WINTERSTONE
REINFORCING TECHNIQUES

The addition of reinforcing such as metallic or fibreglass mesh into the outermost layering of WINTERSTONE sculpture or casting results in a "composite" material with substantially increased strength characteristics. In essence, the reinforcing complements the inherent strength of the WINTERSTONE in withstanding the many and varied stresses to which the material may be subjected. These may be intrinsic stresses such as drying shrinkage and thermal contraction or as may develop from externally applied loadings such as from shipping, handling, erection, heavy winds, abuse from the public, etc. -- most of which are common particularly to large pieces founded in an outdoor environment. The thin shell "composite" working in conjunction with the basic armature of the sculpture/casting must be able to withstand these stresses.

The basic armature or "skeleton" (whether of steel wire or Styrofoam) onto which the WINTERSTONE shell is built-up will vary and will depend on the size and shape of the particular design. The appropriate accompanying exterior "composite" shell will in most cases consist of:

1. A minimum shell thickness of approximately 3/8 inch for small pieces, 1/2 or 3/4 inch for life size, and 3/4 to 1 inch for monumental pieces.
2. A minimum of one layer and preferably two or three layers (depending on size and outdoor conditions) of closely spaced metallic or alkali-resistant fibreglass mesh should be embedded within the outermost shell thickness. This should be complemented with integrally mixed fiberglass chopped strand (1/8” to ¼”) for additional strength and resistance to shrinkage stresses.

Making the sculpture totally solid in casting or excessively thick in sculpting adds weight and not necessarily strength. Particularly in sculpture exposed to severe daily temperature fluctuations the less mass there is the less thermal stresses and possible cracking occurs between a temperature-affected surface (e.g. from hot sun) and the relatively non-affected interior. Extra care and caution should be taken throughout the whole sculpturing process in producing sculpture for abnormal "abuse" or severe outdoor conditions. The outer "composite" shell, critical in such situations should be built-up in accordance with the recommendations noted above and the procedures outlined in the respective Technical Bulletin.

If pieces of rod, wire, or mesh are used, they should overlap to maintain continuity of strength. In all cases, the reinforcing elements should be wholly encased to be completely effective.

The foregoing is also applicable to casting with WINTERSTONE, the only difference being in the particular mix used and in the application process itself. In "slush-casting" the initial face thickness of say 1/16” to 1/8”, should be followed up with additional build-up on the inside with a WINTERSTONE mixture incorporating chopped fibre strand (e.g. 1/2 to 1% fibreglass) in situations where hand access is not possible. Where hand access is possible then the "lay-up" process with the recommended mix and layering of mesh can be carried out similar but reverse to that of the sculpting process. In either case a "composite" shell of the recommended thickness is required.

In all cases where a finished piece, sculpted or cast, hollow or solid, is to be founded in an outdoor environment a wait of at least one month is recommended for further strength development.