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BIOLOGICAL CLASSIFICATION OF MARINE ORGANISMS

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Preservation of Biological Collection

Part 2: Dry Collection

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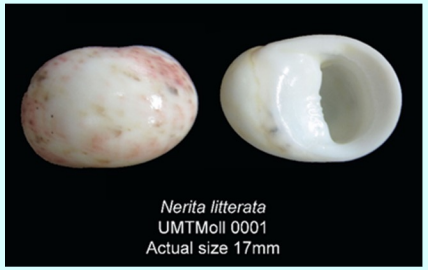
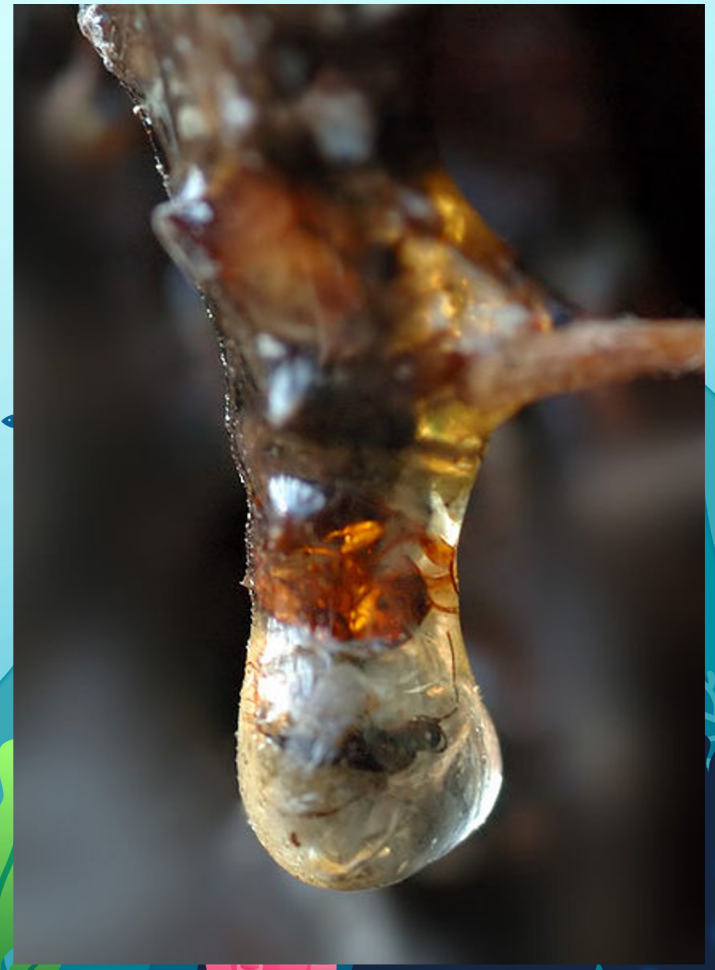
Preservation of shelled animals (dehydration)

- Specimens were soaked in formalin to soften the tissue (immersion depends on specimen size).
- After immersion in formalin, the specimen was immersed in running water until clean.
- After that, specimens were soaked in 30%, 50% and 70% ethanol for 1 hour for each concentration.
- The contents of the specimen were carefully removed.
- Once all the contents have been removed, the specimens are placed in the oven, temperature 40˚C until completely dry. (Repeat this step if necessary)
- Once dry, glue the detached parts and spray acrylic coating for finishing.
- Before storing or displaying make sure the specimen is in a completely dry condition. Place mold repellent and silica gel for storage purposes. Specimens can be displayed on their own or filled in containers.



