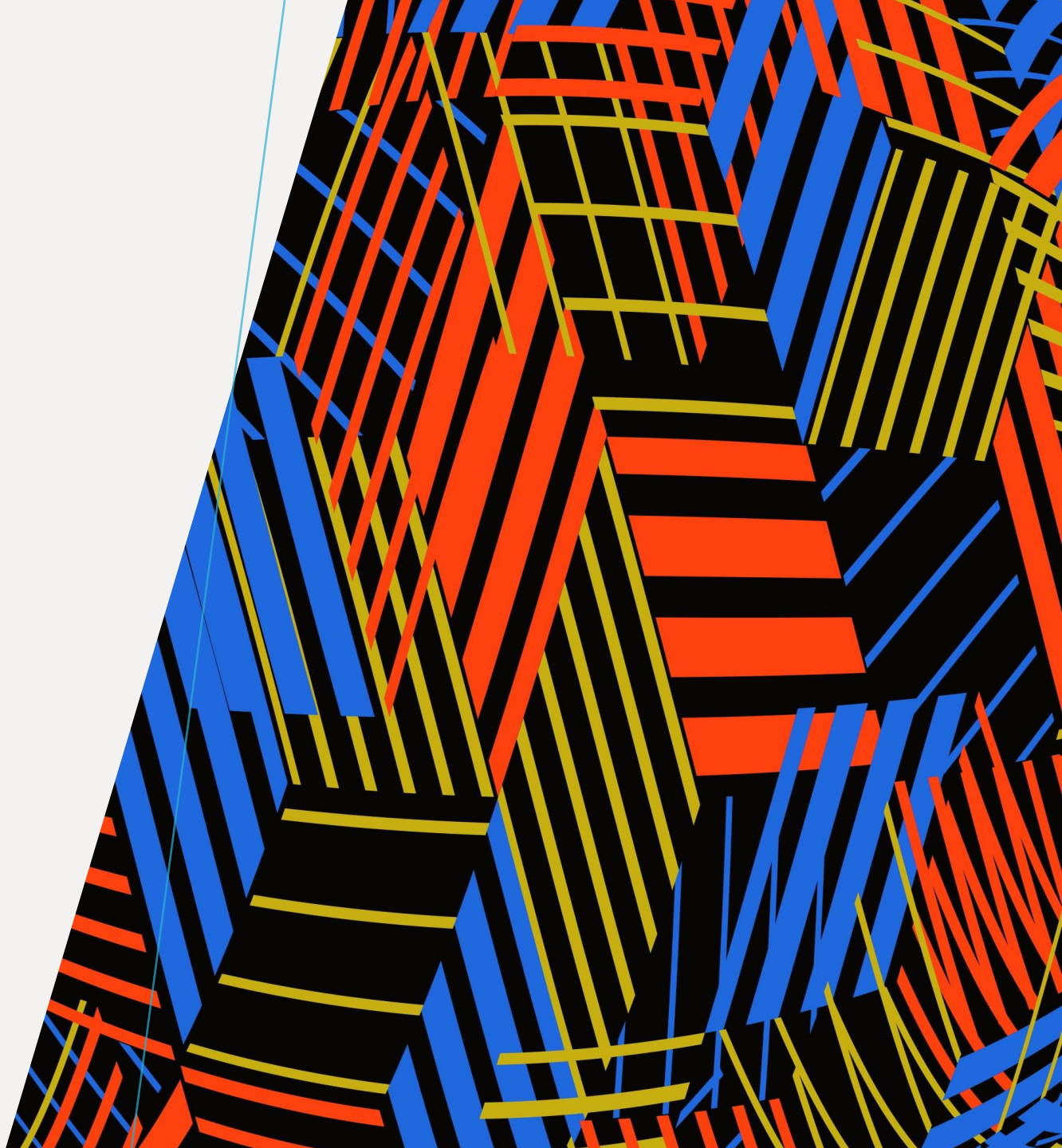
RADIO PLASTICS

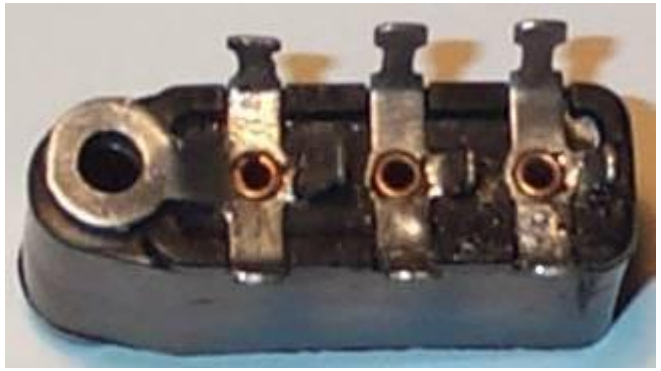
HOW TO IDENTIFY, CARE FOR AND REPAIR



TYPES OF PLASTIC USED IN OLD RADIOS

- Bakelite- Dark brown or black in color. Used extensively for cabinets, knobs, even components
- Catalin- Beautiful brightly colored plastic, often with swirl patterns.
- Plaskon and Beetle- Usually white or pastel colored, opaque plastic
- Tenite- An early thermoplastic used for knobs or trim parts. Wide variance of colors and patterns.
- Polystyrene- A later thermoplastic used for cabinets, knobs, trim and hardware. Comes in a wide variety of solid colors.
- ABS- A modern thermoplastic, high impact resistant and durable. Usually found in black or white.

