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THE COMPLEAT SCULPTOR

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WINTERSTONE® REGULAR Sculpting Medium (Updated Nov. 1999)

PRODUCT OVERVIEW

WINTERSTONE is a sculpting medium developed by Sculptor, Lorne P. Winters, for direct modeling of finished sculpture. It works as easily as clay and sets as hard as stone. WINTERSTONE is a white, dry powder mix --- a complex multi-component cementitious mixture --- which when mixed with the necessary water produces a modeling medium of clay-like consistency. It stiffens and hardens gradually and continuously. During the initial plastic stage it can be modeled easily with control. As the material hardens the sculptor can proceed with carving techniques. By allowing the sculptor to employ modeling and/or carving techniques when working with WINTERSTONE, the full potential of the material can be developed. The inclusion of proper reinforcing elements into the material wherever stress is expected, produces a structurally efficient composite material that can be shaped into any complexity of form.



WINTERSTONE can be integrally pigmented or externally patinated. The hardened WINTERSTONE surface can be refined with abrasives and polished. The finished WINTERSTONE sculpture is intrinsically weather-stable and may be founded in an outdoor environment. With proper care it can be expected to last many years.

These features of WINTERSTONE -- the flexibility of sculpting techniques, adaptability to varied surface textures and finishes, structural versatility, permanence and stability -- make WINTERSTONE an ideal sculptural material.

PREPARATION

WINTERSTONE (Regular) is supplied as a one part dry mix. It has at least a one year shelf life provided it is kept in a sealed container in a dry place. WINTERSTONE is easily prepared by mixing in water in the ratio of 25 to 27 parts (by weight) of water to 100 parts (by weight) of dry mix. (This is equivalent to an approximate volumetric measure of 23 to 25 parts of water to 100 parts of loose dry mix.)

Mix Ratio	<ul style="list-style-type: none"> • (The dry mix in the supplied package is generally compacted due to shipping and handling and should be fluffed-up into a loose condition before measuring volumetrically) • One pound of dry mix produces approximately 20cu.in. of mixed product. (80 sq.in. at 1/4" thickness.)
By weight	
25-27 parts water : 100 parts WINTERSTONE™	
By volume	
23-25 parts water : 100 parts WINTERSTONE™	

This range of mixing water allows the sculptor the choice of a stiff putty consistency at the lesser amount (suitable for finger work) to a softer or pastier consistency toward the greater amount (suitable for spatula/trowel tools). The water content should not exceed the upper limit of water recommended. It should be kept in mind that the strongest and most durable end product results from using as little mixing water as possible.

Place the measured amounts of dry mix into a mixing container. Generally, a one quart (liter) plastic container is adequate and can be easily mixed by hand using a spatula. Larger sculptures requiring greater quantities of mix at any one time can be prepared using a 2 gallon pail and an electric mixing tool.

Mix at least 1 minute, then let the mix rest for 1 minute, and then re-mix for at least another 1/2 minute. In any case, the batch of WINTERSTONE should not be greater than can be used within its working time of 50 to 60 minutes.

APPLICATION

Immediately after mixing, the WINTERSTONE mixture may be applied to a prepared steel wire/mesh armature or Styrofoam core armature using a spatula, trowel or by hand. If by hand, particularly for those who have sensitive skin, some pre-applied hand cream or use of latex gloves is recommended. While working and applying the mix, its consistency may be adjusted by adding small amounts of water (e.g. with a hand bottle sprayer) or else by adding small amounts of dry mix.

Open time of the mixture (reasonable workable consistency) will normally be 50 to 60 minutes depending on the amount of water in the mix and on the temperature conditions. The build-up may be achieved by applying successive layers. As the material is self-bonding it need not be applied wet-on-wet but may be applied on an already dry surface. It is recommended that the surface be roughened with a serrating tool and dampened with a light mist spray before applying a fresh mixture. Continue building up successive layers of WINTERSTONE using fiberglass or steel mesh where required. The outermost surface thickness should include at least one, and preferably two layers of mesh reinforcing particularly if the sculpture is to be founded outdoors in an area of extreme weather/temperature conditions. Take care to maintain at least 1/8" thickness of WINTERSTONE applied over the top layer of fiber

mesh. This will eliminate any read-through of the underlying mesh and will provide some thickness for sanding and polishing of the hardened product. It is essential that premature evaporation of water from the surface is avoided. During application and after initial set of the material, if the surface appears to be drying re-wet these areas with a fine water mist/spray. At the end of a working session cover the entire piece with a plastic sheet. At the completion of the sculpture keep it covered for an additional 24 hours.

