



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

There are two safety concerns involved in the handling of boron fiber, boron fiber prepreg, Hy-Bor prepreg, boron reinforced composites and silicon carbide (SiC) fiber. These are splinters (punctures of the skin by the boron or SiC fibers) and dermatitis (skin rashes caused by an allergic reaction to prepreg resins).

Splinters

While the possibility of splinters always exists with stiff materials, when working with boron or SiC fibers 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 prepreg and the cured materials. Some of these techniques include:

- Safety glasses with side shields (ANSI Z-87)
- Thin leather gloves (MaxiCut 19-D470/M Gloves, Gray Dyneema/Eng Yarn Shell, Gray Nitrile MicroFoam Grip, <https://industrialsafety.com/maxicut-19-d470-m-gloves-gray-dyneema-eng-yarn-shell-gray-nitrile-microfoam-grip-a3-size-medium-pack-of-12-pairs.html>)
- Tyvek® sleeves
- Good housekeeping (keep work area clear and free from loose/broken fibers by continually whipping down surfaces with lint-free cheesecloth)
- Common sense (do not run hands along the edge of a boron or Hy-Bor® prepreg tape, boron fabric).
- Do not flex boron or SiC fiber over a small radius.
- Use Dumont Pattern No. 1 Tweezers to remove fibers (<https://www.grobetusa.com/swiss-pattern-tweezer-dumont-brand-pattern-1-item-no-57-201/>)

Splinters should be removed immediately using surgical quality tweezers such as Dumont Pattern No. 1 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 SiC are non-toxic with no associated health risks.

Dermatitis

Dermatitis, a rash/inflammation of the skin, can be caused by an allergic reaction to polymer resins and is typical of epoxy-based prepreg systems. The level of reaction varies by individual. 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. The layup process documentation should provide guidance on what gloves to wear.

Handling/Cutting of Boron and Hy-Bor® Prepregs and Fabrics

Several different methods have been used to cut boron prepregs including automatic ply cutters, laser assisted ply cutters, ultrasonic-assisted blades, heavy-duty scissors and shears, Die cutters and heavy-duty paper cutters. Each of these methods has it's advantages and disadvantages.

A safe method of cutting is achieved by employing steel templates, which are pressed against the boron prepreg, which has been placed on a soft urethane cutting surface. A utility knife or pizza cutter with a sharp blade is then used to cut along the template. The blades will dull quickly and should be replaced often. The soft underlying urethane absorbs the shock which will help to keep the small pieces of boron filament at the cutting location for easier cleanup. Ensure that all utility knife blades are wiped clean prior to use with solvent to remove any oil.