



HydroSpan™ instructional manual and answers to frequently asked questions.
This is a 4-page document, revised 4-27-06.

Frequently asked Questions:

How long must I soak a HydroSpan casting in water before it fully expands?

Answer: The soaking time is most dependent on the size and thickness of the HydroSpan™ casting, the greater the thickness the more soak time required. Generally, castings with a wall thickness or cross section thickness of 2 inches or less will fully expand in approximately 10 to 14 days @ 72 degrees. Thicker castings will require more soaking to fully expand. When casting thick sections of HydroSpan 100 you may consider creating water ports in your casting. For example: you may place plastic rods (pvc pipe) or plastic pipe (coated with releasing agent) down into your mold before casting the HydroSpan 100 material (do not use wooden rods). When removed from the cured HydroSpan 100 the voids formed by the rods form holes where by water can more easily penetrate the Hydrospan casting and reduce soak time. You may also rotate your mold as the HydroSpan material cures to create a hollow casting of your shape to reduce soak time. A cold-water bath may cause HydroSpan 100 to expand at a slower rate. We do not recommend soaking in hot water; high temperatures will damage the cured HydroSpan 100. Wet newspaper can be packed into a hollow Hydrospan 100 casting after it has been soaked in water to provide additional support during the mold making process.

Can I remove the HydroSpan™ casting from the water bath early if I desire less than a full 60% expansion?

Answer: Yes, If you do not wish to expand the full 60% you can remove the HydroSpan 100 casting from the water early. You must monitor the expansion process daily to know when to remove it from the water at the correct size. After removing the HydroSpan 100 casting from the water it is important to immediately seal the partially expanded casting in a dry air tight plastic bag or "Tupperware" container for several days to allow the expansion process to equalize properly. When soaked in water thin sections of HydroSpan 100 will grow more quickly than thick. If the casting is of a non-symmetrical shape, like the shape of a human hand, the thinner extremities (fingers) will grow at a faster rate than thick sections causing temporary distortion until full expansion is achieved. For example: expanding the shape of a human hand will result in the fingers becoming fully expanded faster than the thicker palm cross section. If allowed to soak long enough the casting will eventually regain exact per portion and detail as all sections achieve full 60% expansion. When you remove a HydroSpan 100 casting from the water early (for less than full 60% expansion) it may be distorted or out of correct proportion because thinner sections have grown more quickly than thick sections of the casting. By placing the partially expanded HydroSpan 100 casting in a dry air tight container for several days you will allow the HydroSpan 100 casting to equalize and restore correct expanded proportion. Once sealed in an air tight container, available water in the HydroSpan 100 casting will move from the more highly expanded thin sections into the less expanded thick sections and eventually reach equilibrium. Whatever available water is present in the HydroSpan 100 will automatically redistribute itself throughout the casting. Once you remove your HydroSpan 100 casting from the water bath and place in a dry air tight container it will stop growing and begin to equalize at whatever expansion level you desire. Symmetrical shapes will grow at a uniform rate and you may be able to simply remove from water bath early when desired expansion is achieved. If you notice distortion in the expanded casting place in air tight container and monitor daily. If you are expanding very small shapes with fine extremities it may be necessary to slow the expansion to prevent cracking of the Hydrospan 100. You may place your Hydrospan casting in a closed jar containing a wet cloth. Moisture (water vapor) from the cloth in the sealed jar will grow Hydrospan 100 at a more even but much-reduced rate compared with full water emersion.

hydrospan™·100

When removed from water how long can I wait before making a mold from the enlarged HydroSpan™ shape? Answer: We recommend you towel dry the HydroSpan and make your mold immediately; HydroSpan will very slowly shrink when removed from water. As long as you return HydroSpan to the water bath it will maintain its expanded shape for several months until algae and fungus begin to grow on it. If you do not return the HydroSpan to the water it will begin to very slowly shrink back.

What type of mold making materials can be used with Hydrospan?

Answer: For new molds we recommend using a good quality silicone rubber molding material for best results. We recommend using a condensation cure silicone molding rubber. Platinum cured silicone molding rubbers are not recommended. If you have existing molds made of urethane rubber, metal or plaster you must use a silicone mold-releasing agent to insure the HydroSpan will not stick inside your mold. If the mold you are using is showing signs of surface porosity wear you may need to first apply a sealing wax in addition to using a silicone spray-releasing agent. If the surface of your mold has been used many times it may develop some surface porosity and absorb the silicone spray release causing Hydrospan to stick. Plaster molds should be sealed prior to use with shellac or appropriate sealant and release agent to prevent sticking. You may use a nonstick spray-on cooking release (like Pam brand) in urethane molds. Nonstick cooking sprays can be easily removed with soap and water. For new molds we recommend silicone rubber molds for two reasons: 1. Silicone rubbers do not require the use of a releasing agent they are naturally self-releasing. Release agents on the surface of your HydroSpan casting will cause longer soaking times to fully expand the casting slowing the process 2. Silicone mold making rubbers will usually produce good results when used against damp HydroSpan 100. Urethane molding rubbers will react with water and cause surface bubbles and Distortions when used against damp surfaces.