FINISHING

WINTERSTONE stiffens and hardens gradually and continuously throughout the modeling process. Generally within a few hours of application, depending on the initial water content of the mixture, and the ambient working temperature WINTERSTONE stiffens or sets to the degree that soft carving techniques may be employed.

At this stage soft carving tools and serrated tools or the like are more suitable than standard clay modeling tools. The material will reach its final set within 24 hours although it will continue gaining in strength and hardness over the next few days. It is preferable at this time to carve any fine details or to point or serrate surface texture if desired, as the material is hard enough to avoid tearing but not yet so hard that considerable effort or hard carving is required.

Any patching required should be done as soon as possible, be it before or after the final set. The surface of the hardened WINTERSTONE may be patched with some WINTERSTONE which has been freshly mixed in a small batch to a creamy consistency. Roughen the area to be patched with a serrating tool and dampen the area to be patched before applying the mixture.

After 2 to 3 days of air-drying give the piece a light water spray and inspect the surface closely. Occasionally irregular lines may appear which although invisible to the naked eye when dry, become evident upon wetting and are due to the differential surface absorption along the lines. These lines are very fine shrinkage cracks which are generally the result of the use of excess mixing water and/or inadequate curing. A creamy mixture of the Regular Sculpting Medium should be rubbed well into these areas with a fine sponge and the excess rubbed off. After curing, follow-up with a very light fine sanding before applying any sealers.

Hardened WINTERSTONE surfaces may be sanded or polished using abrasive grit papers or cloths. Many kinds of surface coatings can be applied to WINTERSTONE sculpture with excellent adhesion, including water, oil or solvent based materials. The sculpture must be thoroughly dried if coatings other than water-based materials are applied. In general, after polishing, breathable type coatings or sealers such as water-based acrylics are recommended. Such sealers are clear and colorless and can be had in matte or gloss. Breathable silicone and siloxane penetrating water repellent sealers may be used but once applied generally preclude the application of additional decorative coatings particularly water-based.

PIGMENTATION

WINTERSTONE can be integrally pigmented to brilliant or soft colors. In general, pigments that are suitable for use in cement mortars such as iron oxides (reds, yellows, browns, blacks, terra cottas) can also be used in WINTERSTONE. All pigments added should be pure, dry powders and not liquid dispersions or mixtures with other fillers. In general, do not use more than 5 parts of pigments per 100 parts of dry WINTERSTONE. To check whether a pigment is compatible, try it first in a small test batch of WINTERSTONE. If adding the pigment causes the WINTERSTONE to set either too quickly or too slowly, the pigment is not compatible and should not be used.

WEATHERABILITY

The life span of a WINTERSTONE sculpture placed in an outdoor environment cannot be assigned accurately because WINTERSTONE as we know it is not old enough to provide us with examples of any age. Modern buildings and structures constructed of materials based on present day cement/concrete technology generally have an estimated life span of 100 years. It is safe to assume that WINTERSTONE sculpture utilizing similar but more complex and up-to-date technology/materials should last that long. Proper sealing and maintenance optimizes the sculptures outdoor performance.

Extra care and caution should be taken throughout the whole sculpting process for any sculpture which is to be subjected to the climatic rigors of an outdoor environment. All aspects of the process are critical, particularly using minimal mixing water, careful application and consolidation during the build-up, proper embedment of reinforcing mesh, proper and adequate curing, and final surface finishing and sealing.

Casting 2000 may be combined in varying proportions with the Sculpting Mix – See WINTERSTONE Casting info for ratios.