WHAT IS BAKELITE?



BAKELITE RADIO CABINETS

WHAT IS BAKELITE?

- Radio collectors refer to molded phenolics as Bakelite.
- Bakelite is a trade name used by The Bakelite Corp. for all of their plastics.
- Usually dark brown or black in color, very durable, high temperature resistance, excellent chemical resistance and electrical insulation resistance.
- Commonly used for radio cabinets, knobs, hardware, plugs, even capacitors.
- Considered a Thermoset plastic. Does not have a uniform density, a filler material is used along with the resin in a high-pressure molding process.
- A thin resin layer forms on the surface of the molding.
- UV exposure will degrade phenolics, causing the resin to release from the “filler”.

CARING FOR BAKELITE

- UV exposure causes the top layer to break down, loose chemical resistance.
- Strongly basic cleaners should be avoided. Alcohols and strong solvents as well.
- Mild detergents, citrus cleaners are safe. Naphtha is good for removing sticker residues or grease.
- Abrasive polishes should be avoided at all costs!
- Automotive or furniture wax is ideal to restore luster and shine. Auto wax will help protect against further UV degradation
- Broken parts can be glued with superglue for strong structural repairs.

WHAT IS CATALIN?

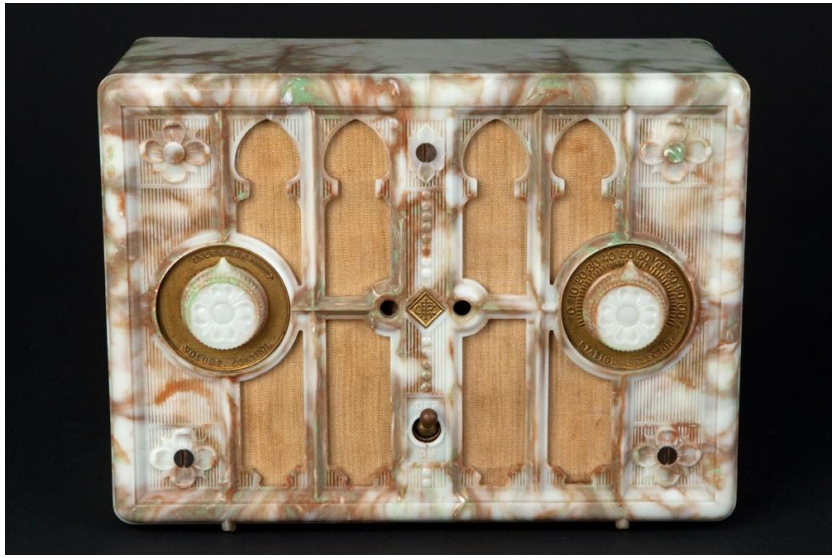
WHAT IS CATALIN?

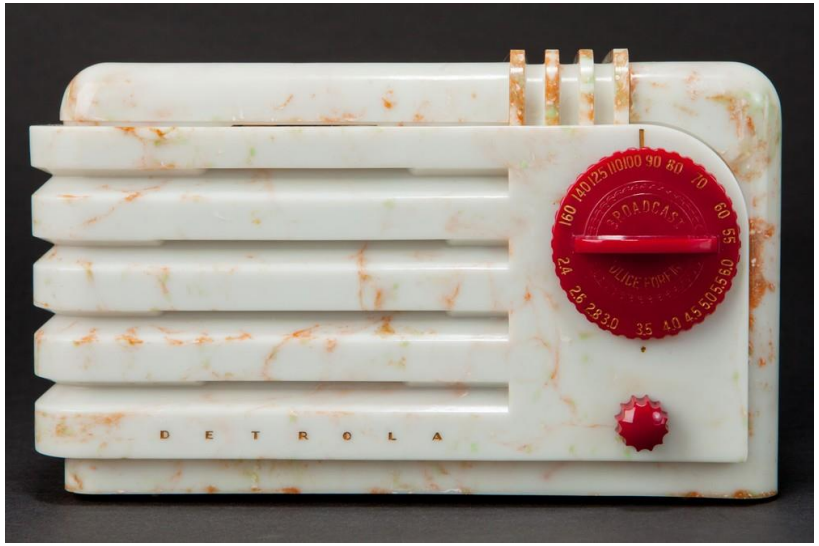
- Radio collectors refer to cast phenolic resins as Catalin.
- Catalin is a trade name of the Catalin Corp, which was used for all their plastics.
- Comes in a wide variety of beautiful colors and patterns, usually semi translucent. Catalin casting is a labor-intensive process which involves hand finishing of each part.
- Used for cabinets and knobs because of its appearance, however it is fragile in comparison to other phenolics.
- Catalin radios are highly sought after and prized by collectors.
- Cast phenolics become discolored with UV exposure and are prone to shrinkage with age.