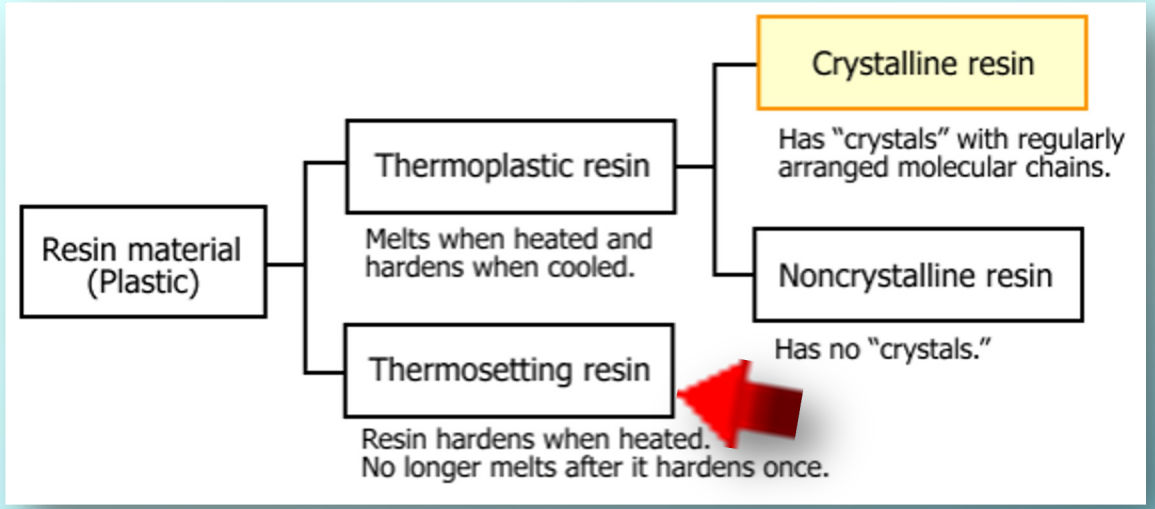
Resin coating/block

- Synthetic, natural product: thick liquid and harden when mix.
- Easily burn and can explode when react.
- Hydrocarbon from plant especially conifer tree. Is a hydrocarbon secretion of most plants, especially coniferous trees. Resin can also be thought of as rubber secreted by trees.
- Usually it is **soluble in alcohol, but insoluble in water.**
- Valuable as a source of raw materials for organic synthesis, among the ingredients in perfumes. Fossil resins from ancient trees form amber.



Types of resins

- plastic resin,
- polyester resin,
- polycarbonate resin,
- casting resin,
- polymer resin,
- acrylic resin,
- chemical resin,
- dry resin.
- Resin is a substance used in lacquers, adhesives, plastics, and epoxies and is known for its translucent properties.

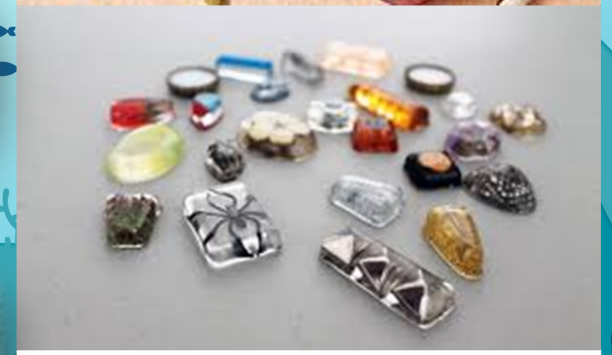


Uses

This water-clear polyester resin is suitable for use:-

- Makers of various types of molds,
- Carving,
- Artwork
- trophy,
- chess game set,
- fishing bait,
- paper press,
- souvenir plaques,
- ornaments,
- doorknob,
- keychains and others.

Suitable for plating or preserving objects such as insects, metal samples, plants / flowers & shells.



Safety

Safe if used properly; precautions should be practiced.

CAUTION

- Resins and hardeners can cause allergic reactions similar to poison ivy, corrosive and can cause severe skin irritation. The level of reaction varies between individuals.
- Although most people are not sensitive to Resins and hardeners, the risk of becoming increasingly sensitive with repeated touch.

- **PREVENT**
  - Wear personal protective equipment such as gloves and a face mask.
  - Wash immediately in case of skin contact.
  - Resin (water insoluble)- wash with non-water material.
  - Hardener (water soluble)- wash with soap and warm water.
  - Stop if there are signs of a reaction.
  - Protect your eyes; rinse eyes with low pressure water for 15 minutes.
  - Do mixing work in a well -circulated area.
  - Avoid inhaling the smell of this material.
  - Do not swallow; wash hands after finishing work.