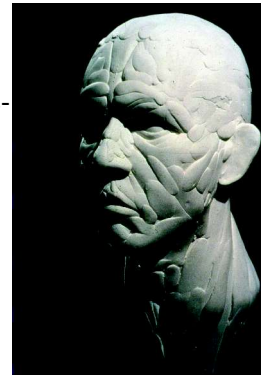
WINTERSTONE® CASTING 2000 MIX (Updated July, 2000)

PRODUCT OVERVIEW

WINTERSTONE Casting 2000 is a new formulation suitable for a variety of art-related and commercial casting applications, and architectural restorations. It has improved strength and shrinkage resistance with fine detail reproduction capabilities. It is ideal for casting of thin shell multi-dimensional or bas-relief forms either by 'slush' casting or 'lay-up'.

WINTERSTONE Casting 2000 is a dry white powder – a complex multi-component cementitious mixture – which when mixed with a nominal amount of water and cast into a mold sets into a stone hard material with faithful reproduction of detail. The hardening process is a result of the internal reactions taking place between the water and the various components. The inclusion of proper reinforcing mesh, either metallic 'hardware cloth' or alkali resistant fiberglass, as backing to the casting; or chopped strand (e.g. fiberglass, polypropylene) mixed integrally into the back-up mixture produces a structurally sound composite 'shell' with increased strength characteristics. This surface 'shell' combined with proper back-up reinforcing rods (particularly in larger 3 - dimensional sculptures or bas-relief panels) results in a light and efficient overall structural system and allows considerable freedom in complexity and intricacy of shape.

WINTERSTONE can be integrally pigmented during the mixing stage or can be externally patinated after de-molding. Hardened WINTERSTONE can be refined with abrasives and polished if necessary. Finished and sealed WINTERSTONE is weather stable and may be founded in an outdoor environment. With proper care and maintenance it can be expected to last many years.



PREPARATION

WINTERSTONE is supplied as a one part dry mix. It has at least a one year shelf life provided it is kept in a sealed container in a dry place.

WINTERSTONE Casting is easily prepared by mixing water in the ratio of 16 to 17 parts by weight of water to 100 parts by weight of dry mix. (This is equivalent to an approximate volumetric measure of 19 to 20 parts of water to 100 parts of loose dry mix. The dry mix in the supplied bag is generally compacted due to shipping and handling and should be 'fluffed-up' into a loose condition before measuring volumetrically.) Care should be taken in the measurement process as the WINTERSTONE mix is extremely sensitive to very small differences in the quantity of mix water. It should be kept in mind that the strongest and most durable end product results from using as little mixing water as possible. One pound of dry mix produces approximately 17 cu.in. of mixed product.

Generally, even for small sculptures, several pounds of mix is required and therefore mixing with an electric or air-powered tool is recommended (e.g. 1/4" electric drill with propeller type mixer attachment). Place the water and the dry WINTERSTONE into a suitably sized plastic container (e.g. 2 gal. pail) and mix thoroughly with the mixing tool for 1 1/2 to 2 minutes then let the mix 'rest' for 1 minute, and then re-mix for at least another 1 minute.

CASTING TECHNIQUES

WINTERSTONE may be cast in numerous types of molds. The type of mold and mold material to be used generally depends on the type, size, shape, and intricacy of the item to be cast, and this is well covered in numerous technical mold literature. The critical aspect in selecting the appropriate mold for casting WINTERSTONE is that the mold in no way takes water away from the mixture once it is applied or poured. Releasing agents may be required depending on the choice of mold.

