

Alpha Form Alumina Slurry **Formerly "Linde A Suspension"**

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Alpha form 0.3 micron alumina has been around the lapidary trade and hobby for many years under the guise of many trade names, such as "Linde A", "Ruby powder", "Airfloat alumina", and etc. Clear away all of the verbiage and you have a very closely graded aluminum oxide powder held in suspension in proprietary slurry or suspension.

Many lapidaries are aware of this material as a polish for various gemstones and have used it very successfully in its' powder form. Using it in the powder form tends to be very wasteful and, due to the relatively high unit cost, quite expensive.

Now there is a much more economical and satisfactory form of Alpha alumina available in the market place. Alpha Form alumina Slurry or suspension as it is otherwise known is now available for use by both the amateur and professional lapidary. This slurry is a very sophisticated colloid type suspension, wherein the alumina is held in suspension in a liquid carrier. The alumina powder remains suspended in the liquid slurry maintaining a constant density. The slurry is always ready for use and the amount of alumina per drop remains constant.

The techniques necessary to achieve the best economy and efficiency from your equipment and alumina slurry are really very simple. The first rule of thumb the new user should make every effort to follow is to try to use a bare minimum of alumina slurry on your lap or buff at any one time. O.K. what constitutes a bare minimum? Well to give you a working example, I initially charge a clean 8" polishing lap with two drops of slurry.

One method of ensuring a reasonably uniform dispersal or spread of this small amount of polish onto the surface of an 8" polishing lap is to mist the surface of the lap with the following mixture. Mix DISTILLED WATER, 50/50 with the potable antifreeze that is used in the drinking water systems of RV's and travel trailers, the principle constituent is propylene glycol. NEVER EVER USE ETHYLENE GLYCOL for any lapidary purpose, it is quite toxic. You can never tell what may be in your tap water that might interfere with your polishing, mixed with a small amount of 20/10 automotive windshield cleaner concentrate as a wetting agent prior to application of the polish. I spread the polish with the tip of my index finger. (Really high tech!) There are a lot of mist or atomizer type bottles on the market, Just be sure that your chosen bottle will provide a very fine mist.

What laps work best? Those of you who have been faceting for some time will have your favorite laps for polishing various gem materials. In most cases you are probably using the same laps that I am. For the novice faceter and the advanced lapidary, I make note of the following uses that I make of alumina Slurry with considerable success.

The laps that I tend to favor for a great majority of the gemstones that I polish with the slurry are the metal laps such as BATT, 50/50 lead-tin, pure tin, and typemetal which is no longer available. Zinc laps comfortably replace the typemetal laps; their physical characteristics are virtually the same. One of the reasons that I try to use the metal laps when ever possible is that when used with a very thin slurry they can deliver a very flat facet, even on quite soft materials. The new laps made from the counter top material "Corian™" are proving to be very useful with the alumina suspension for a variety of gem materials. Corian™ should be used as received, do not use treewax or any other surface treatment. The extender mentioned above is sufficient for most purposes.

In order to maintain as thin slurry as I am able, I revert to my mister bottle to keep the lap moist. Do not allow your lap to dry out! In order to “condition” the surface of my metal laps, I score the surface of the lap radially, like the spokes of a bicycle wheel, (Note: scoring is not necessary with the BATT lap) with a short section of a hacksaw blade. This scoring tends to help to keep the polish on the lap rather than it being thrown off with the rotation of the lap. In order to avoid contamination of your lap it is good policy to clean your lap on occasion with warm running water and a mild soap and a stiff brush. If you feel the need for a quick cleanup when you are polishing a stone, the procedure is very simple and easy to perform. Just spray your lap with 409 or similar liquid cleaner and scrub the accumulated debris off of your lap with a facial tissue or two. Recharge your lap and off you go.

Lap speed is important to achieving a fine polish. If you spin your lap at too high a speed the polishing agent tends to be thrown off of the lap and to dry out very rapidly. You will have to find a speed that works well with your personal hand pressure and the other variables involved such as facet size, angle, and the gem species that you are working with. If your lap is throwing the polish off, you are going too fast.

I have found the alumina slurry to work well when polishing Oregon sunstone, tanzanite, topaz, tourmaline, peridot, the garnet family, andalucite, apatite (real slow), benitoite, beryl (not emerald)*, diopside, hematite, iolite, jadeite, kornerupine, sphalerite (very slow), spinel, spodumene, zircon and without a doubt many of the unusual gem and mineral species that are cut for collectors on occasion

One word of caution when polishing gemstones with open fractures or tubes or have a granular structure! Make every effort to use a polishing compound that is soluble in something that the gemstone being polished is not soluble in. In the case of emerald, the polish of choice is tin oxide, which can be boiled out of fissures with nitric acid. Catseye tourmaline and beryls have the same problem.

Alumina slurry can also be used to polish many of the more taxing cabochon gemstones such as lapis lazuli, jadeite, nephrite and etc. I use a leather lap on my faceting machine. In the case of the jades I add about 10% white vinegar to the water in my spritzer bottle.

Without a doubt many of you will, after using alumina slurry, for some time manage to improve on the methods listed above and will develop new ones, which I hope you, will pass on to other faceters.

- Due to the presence of open inclusions and fractures in emerald alumina is not a satisfactory polish because it is not soluble in any of the common solvents including the mineral acids. Tin oxide is conversely soluble in warm nitric acid and will polish emerald in a satisfactory manner.

To reorder, contact:

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