

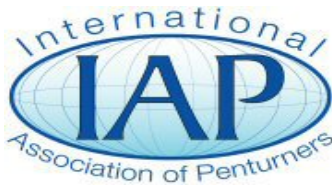
# The Acrylic Revolution

**A Tutorial by:**

**Bill Daniels  
A.K.A “avbill”**

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## *The Acrylic Revolution*

**By Bill Daniels**

Although, many luxury pen-makers have gone to any length to avoid using the word "plastic" in their advertising. Whichever synonym you use for plastic; acrylic, Lucite, alomilite, acrylester, polyresin **they** are all in the plastic-thermal industry. Plastic still remains the ideal material for pen making, because it is lightweight, durable, and colorful. Yet, not all plastics are equal. Here are some points for you to consider:

- Lucite, or acrylic, is a popular material for mid-price pens. It's a very tough and hard material that is transparent in its natural state, so it can be mixed with all kinds of colorings for some truly distinctive effects. It can be cast into shape, reducing the amount of hand labor required for finishing. Today's acrylic-blank makers have become very skilled at achieving the kind of unusual coloring in acrylic molding that was more typical of the early celluloid style of the 1940s.
- Celluloid pens are back, but they can be very expensive due to the high cost and relative scarcity of suitable rods or sheets, and the fact that celluloid manufacturing is a bit of a black art. Celluloid is a bit softer and more scratch prone than acrylic; it is also flammable (so do not hold your celluloid beauty over an open flame).
- In general, the harder a plastic is the more scratch resistant it will be. Such pens will keep a very nice shine without much polishing. However, these hard plastics can sometimes tend to crack due to unrelieved stress introduced in the casting process. A softer pen can get nicked up, but it should be resilient enough to hang in there for a very long time.

In the late 1940s-1950s celluloid was one of the primary resources for fountain pens. This renewed awareness in acrylics has revolutionized pen making in the near future and will dominate the future. The average turner can take an acrylic blank, turn it, and establish an apparent quality only matched by the most skilled wood pen makers. An acrylic pen has an opalescence quality that has memorizing. One advantage of acrylic pens is that there are little or no finishing steps on an acrylic pen. For me, the quality of the finished product is amazing. However, we should ask some questions! So do the acrylic pens sell better? Do they have a specialized challenge for the turner? What qualities of acrylics are there? What must a turner know to understand this fabricated alternative to wood?

## **TYPES of ACRYLICS**

With so many independent people and top manufactures developing their own style of acrylic or polyresin blanks, it becomes a mess. Below I have taken bits and pieces from many turners to get a part of the story on how the character of materials turns. Just remember to keep it simple. Try one manufacture for a time. If you like the product, expand on it. Alternatively, continue your search for a better product. Below are several different materials in today's market. I have ordered and turned at least one acrylic pen from each of the different selections of acrylic.

### **Mica-Pearl (MP)**

This type of acrylic material shows brittleness when turning. Be cautious. It is between Acrylic Acetate and Tru-stone in turning difficulty. This material does carry a pearlescence quality in the blanks, which catches the viewer's eye. The blanks are made from a polyester resin and the catalyst hardener. Add some colorants to mix into the resin before it sets. PSI, Hut, Arizona Silhouette, all carry this product. Arizona Silhouette product is labeled under EPR.

### **Poly-Gem (PG)**

This material is said by the suppliers a harder or denser material than most acrylic acetate blanks. At the same time it is user-friendly allowing ease in drilling and turning. It does smell when turned and is better turned below 1000 rpm.

### **Acrylic Acetate (AA)**

Many acrylic acetate blanks for pens have been specially formulated for turning. It comes in variety of rich, shimmering, translucent colors. It truly looks spectacular in pens and related items. Some of the Acrylic Acetate is specially formulated to be extremely easy to work with; it drills, turns, sands, and polishes like a dream. Some of the turners view the AA as being the softest, or one of the softest acrylics to turn. Just remember not all acrylics are of the same formula resulting in slightly different turning qualities. Keeping any acrylic acetate blank cool when turning, you prevent any meltdown, a softening of the acrylic. All major suppliers carry AA in their catalogs. Check the color spectrum for the colors you like!

## **Inlace Acrylester (IA)**

The IA can be a bear to deal with if you're new to turning, so get some turning time in on the AA first. If you decide to try Inlace Acrylester, do yourself a favor and ask one of the reps at Woodturningz to send you the flyer with hints and tips for turning it. I had serious issues with it before, but I have not lost a blank since Jeff explained what I was doing wrong and I received their flyer. Inlace acrylester blanks are so vibrant in colors their sheer luminescence is very over welling.

## **Polyresin (PR)**

With this acrylic material your gouges easily cuts the blanks and stays sharper longer. Every different type of polyresin has a slightly different formula in the degree of hardness, brilliance, color making all of them independently unique. The polyresin also shines with an uncanny deep brilliance. It is typically more translucent needing your attention in coloring the tubes of the pen.

