

# STONE-BRITE®

## Stone-in-place casting investment

FEBRUARY 2001

Stone-Brite casting investment is specially formulated gypsum investment to cast gemstones set in place. Gemstones such as diamonds, colored stones or cubic zirconia may be used.

Stone-Brite is ready to use and will protect your stones up to a temperature of 630°C (1166°F). Due to the protective barrier provided, gemstones can now be burned out safely at normal flask temperatures.

### PROCESS INSTRUCTIONS

1. Mix the investment powder and water at a ratio of 39-42 parts water to 100 parts powder by weight (39-42 ml water per 100 grams powder). Refer to Chart A for flask size proportioning. For best results, adjust the water temperature to within a range of 22-29°C (72-85°F).
2. Add the investment powder to the water.
3. Using a spatula, mix by hand for 30 seconds until the powder is completely wetted out.
4. Using a mechanical mixer, mix on low speed for one minute, then on medium speed for an additional 2.5 minutes.
5. Vacuum the investment slurry until it rises in the bowl, the bubbles break, and the mix begins to boil vigorously. Continue to vacuum for one additional minute.
6. Pour the investment down along the inside of the flask allowing it to flow up, around, through and over the top row of patterns. Leave a minimum clearance from the patterns of 3/8" at the sides and 3/4" at the bottom.
7. Allow the flask to sit undisturbed for 2 hours before removing sprue base.
8. Load into burnout oven, sprue end down.

### BURNOUT AND CASTING INSTRUCTIONS

1. Following the suggested burnout cycle shown in Chart B, burnout flasks to a peak temperature of 630°C (1166°F). Proceed at recommended peak burnout temperature until all carbon residue has been removed from the mold.
2. Reduce flask temperature to the desired temperature for casting. Add 5-10°C (40-50°F) to compensate for the chilling effect of the stones.
3. After casting, allow flask to cool to room temperature before removing the cast tree. Carefully remove the cast tree by hand. Do not quench hot flask in water as this can damage the stones.
4. Clean the remainder of the investment from the castings with a high-pressure water-blasting unit. Adjust water pressure accordingly so as not to loosen set stones.

**WARNING! Stone-Brite® investment contains respirable crystalline silica (RCS). Do not breathe dust. May cause delayed lung injury (silicosis, pneumoconiosis). The I.A.R.C. (International Agency for Research on Cancer) reports (IARC Monograph 68) there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the forms of quartz or cristobalite from occupational sources. The NTP (National Toxicology Program) reports (Ninth Annual Report on Carcinogens) that RCS is known to be a carcinogen based on sufficient evidence from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust. Follow OSHA Safety and Health Standards for crystalline silica. See Material Safety Data Sheet (MSDS) for detailed information.**

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## Metric Units

### A. Proportioning Chart for STONE-BRITE

Weight of Investment	Large Castings Water/Powder Ratio 39/100		Normal Castings Water/Powder Ratio 40/100		Delicate Castings Water/Powder Ratio 42/100	
	ml water	Approximate Yield cc	ml water	Approximate Yield cc	ml water	Approximate Yield cc
0.5 kg	195	375	200	398	210	416
1.0 kg	390	770	400	795	420	831
5.0 kg	1950	3750	2000	3975	2100	4155
7.5 kg	2925	5775	3000	5963	3150	6233
10.0 kg	3900	7700	4000	7950	4200	8310
15.0 kg	5850	11550	6000	11925	6300	12465
20.0 kg	7800	15400	8000	15900	8400	16620

### B. Water (ml)/Powder (g) of STONE-BRITE Investment Required by Flask Size (W/P = 40/100)

Volume of one kg STONE-BRITE investment, when mixed, is 795 cc at 40/100.

		FLASK DIAMETER							
		65 mm water/powder	75 mm water/powder	85 mm water/powder	90 mm water/powder	100 mm water/powder	110 mm water/powder	120 mm water/powder	150 mm water/powder
FLASK HEIGHT	100 mm	166 ml/415 g	220 ml/550 g	284 ml/710 g	320 ml/800 g	396 ml/990 g	478 ml/1195 g	568 ml/1420 g	888 ml/2220 g
	110 mm	184 ml/460 g	244 ml/610 g	312 ml/780 g	352 ml/880 g	432 ml/1080 g	526 ml/1314 g	624 ml/1560 g	976 ml/2440 g
	120 mm	200 ml/500 g	264 ml/660 g	340 ml/850 g	384 ml/960 g	472 ml/1180 g	574 ml/1434 g	680 ml/1700 g	1064 ml/2660 g
	130 mm	218 ml/545 g	288 ml/720 g	368 ml/920 g	416 ml/1040 g	512 ml/1280 g	621 ml/1553 g	736 ml/1840 g	1152 ml/2880 g
	140 mm	234 ml/585 g	312 ml/780 g	400 ml/1000 g	448 ml/1120 g	552 ml/1380 g	669 ml/1673 g	796 ml/1990 g	1244 ml/3110 g
	250 mm	416 ml/1040 g	556 ml/1390 g	712 ml/1780 g	800 ml/2000 g	988 ml/2470 g	1196 ml/2989 g	1420 ml/3550 g	2220 ml/5550 g

### B. Wax Burnout Schedule\*

Flask size up to  
85x140 mm

2 hours @ 150C\*\*  
2 hours @ 375C  
2 hours @ 630C  
1 hour @ \*\*\*

Flask size up to  
120x140 mm

3 hours @ 150C\*\*  
2 hours @ 375C  
2 hours @ 630C  
2 hours @ \*\*\*

Flask size up to  
150x300 mm

4 hours @ 150C\*\*  
2 hours @ 375C  
3 hours @ 630C  
3 hours @ \*\*\*

\*Suggested burnout. Your schedule may vary depending on the type and quality of the gemstone being used. **Do not exceed 630C flask or oven temperature.**

\*\* At 1550m (5000 feet) altitude, use 120C.

\*\*\* Time to cool to casting temperature after burnout time.

**NOTE:** Investment cools slowly and is dependent on the furnace insulation. Flask temperature must be uniform for proper solidification of the metal. Typical flask casting temperature for delicate pieces is 452-538C and 371-482C for heavy pieces. **In no case should your flask temperature exceed 630C, since stone quality may be compromised.**



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