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**SCULPTURE SUPPLY CANADA**

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# **WINTERSTONE**

## **REGULAR**

### **Sculpting Medium TECHNICAL BULLETIN**

## **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 modelled 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** 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. 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.) 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 (litre) 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.

**One pound of dry mix produces approximately 20 cu.in. of mixed product.**

## **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 conditons. 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 fibreglass 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 fibremesh. 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. Ocassionally 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 colourless 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 colours. 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 **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 sculpture's 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.

## **ADDITIONAL TECHNICAL NOTES**

Casting 2000 may be combined in varying proportions with the Sculpting Mix to suit specific project requirements or sculptor's techniques. By also varying the amount of mixing water the sculptor/caster has considerable latitude of choice w.r.t. 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.

*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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# **WINTERSTONE**

## **CASTING 2000** **TECHNICAL BULLETIN**

### **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 fibreglas, as backing to the casting; or chopped strand (e.g. fibreglas, 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** 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 cubic inches 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.

The most suitable are polyurethane and silicone type molds. For instance, **Smooth - On** molding compounds such as Brush-On Series, PMC121 Series and Evergreen Series provide superior molding capabilities and full compatibility for casting applications with **WINTERSTONE** . 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 inch**. 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. fibreglas, 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 fibreglas 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 inch** for smaller pieces and **1/2 - 3/4 inch** 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 **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 colours. 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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## **ADDITIONAL TECHNICAL NOTES**

Casting 2000 may be combined in varying proportions with the Sculpting Mix to suit specific project requirements or sculptor's techniques. By also varying the amount of mixing water the sculptor/caster has considerable latitude of choice w.r.t. 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.

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# **WINTERSTONE**

## **REINFORCING TECHNIQUES**

The addition of reinforcing such as metallic or fibreglas mesh into the outermost layering of a 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 to 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 fibreglas mesh should be embedded within this outermost shell thickness.

Making the sculpture totally solid 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. In such situations, if mass is desired, it is recommended that a "lean" fill of one part of non-absorptive aggregate (e.g. 50/50 mix of coarse sand and styrofoam beads) and one part of WINTERSTONE be mixed with a bare minimum of water. This filling operation should be done preferably after 2 to 3 days of air-drying of the hollow cast.

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.

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 inch, 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 % fibreglas) 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.

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# CONCRETE PATINA SOLUTIONS

## TECHNICAL BULLETIN

### PRODUCT OVERVIEW

**CONCRETE PATINA SOLUTIONS** are acidic, water-based solutions of metallic salts that chemically react with the surface of cured concrete to produce unique and permanent colour effects. Reactions with the concrete create uneven, variegated or translucent colour effects much like the shadings of natural stone or the aged appearance of a timeworn patina. The result is unique to each concrete surface and cannot be duplicated with other colouring materials. Due to their reaction with concrete, Concrete Patina Solution colours become part of the surface. They will not fade, chip, crack, or peel and wear only as the concrete wears.

The variegated colours produced are unique to each concrete surface and depend on the chemical composition, mix design, porosity, age, texture, and colour of the concrete substrate. Mottling and wide variations in colour and intensity will occur. The colour obtained and the depth of penetration is not predictable, and it is not possible to successfully stain some concrete surfaces. If contaminants remain on the surface, the penetration of the chemical stain may be blocked. Older or weathered concrete or areas that are frequently exposed to run off or dripping water may lack the ingredients necessary for reaction with the chemical stain. Each colour is produced from a different, complex proprietary formulation containing no pigments or resins. They lightly etch the concrete surface to remove laitance and allow a more effective chemical reaction and deeper colour penetration.

### PREPARATION

Before chemically staining the concrete surface, all dirt and grease must be completely removed by cleaning. Coatings, water repellents, previously applied adhesives, waxes, and curing membranes must be completely removed by sandblasting. Acid washing should normally not be used as a cleaning procedure, since it removes necessary reactants from the surface. Failure to remove all contaminants and coatings that impede the penetration of Concrete Patina Solutions into the concrete will cause appearance defects.

New concrete surfaces should be sufficiently cured to allow the concrete to become reactive, a minimum of 14 - 28 days.

Older concrete surfaces must be cleaned so that the surface is completely penetrable before receiving the initial application of stain. An indication of whether the concrete is penetrable can be obtained by spotting the surface with water. The water should immediately darken the substrate and be readily absorbed. If the water beads and does not penetrate or only penetrates in some areas, additional surface penetration and testing must be performed.