KEEP AWAY FROM CHILDREN AND STORE IN A DRY AND COLD PLACE

Clear resin

- Usually the technique is difficult to learn through reading or explanation.
- For the first time use should have the experience of trying several times to get quality results.
- The main difficulty is getting the actual count for the required hardener ratio.
- It is usually necessary to estimate first and look at the level of the mix as each manufacturer produces different materials.

Items need

- Resin/Epoxy Resin (part A)
- Hardener (part B)
- Container for brewing
- Disruptor
- Personal protective equipment
- Release agent-oil, wax
- Mold
- Needle
- Brush
- Detergent- vinegar
- Coloring (optional)

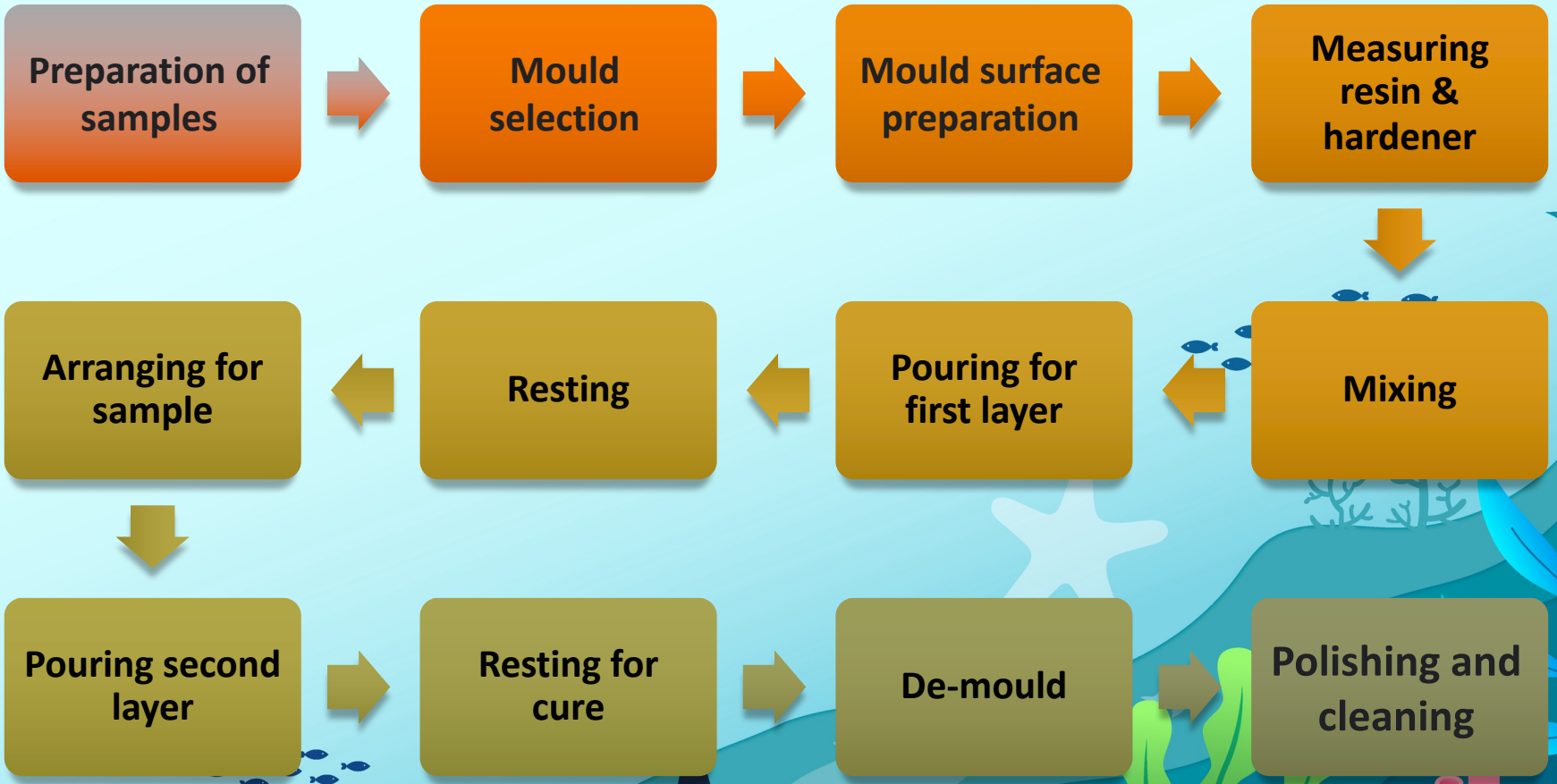
Mould type

- Silicon
- Metal
- Aluminium
- Clay
- Plaster
- Wax
- Plastic mould
- Rubber
- Wood

Sample preparation

- All samples should be dried before coating.
- Whether dried, preserved, hydrated and others.
- There is no limit to the sample type.
- There are several steps before a sample is used.

Method


Preparation of samples
Mould selection
Mould surface preparation
Measuring resin & hardener
Mixing
Pouring for first layer
Resting
Arranging for sample
Pouring second layer
Resting for cure
De-mould
Polishing and cleaning

Preparation for mould

- Any objects to be encapsulated, the resin and the moulds must be free of water contamination.
- Objects preserved in formalin or 70% alcohol may be superficially dried and may then embed as opaque objects.
- It may be desirable to view the object as translucent in which case it must be completely dehydrated.
