

# IDENTIFYING AND TESTING FOR MATERIALS

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We have been given the senses of seeing, touching, feeling, smelling, and hearing. Each of these senses can be used when trying to determine the materials that buttons are made from. Many times one can tell by looking at a button what material it is, but there are times when seeing is not enough. We can touch a glass button to our face or tongue and tell the material just by the coolness. We can tap some buttons against our teeth and hear the hard, high-pitched ring or a soft, flat sound. Some people can rub a button in their hands and produce enough heat to tell what smell is being produced and thus identify the button. There are times when none of these tests work. In most cases one can do a hot needle test and rely on the sense of smell and sight. However, the hot needle test will not work on all materials.

Hot needle testing is the most reliable method for testing materials. Hot needle testing works best when using an electric hot-needle, which produces an even, constant temperature. (See my catalog page for ordering a Hot Needle Tester.) It is recommended that hot needle testing be done in a well-ventilated room. It is also recommended that testing be limited to about 15 to 30 minutes at a time. After that amount of time the nose may become less sensitive to the various smells. Take a break and come back to it again later. A word of caution--Some people may have allergies to some of the odors produced. Use common sense.

I would suggest that to begin with, you practice using a hot needle on some of your inexpensive buttons or broken specimens to get a feel for the needle, smells, etc. To begin hot needle testing--heat the needle, choose a spot on the back of the button, near the shank, in a very inconspicuous spot. Never test a transparent button unless there is some decoration on the front, which can hide the test mark. Poke the buttons with the hot needle and take note of the smell, amount of smoke produced, amount of sizzling, etc. Refer to the information below for the smells and results that might be produced by the various materials.

Experience is the best teacher. You will find that the more testing you do the less you will need to do. You will soon learn to identify many buttons just from you past experience, and reserve hot needle testing for those very difficult buttons.

Some have suggested that rather than using the hot needle test one can produce the same smell by dipping the button into very hot water. This is NOT recommended. There are some buttons that will be destroyed by dipping them into hot water. A two-piece button may get water between the layers and destroy the button. The hot water can melt some buttons or destroy the shape of some button.

Other methods that have been used for testing Synthetic Polymers are: Dow Scrubbing Bubbles, 409, Simichrome Polish, Windex, etc. These methods may work on some types of Synthetic Polymers. However, all of these products contain chemicals, which can cause

damage to the button. This damage may be immediate or it may appear over a long period of time. I do not recommend the use of these products.

There are a variety of methods that have been suggested for various kinds of buttons. I will attempt to describe some of these methods.

Tools that will be helpful in identifying buttons are a very good source of natural light, a magnet, and a magnifying glass.

A good way to learn about materials is to save broken specimens and inexpensive buttons that can be broken, hot needle tested, cut, scratched, etc. to note what characteristics it shows under such treatment. Play with these specimens, practice the hot needle testing, and other testes on them. This will help you become familiar with the results of testing and help you to become familiar with the various materials without damage to your good buttons.

### **Acrylic Resins (Lucite, Plexiglass, Perspex, Pontalite, Crystalline, Acrylite)**

- Hot needle test will penetrate smoothly and easily.
- Hot needle test will leave a tunnel with slight mound on edge. These edges may be smoothed out with hot needle tip.
- Will have a rubbery consistency when hot.
- Odor produced with hot needle test will smell like nail polish remover or sweet overripe fruit.
- Hot needle test produces little or no smoke.
- Never test a transparent piece unless there is some decoration on the front which can hide the test mark.
- Does not yellow with age.
- Feels lighter than bakelite but heavier than celluloid.

### **Black Glass**

- NO hot needle test.
- Hold to the tongue or cheek and the glass will feel colder than buttons of other materials.
- Tap on your teeth and you get a hard or high-pitched ring.
- Will often find a mold mark on the back.
- Facets may be slightly rounded.

### **Black Glass with Silver Luster verses steel**

- Same tests as black glass.
- Will not be attracted to a magnet.

### **Bone (Includes Antler & Staghorn)**

- Hot needle test produces no odor.
- Use a magnifying glass to see tiny black flecks on the surface, from the blood vessels in the bone, called "splinters".
- Coarse grain lines go in one direction, with porous look.
- Colors can be white to deep cream.
- With a sharp knife one can scrape off a very fine powder.
- Usually not self-shank.
- Can be dyed.

- Cannot be softened enough to mold.
- May yellow with age.

### **Casein**

- Hot needle test will penetrate after slight resistance.
- Hot needle test will produce an odor of burnt milk, cheese, burning hair or wet wool. (May also give off these odors if wet, but not recommended as a test.)
- Hot needle test will leave a permanent ridge around the tiny hole, which will be brown inside.
- Will have a high brilliance and a wide color range.
- Light weight, but feels hard.
- Excess humidity may cause crazing.
- Most are hand or machine carved. Look for sawing marks in the unpolished areas.
- Most will have no mold marks, though a few have been press molded. These will most likely have a short peg shank.
- Most are sew through or inserted metal shanks.

