



<b>DESCRIPTION</b>	HydroSpan 100 is a unique two component, Flexible, 100% solids (contains no V.O.C.), polyurethane elastomeric compound. HydroSpan 100, when fully cured provides a simple method for expanding three dimensionally molded parts. Expanding parts is done by simply molding the part with HydroSpan 100 to from a rubber master. After curing 24 hours at room temperature the molded HydroSpan 100 part is soaked in room temperature water and allowed to expand. Full expansion is 61% larger than the original part. Full expansion of parts can be achieved in 5 to 14 days depending on cross section thickness of the part. Thicker cross sections take longer while thinner cross sections require less time.																																																															
<b>WORKING PROPERTIES</b>	<table border="0"> <tr> <td>Mix Ratio By weight</td> <td></td> <td>100 parts A/ 50 part B</td> </tr> <tr> <td>Mix Ratio By volume</td> <td></td> <td>100 parts A/ 53.57 parts B</td> </tr> <tr> <td>Viscosity @ 72°F (A Side)</td> <td></td> <td>9.757 CPS</td> </tr> <tr> <td>Viscosity @ 72°F (B Side)</td> <td></td> <td>340 CPS</td> </tr> <tr> <td>Viscosity @ 72°F (Mixed)</td> <td></td> <td>6,000 CPS</td> </tr> <tr> <td>Color</td> <td>Part A:</td> <td>Clear</td> </tr> <tr> <td>Color</td> <td>Part B:</td> <td>Translucent Blue</td> </tr> <tr> <td>Color</td> <td>Mixed:</td> <td>Translucent Blue (other colors available upon request)</td> </tr> <tr> <td>Working Life @ 72°F</td> <td></td> <td>10-12 minutes</td> </tr> <tr> <td>Full Cure Time* @ 72°F</td> <td></td> <td>24 hours</td> </tr> <tr> <td colspan="3">* Set time and Demold time depends on temperature and relative humidity.</td> </tr> <tr> <td>Specific Gravity: (Part A)</td> <td></td> <td>1.10</td> </tr> <tr> <td>Specific Gravity: (Part B)</td> <td></td> <td>1.03</td> </tr> <tr> <td>Specific Gravity: (Mixed)</td> <td></td> <td>1.07</td> </tr> <tr> <td>Weight/Gallon Part A</td> <td></td> <td>9.16 lbs.</td> </tr> <tr> <td>Weight/Gallon Part B</td> <td></td> <td>8.55 lbs.</td> </tr> <tr> <td>Weight/Gallon Mixed</td> <td></td> <td>8.95 lbs.</td> </tr> <tr> <td>Cubic inch per lb. of product</td> <td></td> <td></td> </tr> <tr> <td>Hardness @ 72° F</td> <td>ASTM 2240-85</td> <td>40 - 50 Shore A</td> </tr> <tr> <td>Hardness Fully Expanded</td> <td></td> <td>20 – 30 Shore A</td> </tr> <tr> <td>Expansion rate @ 72°F for 14 days</td> <td></td> <td>160 %</td> </tr> </table>	Mix Ratio By weight		100 parts A/ 50 part B	Mix Ratio By volume		100 parts A/ 53.57 parts B	Viscosity @ 72°F (A Side)		9.757 CPS	Viscosity @ 72°F (B Side)		340 CPS	Viscosity @ 72°F (Mixed)		6,000 CPS	Color	Part A:	Clear	Color	Part B:	Translucent Blue	Color	Mixed:	Translucent Blue (other colors available upon request)	Working Life @ 72°F		10-12 minutes	Full Cure Time* @ 72°F		24 hours	* Set time and Demold time depends on temperature and relative humidity.			Specific Gravity: (Part A)		1.10	Specific Gravity: (Part B)		1.03	Specific Gravity: (Mixed)		1.07	Weight/Gallon Part A		9.16 lbs.	Weight/Gallon Part B		8.55 lbs.	Weight/Gallon Mixed		8.95 lbs.	Cubic inch per lb. of product			Hardness @ 72° F	ASTM 2240-85	40 - 50 Shore A	Hardness Fully Expanded		20 – 30 Shore A	Expansion rate @ 72°F for 14 days		160 %
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<b>CLEAN UP</b>	Dispose of all empty HydroSpan 100 component containers in accordance with local, state and federal regulations. Empty component containers can be rendered non-hazardous by rinsing the containers with a small amount of mixed material and allowing material to cure for 24 hours. The containers will then contain non-hazardous cured urethane.																																																															
<b>STORAGE AND SHELF LIFE</b>	HydroSpan 100 liquids should be stored in the original, unopened containers in temperature between 75°F and 85°F (24°C and 29°C). Shelf life of materials when kept in unopened sealed containers, at the recommended storage temperature is six months. Containers should not be opened until ready for immediate use. When resealing opened containers purge with dry gas, Dry-It (available from Industrial Polymers, Inc.). To avoid air entrapment, undue agitation of containers should be avoided.																																																															
<b>SHIPPING CLASS</b>	Class 55 Non-hazardous																																																															
<b>MOLD PREPARATION</b>	HydroSpan 100 can be molded in almost any kind of mold as long as it is fully prepared before filling with uncured polymer. Release agents used in the molding process inhibit the absorption of water thus slow down the expansion of the part. All waxes and release agents should be thoroughly removed with mineral spirits or acetone before the part is soaked in water. Parts molded in silicone molds require no preparation before soaking. All surfaces should be free of dirt and visible moisture. Depending on relative humidity and temperature, parts can be handled 12 hours. Full cure is attained in 24 hours at 72°F.																																																															
<b>APPLICATION AND MIX RATIO</b>	Mix two (2) parts of component A to one (1) part of component B by weight (use maximum batch size of no more than 2.98 lbs. (1,353 grams) of Component A to 1.49 lbs. (676 grams) of Component B [1/2-gallon total mix]). Pour both components into a clean one (1) gallon plastic pail and quickly mix using a spatula or "jiffy" mixer and electric drill. For smaller batch sizes only use hand mix with spatula to avoid "whipping" in unwanted air into the mixture, take care to scrape side of pail with a flat spatula to include all of the unmixed liquid (do not use square or round rod as mixers). Mix for about 1 minute and quickly pour into another clean mixing container, mix again for about 30 seconds, then pour into the prepared mold.																																																															