- As with painting, the surface to be epoxied must be prepared correctly for optimal results.
- It's very important to remove all oils and water from the area, as oil will prevent the epoxy from adhering, and water will prevent the epoxy from curing properly.

Preparation for mould

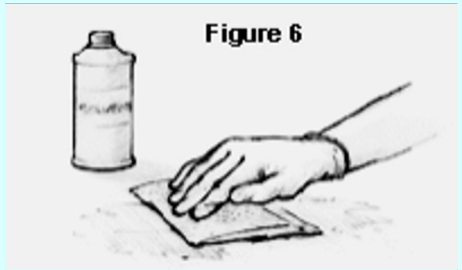
- Detergents will also prevent epoxy from adhering.
- In fact, detergents are often used in reusable molds as a release agent for epoxy.
- In general, wiping the area with acetone or alcohol or other non-oily solvent on a clean rag just before mixing your epoxy will do the trick.
- Make sure the solvent evaporates completely from the surface, and try not to touch the surface afterwards (the oils on your hands could affect the bond).

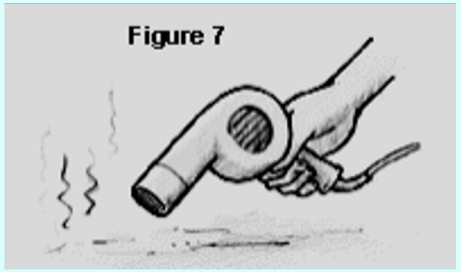
For good adhesion, bonding surfaces should be:

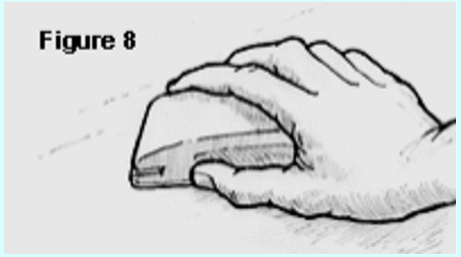
- Clean Bonding surfaces must be free of any contaminants such as grease, oil, wax or mold release. Clean contaminated surfaces with lacquer thinner, acetone or other appropriate solvent. Wipe the surface with paper towels before the solvent dries. Clean surfaces *before* sanding to avoid sanding the contaminant into the surface. Follow all safety precautions when working with solvents. *(Figure 6)*

- Dry All bonding surfaces must be as dry as possible for good adhesion. If necessary, accelerate drying by warming the bonding surface with a hot air gun, hair dryer or heat lamp. Use fans to move the air in confined or enclosed spaces. Watch for condensation when working outdoors or whenever the temperature of the work environment changes. *(Figure 7)*