CARING FOR CATALIN

- UV exposure causes the outside layers to photooxidize, usually resulting in a brown color. Radios with poor ventilation or heat shielding are prone to discoloration from the tubes. Catalin can shrink and crack due to age and thermal cycling.
- Harsh cleaners and solvents should be avoided. Mild detergents are ok in low concentrations.
- Catalin is wet sanded and abrasive polished to bring back its original luster.
- After wet sanding and polishing, auto wax can be applied to slow down UV degradation.
- A cool, temperature stable environment is best for storing catalin to minimize shrinking, warpage and cracking.

WHAT IS BEETLE?





...AND PLASKON?

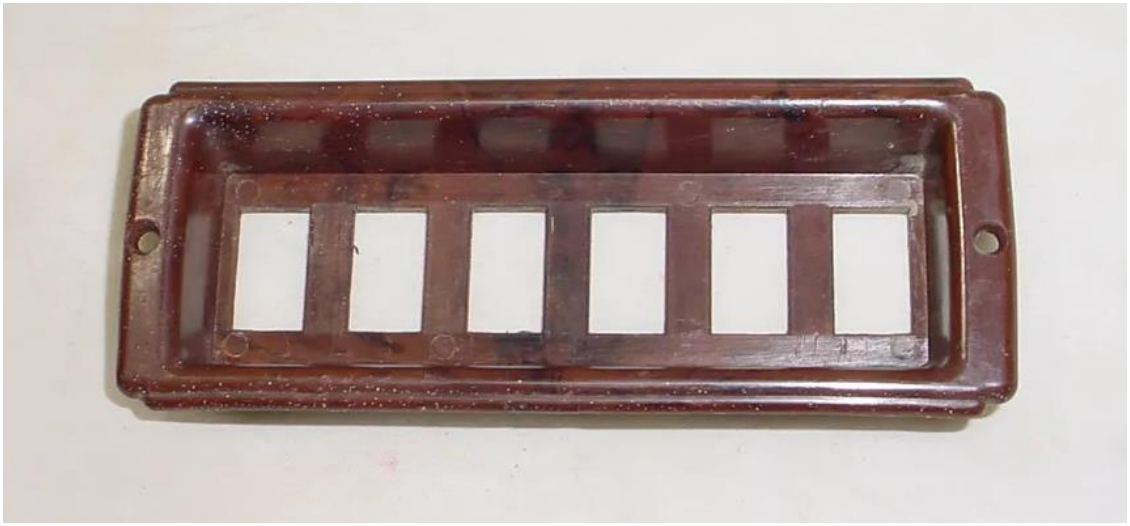
WHAT IS BEETLE AND PLASKON?

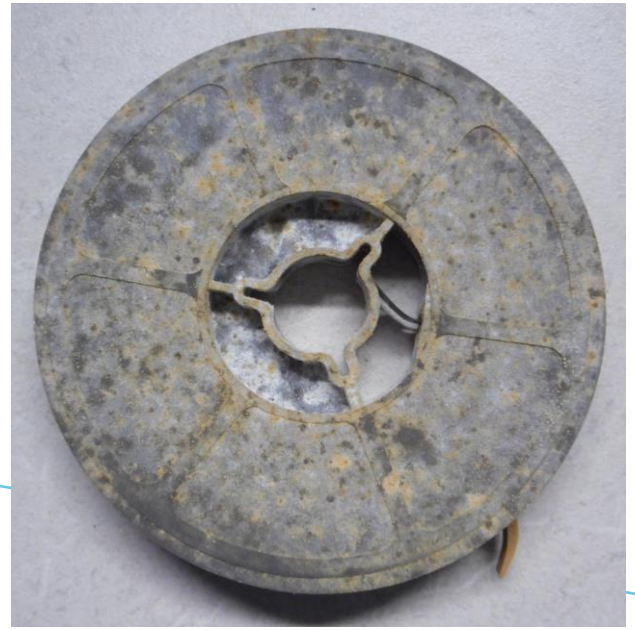
- Beetle and Plaskon are both Urea-Formaldehyde (U-F) thermoset plastics. A resin is mixed, cast, and cured with heat. Beetle and Plakon are opaque allowing dial lamp light to pass through these radio cabinets.
- Radio Collectors refer to white or light pastel colored urea plastic cabinets as Plaskon.
- White or light pastel colored urea plastic cabinets that have spattered or swirl patterns are referred to as Beetle.
- Both Plaskon and Beetle are trade names.
- U-F plastics are incredibly resilient to chemical and UV exposure; they do not warp or discolor. These plastics are brittle and are susceptible to cracks from impact. Beetle can develop cracks around areas where different colors meet.