## **True Stone – AcryliGem (TS)**

There different names are synonymous to Tru-stone. They represent beautiful materials made from a combination of crushed semi-precious stones, combined with other natural pigments and materials which are then subjected to tremendous heat and pressure. This results in a material still "hard as a rock" but workable with a lathe. It has the look and the cool feel of stone, and is difficult to distinguish from the real stone. This material is easy to turn with sharp tools. The results of a pen made with this material are one that has a nice heft to it, a brilliant sheen and texture and an interesting appearance.

## **Alumilite**

This product is for the advantageous pen turner wanting to experience in making her/his own acrylic blanks. Many of the experienced turners are going this route for the uniqueness of the product and the satisfaction of a one-of-a-kind product. I just poured and turned my first useless-wood blank in Alumilite. The blank was ready to turn in 2 hours, it was still warm and a better result would be if you wanted overnight. Turning it was like eating grandmother's pie, easy and fun. The property of alumilite causes few blowouts, and sanding was just the same. If you are searching for that deep clarity high gloss shine of acrylic, you will not get it without enchantments- such as CA finish. If ease of turning is your primary desire, Alumilite is hard to beat. If non vapors are your primary concern, casting Alumilite is hard to beat. Again, the Alumilite finishes to a polished shine. It has a gloss but a step down from the high gloss of other acrylics (PR) (IA) (MP) and (GP).

## **Corian**

Another source for turners seeking to produce an unusual pen is corian. Another polyresin/acrylic blend, corian is easy to turn on the lathe with skill. However, it can be difficult to assemble. Corian is rigid it. The best tip I can give you in finding corian is go by Kitchen cabinet shops and ask for the throw out pieces.

## **Celluloid**

In the early 20<sup>th</sup> century, many fine fountain pens were made with celluloid material. Today they are collector's items. Now there is resurgence in interest in this material for fine writing pens. So what is celluloid? Celluloid is regarded as being the first thermoplastic. Then the different materials for celluloid compound were nitrocellulose and camphor. The formula has been altered from the beginning but the basic chemistry is still there. As thermoplastics, celluloid has found a wide variety of uses in the 19<sup>th</sup> and the first half of the 20<sup>th</sup> century. Early celluloid could be extremely flammable! Celluloid has certain characteristics, which differentiate it from other plastics. In general, pieces made from celluloid tend to be thin, light, somewhat brittle, and sensitive to heat. Today's celluloid is easily molded and shaped, making it easy to turn. It was first widely used as an ivory replacement. Celluloid pens are easy to turn and polish to an almost glass-like finish. If you have a hard time, distinguishing between celluloid and other acrylics of today put your nose to it. When placed briefly in hot water, early celluloid smells like camphor, while later cellulose acetate smells like vinegar.

## **Bakelite**

Bakelite was developed by Dr. Leo H. Baekeland, and it was patented in 1909. There were several colors of bakelite. Bakelite colors, however, do change with age. Most pieces, which collectors identify as Apple juice yellow, were originally colorless, and white Bakelite mellows to a creamy ivory color. Bakelite can be transparent, translucent, or opaque. Bakelite tends to be heavy. The more translucent the Bakelite material the more brittle it becomes. Bakelite can be transparent, translucent, or opaque. Bakelite tends to be heavy. Bakelite is also known as products of Catalin, Prystal, Marblette, and Durez. Bakelite is very hard to come by for a pen blank and expensive.

## **Catalan**

Catalan is a cast bakelite product, with a different manufacturing process (two-stage process) than other types of bakelite resins. Catalin is transparent, nearly colorless, so unlike other bakelite phenolics it can be dyed bright colors or even marbled. This has made Catalin more popular than other types of bakelite. Catalin was not a durable product. It tended to shrink and crack as it aged.

## **Lucite**

Lucite, is another acrylic resin, was first marketed by DuPont in 1937. This synthetic material that is denser and heavier than normal plastic and is usually finishes without the seams and knobs that are tell-tale signs of injection or molding. Like Bakelite, it is a thermo set plastic. Although in its original state it is clear and colorless, it could be tinted any color of the rainbow, from transparent to opaque. When placed briefly in hot water, Lucite is odorless. Higher-end pens are often made with Italian Lucite. As with anything you need to properly take care of your plastic pens. Older Lucite can develop cracks from age or exposure to heat.

## *Conclusions*

The thermoplastic industry has developed many Acrylic Acetate or polyresin- acrylic blends. These pen blanks have changed and are forever changing the make-up of the pen world today. Just remember: plastic is an ideal material for pen making, because it is lightweight, durable, and colorful. Celluloid material has been the easiest to turn. The acrylic acetate has also been the easy to turn. Both have an awesome high gloss finishes. There are also several companies that have produced the acrylic/polyresin with a softer finish. You add to the mix Inlace Acrylester, Mica-Pearl and Poly-gem you will have a hard time to go back to that other product called wood for pens.

When it is all said and done, not all acrylic / polyresins blanks are the same, and they are not all user-friendly. Then finished it takes on a sophistication of illumining a transparent glow that shimmers of radiant beauty that is just breath taking!

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