrous product formed by either blowing or spinning a molten mass of glass. The resultant fibres are collected as a tangled mat of fibrous product.

HT (rock) stone wool: a recently developed high-alumina, low-silica wool

Inhalability: ratio of the particle (fibre) concentration in the inhaled air to that in the ambient air. (The inhalable fraction of an aerosol consists of particles than can enter nose or mouth upon inhalation.)

Intercept method: diameter is measured in proportion to fibre length (length-weighted diameter).

Kaolin: naturally occurring mineral (china clay) composed mainly of alumina and silica

k_{dis}: the dissolution constant of a glass fibre, being the rate at which it dissolves *in vitro* in a salt solution such as Gamble's solution (the unit is ng/cm^2/h).

Mineral wool: may refer to either slag wool or rock (stone) wool depending on the raw material from which it is produced.

NIOSH fibre: length greater than 5 μm, diameter less than 3 μm, length:diameter ratio 5:1

Nominal diameter: is the median diameter to which the fibrous product is manufactured. It may be thought of as the diameter at the midpoint of a long fibre created by joining all the fibres in a sample together in order of increasing thickness.

Personal sample: a sample taken within the breathing zone of the worker

Refractory: resistant to heat

Refractory ceramic fibre: amorphous, glassy, predominantly alumino-silicate products created from molten masses of either alumina and silica or naturally occurring kaolin clays

Respirability: ratio of airborne particles (fibres) penetrating to the alveolar region of the lung to that in the ambient air

Respirable fibre: a particle with a diameter less than 3 μm and length greater than 5 μm and with a length to width ratio of greater than 3:1. These fibres can reach the deepest part of the lung.

Retention half-time $T_{1/2}$: time by which 50% of the amount of the fibres in the lungs has been eliminated by a monoexponential function

Rock (stone) wool: a fibrous product manufactured by a process of blowing or spinning from a molten mass of rock. The resultant fibres are collected as a tangled mass of fibrous product.

Shards: particles of respirable dust (from highly chopped and pulverized continuous glass filament) with aspect ratios equal to or greater than 3:1

Shot: some wool fibre formation processes can produce numerous large, rounded particles approximately 60 μm or larger in diameter. These are known as shot.

Size: see Binder

Slag wool: a fibrous product manufactured by a process of blowing or spinning from a molten mass of metallurgical furnace slag

Stanton fibres: fibres with length > 8 μm and diameter ≤ 0.25 μm

Static sample: a sample taken at a fixed location, commonly between 1 m and 2 m above floor level

Superfine fibre: an extremely fine fibre with a diameter less than 1 μm, usually made of glass for specialist applications

Time-weighted average (TWA) concentration: the concentration of a contaminant that has been weighted for the time duration of the sample. High exposure of short sample duration does not 'weigh' as heavily in the calculation as do moderate levels for extended periods.

Wagner scale: a scale for assessing the extent of inflammation and fibrosis in the lungs of rats exposed to particles or fibres

Weighted lung retention half-time: sum of the product of each halftime of a double exponential retention curve weighted by the coefficient of each exponential expressed in days

WHO fibres: any particle that has a length greater than 5 μm, a fibre diameter less than 3 μm and a length:diameter ratio larger than 3:1