- Sanded Sand smooth non-porous surfaces—thoroughly abrade the surface. 80-grit aluminum oxide paper will provide a good texture for the epoxy to "key" into. Be sure the surface to be bonded is solid. Remove any flaking, chalking, blistering, or old coating before sanding. Remove all dust after sanding. *(Figure 8)*

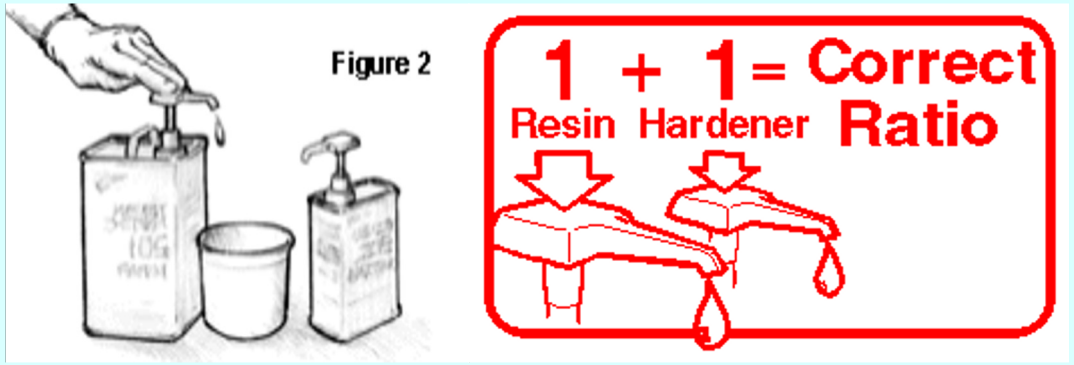






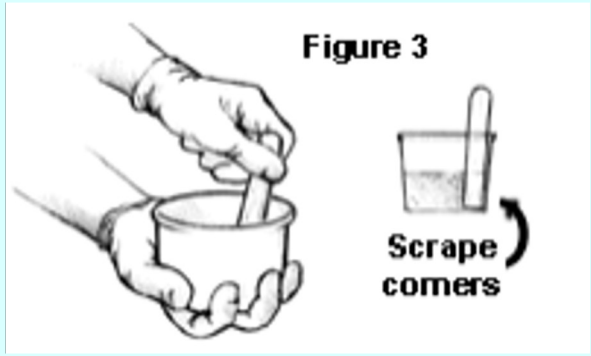
Measuring

- Careful measuring of epoxy resin and hardener and thorough mixing are essential for a proper cure.
- Whether the resin/hardener mixture is applied as a coating or modified with fillers or additives, observing the following procedures will assure a controlled and thorough chemical transition to a high-strength epoxy solid.
- Dispense the proper proportions of resin and hardener into a clean plastic, metal or wax-free paper container *(Figure 2).* Don't use glass or foam containers because of the potential danger from exothermic heat build-up.
- DO NOT attempt to adjust the epoxy cure time by altering the mix ratio. An accurate ratio is essential for a proper cure and full development of physical properties.
- The ratio normally 2:1 or 1:1 depend on the resin types.



Mixing

- Stir the two ingredients together thoroughly—at least 1 minute—longer in cooler temperatures *(Figure 3)*.
- To assure thorough mixing, scrape the sides and bottom of the pot as you mix.
- Use the flat end of the mixing stick to reach the inside corner of the pot.
- When mixing, it is again important to avoid unnecessary air inclusion.
- **WARNING!** Curing epoxy generates heat. When contained, a large mass of curing epoxy has a very short pot life, and can generate enough heat to melt plastic and foam, burn your skin and ignite combustible materials.
- For this reason do not use foam or glass mixing containers. If a pot of mixed epoxy begins to exotherm (heat up), quickly move it outdoors. Avoid breathing the fumes. Do not dispose of the mixture until the reaction is complete and has cooled. Do not fill or cast layers of epoxy thicker than 1/2"—thinner if enclosed by foam or other insulating material. Do not pour into confined spaces.