### APPLICATION

**Concrete Patina Solutions** are available in **eight standard colours** : Copper Patina, Weathered Bronze, Fern Green, Padre Brown, Black, Faded Terracotta, Dark Walnut, & Antique Amber. **Copper Patina, Fern Green, and Weathered Bronze must only be used for interior applications**, since they may react with water and darken or blacken when exposed to excess moisture. Experimentation, skill, and practice are needed to achieve the desired colour effect. The colour produced is unique to each concrete surface and depends on the chemical composition, mix design, porosity, age, texture and colour of the concrete substrate, the stain colour, preparation methods and application procedures, the number of stain applications, experience in the use of the material, sealing or finish-coating materials and methods, and other factors. Each will significantly affect the final appearance and performance of the chemically stained concrete. Prior to general application of the chemical stain, produce representative test sections for each individual concrete surface and colour effect to verify and approve suitability and appearance. If little chemical activity takes place when the surface is tested, chemical stain in a darker colour may produce a stronger reaction. If the concrete is so old or weathered that it is not reactive it will not be possible to successfully use a chemical stain.

To achieve **special colour effects**, two or more Patina Solution standard colours may be intermixed before application or applied one over the other while wet, or a sequence of applications may be made using a different colour for each application. A more-variegated colour can be produced by uneven application of the Patina Solutions. Spotted colour effects may be produced by spraying the surface with chemical stain in a darker colour using a hand-held plastic spray bottle. Streaked or mottled effects may be created by laying or sprinkling absorbent materials, such as cloth or sawdust, over the surface. Darker colours are normally produced under the inert material. Though the effect achieved is primarily dependent on the surface of the concrete to which it is applied and not on ambient temperatures, weather conditions should also be considered when planning stain applications. The chemical stain will dry faster and may require more material or additional applications to produce the desired results in hot, dry, and windy weather. Rain will wash the chemical stain from the surface prematurely and runoff may stain adjacent areas or damage landscaping.

## APPLICATION *Continued*

Concrete Patina Solutions should be applied full-strength (undiluted). Coverage will vary widely depending on the porosity and texture of the surface, composition and age of the concrete, preparation and application techniques, number of applications, and other factors. A minimum of two separate stain applications is required. **Coverage rate** is approximately 75 - 100 square feet per gallon for two applications or 150 - 200 square feet per gallon per application.

Under normal conditions when properly stored, the shelf life is at least one year from date of purchase. Containers should be tightly closed and stored upright, away from direct sunlight, combustible materials and sources of heat. Do not use metal containers for holding the Concrete Patina Solutions during application or storage.

Concrete Patina Solutions are normally brush applied and scrubbed into the concrete surface. In larger areas an acid-resistant hand-pump sprayer may be used. Brushes must be uncoloured, acid-resistant nylon bristle of medium stiffness, having the ability to hold liquids.

Inexpensive paint brushes may be used when applying stain to small areas. They will be damaged by the acidic solution and should be frequently replaced. Brushes with coloured bristles should be avoided since they may bleed, discolouring the surface.

The colour of the stain solution will not resemble the final colour, but will be transparent when first applied, turning cloudy as reaction occurs. **The Concrete Patina Solution should fizz when applied.** If it does not, additional cleaning is needed or the surface is not sufficiently reactive to be chemically stained. When spraying the solutions, spray the stains evenly across the surface a few inches ahead of the brush while scrubbing. Scrub the solutions into the surface using a circular or figure-eight motion, working in small sections and keeping the brush in contact with the concrete and in continuous motion. Gradually spread the Patina Solution until all fizzing action ceases.

Do not spread reacted material to new sections, instead brush it back over the section just treated. Maintaining a wet edge, work new Patina Solution applications into the edges of the adjacent, still-wet, previously treated areas. During scrubbing, keep the surface thoroughly and uniformly saturated, but do not allow the liquid to splash, drip, or puddle in joint indentations and depressions unless desired for the colour effect. Apply the stain solutions to vertical surfaces in the same way, starting at the bottom and working upward. Avoid excessive rundown. Allow the solution to remain in contact with the concrete until the desired effect is obtained, a minimum of approximately four hours. Apply additional coats in the same manner, normally allowing the residue to remain on the surface between coats.

Take proper precautions to prevent contact with the surface until the residue is removed and the surface rinsed. After the final application has remained on the surface for a minimum of approximately four hours, remove all residue by wet scrubbing with a detergent, then rinse until the water is completely clean. Dispose of all stain residue, runoff liquid, absorbent materials used during application, and discard in accordance with local, state, and federal regulations.

**Sealing** of the stained concrete should be performed as soon as possible after the concrete has been chemically stained, rinsed, and allowed to dry completely, a minimum of 24 hours. Surface may be sealed using breathable acrylic sealers suitable for concretes.