**APPLICATION AND MIX RATIO (Cont.)**

After about 6 to 8 minutes HydroSpan 100 thickens to a gel like consistency. It is important to have all pouring completed before this occurs. The "double" mixing technique ensures that no unmixed material is used in the molded part. Unmixed material will near cure propyl and will greatly compromised the mold part.

Liquid containers of component A & B should be maintained at 72°F before using for best results. Warmer temperatures will decrease working life, cooler temperatures will increase application time. Choose a work area that is free from visible moisture and capable of maintaining a temperature range of 70°F to 90°F. After temperature stabilizing the liquid component A and component B to 70°F to 80°F begin mixing using held spatula or jiffy mixer and electric drill (both are available from Industrial Polymers, Inc.). Latex gloves and eye protection are recommended (see Industrial Polymers material safety data sheet for more details).

The geometry of the molded HydroSpan 100 part greatly influences the rate that full expansion is completed. Thinner cross sections complete full expansion faster than thicker cross sections. The accompanying graph illustrates this phenomenon. In this study, three parts were made of various shapes and graphed to show how the thickness of cross section influences the rate of expansion.

Cross sections thicker than 0.50 in. may develop splitting in the surface as the part swells.

Tracking the weight gain of the expanded HydroSpan 100 part is useful in determining the completion of the total expansion. Ultimate weight gain is between 340% to 360% of the original part's weight and is determined as follows:

$$\frac{(\text{Expanded part weight}) - (\text{Original Part weight})}{(\text{Original Part weight})} \times 100 = \% \text{ weight gain}$$

- % weight gain is larger than linear dimension change
- Max weight gain: 340% to 360%
- Max linear dimension change 145% to 161%

**EXPANDED PARTS**

Once the HydroSpan parts have expanded to the desired size a final mold should be made as soon as possible. The preferred mold making material is Silicone rubber. Expanded HydroSpan 100 parts should be maintained in water to preserve the expanded shape and will shrink back to their original size if allow to dry out.

**PROBLEM SOLVER**

Problem	Reason	Solution
Material Sets too quickly	Liquid components too warm before using	Condition liquid to 72° F
"clumps" form in component A	Moisture contamination	Purge liquid containers with "Dry-It" after use
Uneven color color rubs off	Component A & B not weighed correctly and or improperly mixing	Use calibrated gram scale, "zero" out the weight of mixing container. Check the Calculation of Part A and B used in the mix. Do not mix batches over 4.47 lbs. total weight. Use two mixing containers (see mixing instructions)
Surface bubbles	Moisture contamination Or excess air "whipped" into mixture	Mold surface should be dry Take care to slowly mix the combined liquids to avoid "whipping" in unwanted air. Must be allowed to cure overnight in a dry environment
Cured HydroSpan 100 will not expand	Mold release agent on surface	Clean cured parts with mineral spirits or acetone before soaking in water or Use Silicone molds
Sticky spots	Uneven mixing	See Mixing Instructions.
Polymer fall apart after soaking in water	Uneven mixing or incorrect amounts of Part A or B Molded part is not fully cured	Use calibrated gram scale, "zero" out the weight of mixing container. Check the Calculation of Part A and B used in the mix. Do not mix batches over 4.47 lbs. total weight. Use two mixing containers (see mixing instructions) Part must be cured 24 hrs before exposing to water