### **Celluloid**

- Hot needle test will produce the odor of camphor (moth balls).
- Hot needle will penetrate very quickly and will produce smoke.
- A camphor odor may be produced by rubbing the button in your warm hands.
- Lightweight.

### **Cellulose Acetate (also known as Acetate)**

- Similar to celluloid.
- Hot needle test will produce smoke, but less than celluloid.
- Hot needle test will penetrate easily.
- Hot needle test may produce slight sizzling.
- Hot needle test will produce very little odor; possible a slight sour or vinegar smell.

### **Ceramic**

- Special Clay that is baked.
- Scratching with a sharp object will have very little effect on it.

### **China**

- NO hot needle test.
- The back may have a more granular surface as though laid on a sandy surface.
- Very few will have metal shanks, with the exception of gaiter and pin shank.

### **Composition**

- Hot needle test will produce the odor of burning lacquer or sealing wax because of the component used to hold it together.
- Many composition buttons have sparkles in them.

### **Copper**

- NO hot needle test.
- Will tarnish.
- A redish color.

## **Gemstones**

- When held to the tongue or cheek it will be slightly colder than glass and will not warm to body temperature as quickly as glass.
- May show signs of wear. Identified by its flaws, not its perfections. Its natural flaws will be angular or irregular.
- Will not scratch as easily as glass

## **Glass**

- NO hot needle test.
- Hold to the tongue or cheek and the glass will feel colder than buttons of other materials, but warmer than many gemstones.
- Heavier than plastics.
- Tap on your teeth and you will a hard or high-pitched ring.
- Often find a mold mark on the back or edges.
- Often will have a smooth back surface.
- May have a few hair like marks on the back surface.
- A drop of water on the button will spread out.
- Tiny bubbles may be visible when examining with a magnifying glass.
- May show scratch marks

## **Gold**

- NO hot needle test.
- Use extreme caution with the following solution. It is a chemical and would be poisonous if swallowed. It can also burn on contact with the skin.
- Mix a solution of: 5 drachma water, 6 ½ drachma nitric acid and 15 drops Moraitic Acid. Place one drop on the button in a very inconspicuous spot on the back. Silver will remain unaffected while other materials will discolor.

## **Goldstone**

- A glass button containing copper filings.

## **Gutta Percha** – Sap from the Niato tree (genus palaquium)

- Hot needle test will produce no odor.
- Taste will be salty if you touch your tongue to the button.
- Will look a lot like rubber.
- Is harder than rubber.

## **Horn or hoof**

- Hot needle test will give the odor of burning feathers, burning hair or meat.
- Hot needle test will produce sizzling and smoke.
- The black pressed horn may have a “pick-mark” on the back. The pick-mark is a mark made by a needle type object that was used to pick or help remove the button from the mold.
- May have a waxy or greasy feel. May also feel smooth.
- If there are natural grain patterns they will be irregular.
- There may be parallel splits or lines on the back of older horn buttons.
- Will be lightweight.
- Hold natural horn to a strong light, can usually see light through the edges.
- Some are back marked with the name of a French city were they were made "CAEN"

## **Ivoroid** - (Trade name given to a celluloid which imitates ivory.)

- Hot needle test will produce a camphor odor.

- A molded material.

### **Ivory**

- Hot needle test will produce no odor. Hard to penetrate. May leave a brown residue in the immediate burned area.
- Very fine grain, or wavy lines
- Almost tooth-like.
- Color can be white to deep cream.
- Takes a very high polish, usually very fine workmanship almost like a waxy luster.
- With a sharp knife one CANNOT scrape off a fine powder as on bone.
- Very old ivory buttons may require a curved needle to be sewed on.
- CANNOT be softened enough to mold.
- Cracking may be caused by heat and humidity.
- Will look white under a black light. Works best if done in a dark area. (Black light is ultraviolet light. Avoid looking at the light directly.)
- Usually very fine workmanship.

### **Jade**

- NO hot needle test.
- A drop of water on the surface will not spread out. It may draw up instead. (Agate and some other precious stones will do the same.)
- Will feel cold to touch.
- May look greasy.

### **Jet** (Not to be confused with black glass)

- Hot needle test will produce the odor of coal gas. It will leave such a discrete mark you can hardly find it.
- Glossy surface when polished.
- Light in weight, soft and smooth.
- Warm to the touch and a 'waxy' feel.
- Will make black marks on paper or a brown mark when rubbed against white unglazed ceramic tile.
- Will have the appearance of a piece of wood with the grain showing.
- May have machining lines on back as being turned on a lathe.
- Can be carved with tools.
- Scrape the back of the button with a knife and you will get a very fine black powder. Can be scratched with a piece of glass.
- May show wear, scratches easily.
- No mold marks, because they are carved.
- Is a mineral with magnetic qualities.
- If placed in salt water it will float, or sink slower than glass.
- Quite dense.
- May fracture if dropped.

### **Kutani** (a porcelain like fine china)

- NO hot needle test.
- Color will be white.
- Smooth and shiny finish.
- Shank is glazed all over. May also have soiled look around shank.