### CONCRETE PATINA SOLUTIONS COLOUR CHART

#### INTERIOR

Copper Patina  
Fern Green  
Weathered Bronze

#### INTERIOR / EXTERIOR

Black  
Padre Brown  
Dark Walnut  
Antique Amber  
Faded Terracotta

## SAFETY FIRST

**DANGER!** OXIDIZER. CAUSE SEVERE EYE IRRITATION, POSSIBLE BLINDNESS. CORROSIVE, CAUSES EYE AND SKIN BURNS. MAY BE FATAL IF SWALLOWED, INHALED, OR ABSORBED THROUGH THE SKIN. CONTACT WITH BROKEN SKIN MAY RESULT IN ULCERS. PROLONGED OR REPEATED BREATHING MAY CAUSE ULCERATION OR PERFORATION OF NASAL MEMBRANES. CANCER HAZARD - CAN CAUSE CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE. Contains Hydrochloric Acid, Chromic Chloride, Cupric Chloride, Ferrous chloride, Ferric Chloride, Manganese Chloride, and Sodium Dichromate. Do not get in eyes, on skin or clothing. Wear acid vapour mask, goggles, gloves, protective clothing, chemical resistant apron and boots. use only with adequate ventilation. Do not breathe vapour or mist. Close container after each use. Store upright in tightly closed containers away from combustible materials and sources of heat.

#### **DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN.**

Wash thoroughly immediately after handling. Before using or handling, read the Safety Material Data Sheet.

**FIRST AID :** Eyes -- FLUSH IMMEDIATELY THEN SEEK MEDICAL ATTENTION. Hold eyelids apart while flushing material out thoroughly with large amounts of water. Ingestion -- Give several glasses of water or milk. SEEK MEDICAL ATTENTION IMMEDIATELY. Skin -- Wash thoroughly with soap and water. Inhalation -- Move to fresh air. If symptoms persist or develop, seek medical attention. In case of spillage, neutralize, absorb with inert material, and dispose of in accordance with applicable regulations.

Do not reuse empty container.

*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.

S C U L P T U R E   S U P P L Y   C A N A D A

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# **WINTERSTONE**

## **PATINATED “METALLIC” FINISH**

### **TECHNICAL BULLETIN**

The first step toward achieving a patinated “ metallic ” finish requires the addition of metallic powder into the **WINTERSTONE** Mix. The most commonly used patinable metals are bronze, brass and copper. The **WINTERSTONE** sculpting and casting mixes have been formulated to “ accomodate ” a certain amount of metallic powders without affecting to any appreciable degree the desireable working characteristics of the mixture.

A metallic powder content of the order of 80 to 100 parts (maximum) per 100 parts by weight of dry **WINTERSTONE** is recommended. ( Volumetrically this is equivalent to approximately one part metallic to six parts of loose dry **WINTERSTONE** ). This amount is generally sufficient to produce a “ metallic ” effect for patination with the appropriate chemicals. The metallic powder used should be finer in size than No.200 sieve (0.075 mm) and preferably even finer than No.325 sieve (0.045 mm). It is also recommended that a small amount of coloured oxide pigment be added, of the order of 2 to 3 parts per 100 parts of **WINTERSTONE**, to enhance and give “depth” to the patination.

The mixing and application procedure of the “metallic” **WINTERSTONE** mixture is the same as outlined in the Technical Bulletins for the respective sculpting or casting mixtures — however an increase of 2 - 3 parts water may be required to achieve the desired working consistency. For casting applications the “metallic” mixture need only be sufficient to give a “face” thickness of 1/16 inch. For sculpting applications where rasping and/or sanding is normally required, a thickness of at least 1/8 inch is recommended.

After 2 to 3 days of air-drying the hardened surface may be sanded to the desired smoothness and then the patinating process can be carried out. Generally the same formulations and procedures used for patinating foundry cast metals can be used. Cold patinas are recommended. Hot patinas are feasible but require additional care and caution to avoid temperature - gradient induced cracking of the surface. At least 2 weeks of air-drying should be allowed for strength development before proceeding with a hot patina application; also the surface should not be heated to more than 110° - 120° F — generally adequate for most “hot” patina chemical reactions which can be readily achieved with a simple hair-dryer type of device.

The final sealing of the surface is the same process as outlined in the technical bulletins and which may be an oil or wax rub, breathable acrylic etc. depending on the effect desired and on the environmental exposure. This procedure is as outlined in the respective sculpting or casting Technical Bulletins.

For further information see the Winterstone International website @ [www.winterstone.com](http://www.winterstone.com)

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