

Materials List for Aluminization of the 100-inch Telescope Mirrors using the 108" Bell Jar

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2.0 Consumables and Equipment

Many of the details of the aluminization process were hammered out through the years of aluminizing the telescopes at Mount Wilson where this work has been done at the observatory for more than 65 years. In the recent past the optician work has been handled expertly by Larry Webster, of UCLA's 150 ft Solar Tower, who has refined and updated much of the work and continues to provide technical consulting. There are presently 3 qualified opticians for mirror coating, Dave Hale, ISI Berkely, Nils Turner, CHARA Georgia State and myself representing UnISIS. Each project looks after its own telescope mirrors with UnISIS being the key user of the 100-inch telescope. This document is aimed at the materials needed for coating the 100-inch mirror and with suitable modifications can be used for other projects.

2.1 Consumable Raw Materials List

There are many different items needed to successfully complete a mirror recoating project. Not having the materials on hand when a mirror is ready to coat can introduce delays on the order of a month. So ordering early is key! The following is a standard list of materials to be on hand prior to the start of recoating.

Table 2: Consumable material list.

Material	Recommended amount to have on hand
Distilled Water	100 gallons from Sparklettes (in addition to that used for making acid)
Orvus or Liquidnox Soap	16 oz from Kruse Feed
HCl (CuS) Acid	12 gallons prepared (4 gl. HCl + 8 gl. H ₂ O + 6 teaspoons Cupric Sulfate Crystals) from Tri-Ess
Cupric Sulphate	CuSO ₄ 5H ₂ O (purified, diamond bluestone) (16oz. bottle) Supplier: TRI-ESS Sciences Inc
Medical Grade Cotton	5 x 1 lb boxes
Kaydry Towels	1 case (15 boxes) from Clean Sweep Supplies
Particle Free Towels	10 packages

Dry Nitrogen Bottles	2 large bottles (high grade)
Oxygen Bottle	1 small bottle (high grade and new)
Surgical Masks	10 from Ace Hardware
Vinyl Gloves	10 pair from Ace Hardware
CaCO ₃ Powder	1 lb jar from Tri-Ess
Tungsten Filaments	44 from R.D. Mathis Co.
Aluminum Staples	176 pre-bent from Jori Inc.
KOH	3oz of crystal (0.5oz of KOH in 500cc of distilled water.) from Tri-Ess
Felt Pads	Exisiting never been replaced.

2.2 Equipment List

Observatories by there very nature are inherently poor. This means equipment gets borrowed and left elsewhere on the grounds. This means no matter how careful you were to have things the year before, likely this year they are somewhere else. The following items need to be hunted down, cleaned if necessary or purchased again.

Table 3: Equipment List

Item
Garden Hose
Submersible Pump
Large Saw Horses
120-inch basin
Safety Glasses
Splash Face Mask
100-inch Mirror Covers
Acid Gloves
Nitrogen Hose & Fittings

Long Poles
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2.3 Suppliers

The following list of suppliers have served well in the past for providing the needed consumables and equipment. Most likely there are others equally good, we just haven't purchased from them yet.

Table 4: Suppliers list

TRI_ESS Sciences Inc. 1020 W. Chestnut St. Burbank, CA 91506 (818) 848-7838	ACE Hardware Everywhere
Kruse Feed (626) 575-6000	Personna USP Sterile Check with CHARA
R.D. Mathis Co. 2840 Gundry Ave., Long Beach, CA 90806 (562) 426-7049	Clean Sweep Supplies 4435 San Fernando Road Glendale, CA (818) 956-6060