The mixing of WINTERSTONE should be done in two or more batches. The initial batch should be small enough to use within its 'open' pouring time and yet sufficient to cover the mold surface or 'face' up to a thickness of 1/16 - 1/8". The 'open' pouring time of the casting mixture is of the order of 5 minutes. An additional few minutes of open time if required can be achieved with occasional agitation of the mixture in the mixing container. In all casting techniques care should be taken to remove entrapped air from the mixture. This can be done by pouring or applying the 'face' mix into the mold and slushing, brushing or vibrating. Allow the face mix to thicken and set but still be 'finger-print sensitive' and damp. Generally this should take about 8 to 10 minutes. During this interval another batch of mixture can be prepared. This back-up mix can be applied in different ways depending on the size and intricacy of the piece being cast and the accessibility into the mold. Chopped strand (e.g. fiberglass, polypropylene) may be incorporated into the mixture (up to 1 % by wt.) and then slush cast in a manner similar to the face mix. Another option is to use short lengths of fiberglass mesh, impregnate these with mixture and build onto the back of the face mix. In either case the build-up can be repeated layer upon layer until the desired thickness is achieved. The overall thickness need not be greater than 1/4 to 3/8" for smaller pieces and 1/2 - 3/4" on large life-size castings, depending on the shape and size, and back-up reinforcing. Care should be taken throughout the process to ensure that the thickness is relatively even and consistent.

In casting some sculptures by lay-up such as large sculptures using multi-segmented molds or haut-relief type panels, run-off on vertical surfaces might be a problem. In such cases the use of a 50:50 mixture of Casting 2000 and Sculpting Mix is recommended. It is placed in the mold and compacted by hand or trowel. Mixing and application procedures as outlined in the WINTERSTONE Regular Sculpting Mix Technical Bulletin should be followed. The demolding of the sculpture when using this combined mixture will vary from 10 - 24 hours depending on the characteristics of both the sculpture and the mold.

The techniques and materials mentioned in the foregoing is sufficient to form the basis of approach to any type, size or complexity of sculpture. The final choice of the process to be used remains with the sculptor/caster.

CURING

At the completion of the casting process the entire piece should be wrapped with plastic sheeting to maintain the moisture and 'cure' properly. The piece may be demolded generally after 4 to 16 hours and will depend on the shape and fragility of the detail and on the flexibility of the mold material. If the piece is demolded before the recommended 24 hours of moist curing, it should be immediately re-covered in plastic sheeting. The dampening and plastic covering to preserve moist curing conditions for the initial 24 hours is critical to the development of the overall strength and durability of the finished product. After the initial 24 hours of moist curing the piece should be uncovered and allowed to air dry. The air-drying triggers other internal reactions leading to further strength development.

FINISHING

Regardless of the type of mold or casting technique used, some minor imperfections may occur which require a certain amount of repair work. The repairs should be carried out before applying any finishing or sealing coatings. Before starting with this work, any mold release residue should be removed with the appropriate solvent as may be recommended by the mold supplier, or by fine sanding. Seam 'feathers' can be sanded down carefully. Any air holes or other surface defects may be patched with some WINTERSTONE Casting 2000 which has been freshly hand-mixed in a small batch to a creamy consistency. Surface defects should be roughened slightly and dampened with a light fog spray before applying the mixture. Air holes may be readily filled by rubbing the mixture into the surface using a fine sponge. Allow to cure for 24 hours before fine sanding.

After 2 to 3 days of air-drying give the piece a light water spray and inspect the surface closely. Occasionally irregular 'lines' may appear which although invisible to the naked eye when dry, become evident on wetting and are due to the differential surface absorption along the 'lines'; these lines are very fine shrinkage cracks which are generally the result of the use of excess mixing water and/or inadequate curing. A creamy mixture of the Casting 2000 should be rubbed well 'into' these areas with a fine sponge and the excess rubbed off. After curing, follow up with a very light fine sanding before applying any sealers.

Many kinds of surface coatings can be applied to hardened WINTERSTONE with excellent adhesion, including water, oil or solvent based materials. The sculpture must be thoroughly dried if coatings other than water based materials are applied. On completion the piece should be sealed with two coatings of sealer, particularly if it is to be exposed in an outdoor environment.

'Breathable' sealers are recommended, either water-based acrylic, silicone or siloxane. This may have to be repeated every few years on outdoor pieces and will depend on the sealer used and on the severity of the climatic conditions and airborne pollutants.