## **Lava**

- NO hot needle test.
- Will feel cool to touch.
- Lemon juice will etch the finish by causing very tiny bubbles. Test on the back with great care and rinse immediately.

## **Nylon**

- CAUTION: melts with low heat.
- Hot needle sinks in quickly and mounds up around small hole with jagged edges. Tiny black carbon spots may appear.
- Hot needle test may produce stringing.
- Hot needle will produce little or no smoke.
- May feel slight vibration if you rest needle lightly on button when testing.
- Hot needle test will produce a slightly waxy odor.

## **Pewter**

- NO hot needle test.
- Contains lead and will leave a pencil-like mark when drawn across a piece of paper.

## **Phenolic Resin (Bakelite, Catalin)**

- Hot needle test will produce the odors of Carboic acid, Formaldehyde, Lysol or Phenol. This odor is very difficult to produce because this is a thermo-set plastic which is very hard. It is almost impossible to get the hot needle to penetrate the button.
- Hot needle test will produce a slight pin-prick.
- Hot needle test will produce no smoke.
- Is hard; looks and feels dense.
- Has acid taste.
- If dropped does not bounce well.
- Will darken when subjected to sunlight.

## **Plaster of Paris** – Powder mixed with water and hardened.

- Hot Needle will do nothing, but may scratch the surface.
- If scratched with a sharp object it will produce a fine white powder.
- Softer than ceramic, because it is not baked.

## **Polyester**

- Hot needle test gives a strong fruity or sweet odor.
- The hot needle leaves a small whitish, frosty prick mark, creating some crumbs, which will easily brush off.
- Hot needle test produces NO smoke.
- Molded button with flat back and the shank is glued on after the molding process.
- Usually opaque white bodies, and the fronts are hand painted.

## **Polystyrene**

- Hot needle will sink in quickly. A generous mound will be formed. Can leave a large hole. Needle looks wet and smokes afterwards.
- With hot needle test melted part may appear to be full of bubbles.
- With hot needle may be a slight stringing, but less than Nylon.
- Odor produce by hot needle will be like petro/chemical, coal gas or slightly sweet.
- Hot needle test will produce a slight plume of smoke.
- The only Synthetic Polymer that will float in water.

### **Rubber (Hard)**

- Burning rubber or sulfur smell with the hot needle test. (Sometimes this smell can be produced by rubbing the button in your hands.)
- In most cases say "Goodyear" on the back or have the initials of one of the rubber companies.
- Hold to a strong light, can see no light through the edges as with natural horn.
- Black, brown and dark red are most common colors.

### **Satsuma (a pottery)**

- NO hot needle test.
- Color will be cream, golden or cobalt blue. Sometimes there is a black matte finish that is used.
- Crackled finish or visual texture.
- An old Satsuma will often have an unglazed hump shank.

### **Silver**

- NO hot needle test.
- Use extreme caution with the following solution. It is a chemical that is poisonous if swallowed. It can also burn on contact with the skin.
- Mix a solution of: 1 ounce water, 30 drops nitric acid and 24 grains Nitrate of silver. Place one drop on the button in a very inconspicuous spot on the back. Silver will remain unaffected while other materials will discolor.

### **Steel**

- NO hot needle test.
- Will be attracted to a magnet.

### **Tortoise shell**

- Hot needle test will produce the odor of decaying fish, seaweed, burning hair or the smell of the sea.
- Hot needle test will also produce sizzling and smoke much like horn.
- Natural pattern is irregular, with striations and layers.
- No mold marks.
- Most often done in very fine workmanship, with inlays, gilding or engraving.

### **Urea/Melamine**

- Hot needle will penetrate a little.
- Hot needle test may produce burnt crumbs, which can be wiped off, usually leaving a flat white circle which is burned brown inside hole.
- There will be some sizzling and a small amount of smoke with hot needle test.
- Hot needle test odor will be that of burned fish, Formaldehyde or a chemical smell. (Odor is similar to Casein.)

### **Vaseline Glass**

- NO hot needle test.
- Will glow under black light.
- This is a glass that has a yellow or green color, with uranium salts in it. That is what gives it the glow.

### **Vegetable Ivory** (Is actually made of a Corosso nut from Tagua Palms)

- Hot needle test will give the odor of burning walnut shells.
- Vegetable Ivory can also be identified by the unprocessed material seen in or around the shank hole. Usually the button maker dyed the button before the holes were made. The dyes will not penetrate the button.

- Never pure white.
- Under magnifying glass one can see a very fine grid of tiny dots which represent the growth pattern of the nut.
- Can take on an impression of a mold if put under pressure.
- With age will have a tendency to crackle or mottling on the surface.
- May look soft and oily, but feels hard and dry.

### **Wood**

- Hot needle test may produce the odor of burning wood.
- Can usually see the grains of the wood, not to be confused with the grain lines in bone.

For more detailed information on Synthetic Polymers (Acrylic Resins, Casein, Cellulose Acetate, Nylon, Phenolic Resin, Polyester and Polystyrene) you might like to purchase a publication by the National Button Society called "National Button Society Section 9-A Synthetic Polymers Handbook"