CARING FOR BEETLE AND PLASKON

- Plaskon is very resilient, minimal care is needed.
- Can use normal household cleaners, however most solvents should be avoided, as some can dull the surface.
- Use Naphtha to remove glue residue.
- Scratches can be wet sanded then polished out with abrasive compounds.
- Broken parts can be bonded with superglue for strong structural repairs.

WHAT IS TENITE?





WHAT IS TENITE?

- Tenite is a trade name used by Eastman co. for their Cellulose Acetate recipe.
- Cellulose Acetate is an early thermoplastic made from cotton or tree pulp.
- Used for Knobs, escutcheons, trim parts, and dials
- Comes in all colors and patterns.
- Tenite commonly warps, shrinks, cracks with age, high temperatures and humidity. Rarely is this plastic perfectly preserved.
- Tenite develops a white powdery substance on the surface when exposed to heat and humidity that looks like mold.

CARING FOR TENITE

- Warping is irreversible. Most glues do not bond well to tenite, cracks and broken parts are tough to repair.
- Warm water and strong detergent can remove white powdery buildup. A toothbrush works well for cracks and crevices. This powdery substance is mildly hazardous and should be handled with PPE.
- Furniture or auto wax can be used to return the original luster and shine, polishes can also be used.
- To prevent further degradation, tenite should be stored below 68 F and with a relative humidity of 30-40%.

WHAT IS POLYSTYRENE?

WHAT IS POLYSTYRENE?

- First patented in 1949 by BASF, this thermoplastic quickly became widely used by the late 1950s.
- Just referred to as “Plastic” by radio collectors.
- There are hundreds of different types, different densities and characteristics depending on plasticizers used.
- Used for cabinets, knobs, hardware, trim, dials, cases
- Polystyrenes are lightweight, can be brittle, have poor chemical resistance and a low melting point.
- Not prone to UV degradation.

CARING FOR POLYSTYRENE

- Polystyrene is very prone to scratches and is easy to crack.
- Detergents are ok, avoid solvents at all costs!
- Scratches can be wet sanded and polished.
- Cracks and broken parts can be “welded” using acetone. These repairs are just as strong as prior to breakage.
- Vinyl cases contain plasticizers than can mark or even melt polystyrene radios. Remove radios from cases for storage.

WHAT IS ABS?


70
90
60
55
130
150
VOLUME
OFF
AUTO
BC
HF
SCAN
CH. A
CH. B
Jolly Roger
Electra
COMPANY
CUMBERLAND, INDIANA
EARPHONE


AM
12:14
WAKE 1
WAKE 2
BATTERY BACKUP
FM 88 92 96 100 104 108 MHz
AM x10 55 65 80 100 130 160 KHz
REVERSE
FORWARD
F. FORWARD
SLEEP
OFF MUSIC ALARM SET
OFF MUSIC ALARM SET
WAKE 2
ON
OFF

WHAT IS ABS?

- ABS is a very strong thermoplastic that began to appear in the late 60s and is still in widespread use today.
- Referred to as “Plastic” by radio collectors.
- Usually black or white in color, can have silvering, colors, or even patterns printed on.
- ABS will often deform or rip before it cracks.
- Used for cabinets, knobs, hardware, everything essentially.
- UV exposure and heat can discolor white ABS, causing it to turn yellow or even brown

CARING FOR ABS

- ABS is very stable and temperature resistant. It is not resistant to solvents and scratches easily.
- Clean with detergents, avoid all solvents.
- Can be wet sanded and polished to remove scratches.
- Can be “welded” with acetone. These repairs are as strong as the unbroken part.
- Discolored ABS can be reversed with the use of a catalyst (Hydrogen Peroxide) and UV exposure.

REPAIRING BROKEN CABINETS

- Assess the damage. Is it a painted radio or bare bakelite? All broken pieces present?
- Bond cracks and pieces together. Super glue and baking soda for phenolics or urea plastics. Acetone for styrenes.
- Make a mold of the missing area using Masonite board.
- Use JB weld putty to fill the mold.
- Remove the mold and sand the area with 220 grit. Fill remaining imperfections with spot putty.
- Sand the repair areas smooth with progressively finer sand paper. 220 up to 600
- Prime the cabinet and paint.
- Optional: wet sand and polish paint for a contest wining shine