PIGMENTATION

WINTERSTONE can be integrally pigmented to brilliant or soft colors. In general, pigments that are suitable for use in cement mortars such as iron oxides (reds, yellows, browns, blacks, terra cottas) can also be used in WINTERSTONE. All pigments added should be pure, dry powders and not liquid dispersions or mixtures with other fillers. ***In general, do not use more than 5 parts of pigments per 100 parts of dry WINTERSTONE.*** To check whether a pigment is compatible, try it first in a small test batch of WINTERSTONE. If adding the pigment causes the WINTERSTONE to set either too quickly or too slowly, the pigment is not compatible and should not be used.

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Extra care and caution should be taken throughout the whole casting process for any sculpture or ornamentation which is subjected to the climatic rigors of an outdoor environment. All aspects of the process are critical: using minimal mixing water, proper and adequate curing, proper embedment of reinforcing mesh, and particularly final surface finishing and sealing.

ADDITIONAL TECHNICAL NOTES

Casting 2000 may be combined in varying proportions with the Sculpting Mix to suit specific project requirements or sculptors techniques. By also varying the amount of mixing water the sculptor/caster has considerable latitude of choice with respect to working consistency, pot-life and set times.

Example:

- 50/50 mixture of Casting 2000/Sculpting Mix @ approximately 14 parts water - produces a workable mixture with approximately 20 minutes pot-life and which sets within one hour. Ideal for fast-paced rough build-up of a sculpture.
- 50/50 mixture of Casting 2000/Sculpting Mix @ approximately 16 parts water - produces a workable mixture with additional open time and a workable consistency for lay-up casting. Ideal for large multi-segmented mould application.

WINTERSTONE® ICING MIX #11 (for Hi-Lighted Hi-Metallic Effects) (Nov. 2005)

ICING MIX No. 11 is a stronger and finer version of regular ICING MIX (No. 8) and as such ***permits you to use a much higher concentration of metallic powder into the mix, i.e. up to 1 part metallic to 1 part ICING MIX No. 11 (volumetrically).*** The resultant metallic-rich composite allows greater freedom in achieving not only a greater variety of truly rich metallic effects, but also dramatic Hi-Lighting by burnishing.

ICING MIX No. 11 can be used either as the final metallic layering(s) on a directly modeled sculpture, or as the brush-in 'face' coat on the mold in lay-up casting. For the modeling process, ***the mixing water is of the order of 30 parts water to 100 parts (volumetrically) of the dry Icing / Metallic mix*** -- this will vary slightly depending on the metallic powder used, i.e. Bronze, Brass, Copper, Iron (or mixtures thereof). To achieve the desired 'brushability' consistency into a casting mold, a small amount of additional water is required.

Allow at least 3 days for the finished surface (be it modeled or cast) to dry-cure and harden before proceeding with the patination process and follow-up burnishing. The surface increases in hardness with additional dry-curing time, which in turn affects the success of your burnishing efforts. Burnishing of designated Hi-Lighted areas is easiest and best when done on a surface that has been lightly rubbed down smooth with carborundum paper (#320 - #400). This rub should be done preferably before the patina chemical is applied as it bares the 'metallics' for better re-activity.

Burnishing is simply the process of rubbing the areas designated for Hi-Lighting with a soft-bristled brass brush or preferably a small, flat strip of brass metal. Continue rubbing the surface with rapid back-and-forth strokes until a shiny gloss is achieved. (Note: Different effects can be achieved by using a burnishing tool (strip) of different metals or material e.g. copper, sterling silver, ivory, etc.)

Apply a coat(s) of acrylic sealer to increase the gloss of the burnished surface. An alternative is to apply a high carnauba paste wax directly to the burnished surface (or over the acrylic sealer) which allows you to control the degree of sheen simply by varying the buffing/polishing effort. (Refer to respective Technical Bulletins for additional details.)



The Material Safety Data Sheet for this product should be read before using and is available upon request.

This product is safe to use with proper handling and precautions. Read and follow directions carefully.

IMPORTANT- *The information contained in this Technical Bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe a patent. User shall determine the suitability of the product for its intended application and assumes all risk and liability whatsoever in connection therewith.*

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