

SPECIALTY MATERIALS, INC.

Manufacturer of Boron and Silicon Carbide Fiber and Boron Nanopowder

Safety and Handling Guidelines **Boron and SCS Silicon Carbide Fiber**

There are two safety concerns involved in the handling of boron fiber, boron reinforced composites and SCS silicon carbide (SiC) fiber. These are splinters (punctures of the skin by the boron or SCS SiC fibers) and dermatitis (skin rashes caused by allergic reaction to epoxy resin).

Splinters

While the possibility of splinters always exists with stiff materials, when working with boron or SiC there are a number of procedures that can be used to reduce the risk. These procedures are mostly common sense techniques. Safety must be stressed to all employees when working with advanced composite materials. Some of these techniques include:

- Safety glasses with side shields (ANSI Z-87)
- Thin leather gloves
- Good housekeeping (keep work area clear and free from loose/broken fibers)
- Common sense (do not run hands along the edge of a boron tape, boron fabric). Do not flex boron or SiC fiber over a small radius.

Splinters should be removed immediately using surgical quality tweezers. If the splinter causes major discomfort, medical attention may be required. If the splinter does not cause discomfort, it will eventually work itself out. Boron and SCS SiC are nontoxic with no associated health risks.

Dermatitis

Dermatitis, a rash/inflammation of the skin, can be caused by an allergic reaction to epoxy resin and is typical of epoxy-based prepreg systems. The level of reaction varies. Dermatitis can best be controlled by eliminating skin contact with the resin. Several different types of vinyl-based gloves can be used for this purpose. Care should be taken to choose a glove that is also resistant to the specific chemicals and solvents used in the work environment.

Handling/Cutting of Boron Prepregs and Fabrics

Several different methods have been used to cut boron prepregs including automatic tape laying machines and laser cutters, heavy-duty scissors and shears, and heavy-duty paper cutters. Each of these methods has its advantages and disadvantages.

A safe method of cutting is achieved by employing aluminum templates, which are pressed against the boron prepreg, which has been placed on a soft cork surface. A utility knife or pizza cutter with a sharp blade is then used to cut along the template. The soft underlying cork absorbs the shock which will help to keep the small pieces of boron filament at the cutting location for easier clean up.