Tensile strength and stiffness are the most important properties of asbestos fibres, which make possible their use in composite structures, the fibres carrying the load while the matrix distributes the applied stresses between them. The tensile strength of the composite is therefore a function of the tensile strengths of the reinforcing fibres and the volume fraction which they occupy. Fibre/polymer strength ratios of the order of 100 to 1 are achieved and, similarly, figures of between 20 and 40 to 1 are attained for stiffness ratios. From a consideration of the strength of the stable silicon-oxygen structure as prevalent in asbestos and which was referred to earlier one would expect very high tensile strengths of the order of as sometimes suggested more than 100000 kg/cm^2. These are not reached in practical tests (see Table I-3) probably because of repetitive flaws occuring in the fibres. These flaws may in some instances become the cause of failure in composite structures through the reduction of the length of the fibres and consequently a failure of the interfacial bond between fibre and matrix. It is evident that the strength of this interfacial bond is also of importance. It probably cannot solely be described in terms of the simple forces of adhesion. Chemical and mechanical bonding may also occur to some extent.

The ability of asbestos fibres to split into finer fibres is one of their most valuable properties. Industrially this is achieved by either mechanically or chemically processing the raw asbestos. This process is called opening or fiberizing. The degree of fiberization determines the surface area of the fibres which is a most important parameter for all their industrial applications. Degree of fiberization can be expressed directly in terms of the measured surface area of the fibres. Raw asbestos as shipped from the mines has a surface area varying from 6000 cm^2/g - 30000 cm^2/g. This may be increased by additional milling in the manufacturing processes by a factor of five or six. It should be mentioned that each manufacturing process involving asbestos fibre requires a degree of fiberization which within limits is critical for reaching optimal properties in the finished product.

The length of the asbestos fibre may vary considerably and is dependent upon the type of asbestos, the seams from which the raw fibre has been mined

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