How do I calculate how the full size of my casting after it has expanded 60%.

Answer: To calculate size of expanded shapes multiply starting dimensions by a factor of 1.6. For example an object, which measures 10 inches tall, will become 16 inches tall after one expansion ($10 \times 1.6 = 16$).

HydroSpan Instruction Guide

HydroSpan is a safe easy to use two component flexible urethane. It is non hazardous for shipping purposes, contains no Volatile Organic Compounds (VOC), is nonflammable and produces no odor. It has a mix ratio of 2 parts A to 1 part B component by weight, working life is approximately 7-minutes @ 72 degrees Fahrenheit, full cure time 24 hours. Hardness of cured HydroSpan™ (before soaking) is 45 Shore A / hardness of expanded HydroSpan™ (after water soaking for 14 days @ 72° F) is 35 Shore A. Percent increase in size 60%.

Mixing method: Hand stirring or electric drill with jiffy mixer attachment.

Color: Transparent blue. This product is for professional use only, please read all material safety data information prior to use. To request copies of material safety data information, please call (713) 943-8451 or log on to www.industrialpolymers.com.



BEFORE YOU BEGIN

Assemble the required materials.

HydroSpan "A" (resin) and "B" (hardener)

A mold of the shape you plan to enlarge

Plastic or metal spatula for stirring

Clean glass or plastic measuring container (large enough for A & B mixture and stirring). Do not use Styrofoam, styrene cups

An accurate scale to measure the A and B components

Drop cloth or newspapers to protect work surface

Paper towels

You must wear protective clothing, rubber gloves and eye protection while using this product.

GETTING STARTED

STEP 1

Choose a workspace where your mold will be undisturbed for 12 hours that is not in direct sunlight and away from sources of heat or cold. Protect work surface with a drop cloth or sheets of newspaper. If using a urethane, metal or plaster mold you must apply a releasing agent to prevent HydroSpan from sticking to your mold. In most applications use a spray-on or brush-on silicone release agent. If you are using a silicone rubber mold you will not need to use any mold-releasing agent. Plaster molds must be sealed with shellac or appropriate sealer prior to use. An unsealed plaster mold will absorb release agents and may cause sticking of HydroSpan casting.

STEP 2

Measure by weight 2 parts A component material to 1 part B component into a clean glass or plastic measuring container. Stir continuously for at least 3 minutes, mixing well. Thorough mixing is required. Scrape the sides and bottom of the container while stirring. We recommend that you pour the mixed HydroSpan into a second clean mixing container and stir a second time before pouring into mold. This ensures no unmixed material will compromise our casting. Reseal partially used containers immediately after use. Once the HydroSpan shipping containers are opened, we recommend the contents be used as quickly as possible. Repeated opening and closing of shipping containers will allow moisture contamination of liquid components.

Generally we have found that small air bubbles trapped in the HydroSpan will not affect the accuracy of your casting or the expansion process. Close storage containers quickly to prevent moisture contamination of "A" and "B" liquid components.

STEP 3

Slowly pour HydroSpan from the mixing container into the center of the mold. Pour slowly and evenly to prevent entrapment of air bubbles. It is important to quickly complete the pouring process; HydroSpan has a relatively short working life. After only a few minutes HydroSpan will become too thick to pour evenly into your mold.

STEP 4

Mold must remain undisturbed for 12 hours. After the HydroSpan casting has fully cured you may remove from mold. If you applied a mold-releasing agent it must now be removed. Release agents should be removed before soaking your HydroSpan casting in water. Most release agents can be removed with a wash of isopropyl or denatured alcohol. Washing in warm water with common dish washing detergent will insure most of you release agent has been adequately cleaned. If you used a silicone molding rubber to make your casting no washing or cleaning is required. Place your hydros™pan casting in a water bath, which provides enough room for unrestricted growth. The HydroSpan casting should be completely submerged in room temperature water (@ 72 degrees Fahrenheit).

STEP 5

Monitor the expansion of your shape, when desired enlargement is achieved you are ready to make a new mold from the enlarged Hydros™pan casting. You may repeat the preceding steps creating successive expansions of your shape until desired size is achieved.

CLEAN UP

Do not pour excess product down the drain. Excess material should be allowed to harden and disposed of as solid waste. Use paper towels, alcohol or mineral spirits. Wipe up any spills and wipe off mixing utensils. Wash hands thoroughly. Do not use soap and water or cleaners which may contain water for clean up. Water will cause the A component to instantly harden and become more difficult to remove.

WARNING

Keep out of reach of children to avoid injury. Avoid inhalation, ingestion, eye and skin contact. Wear protective clothing, rubber gloves and goggles. Protect work surfaces and use only in a well-ventilated area. Contact may produce allergic reaction by skin contact, so always wear rubber gloves. Contact may cause eye/skin irritation. Wash hands with soap and water promptly after using. Store in a cool, dry place away from high temperature or open flame. See enclosed material safety data information sheets for complete health and safety information.