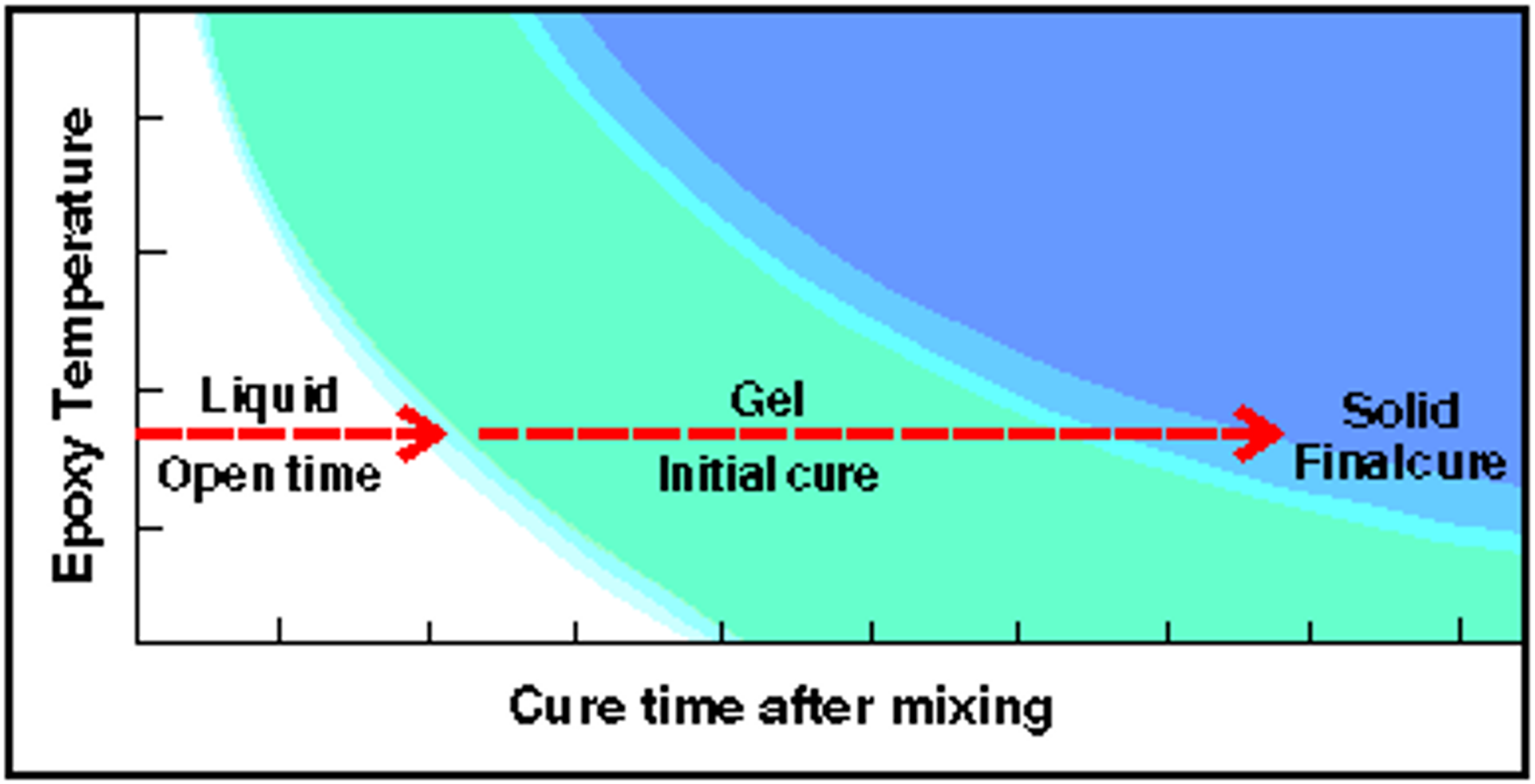

Epoxy Temperature
Liquid
Open time
Gel
Initial cure
Solid
Final cure
Cure time after mixing

Figure 1

Pot Life

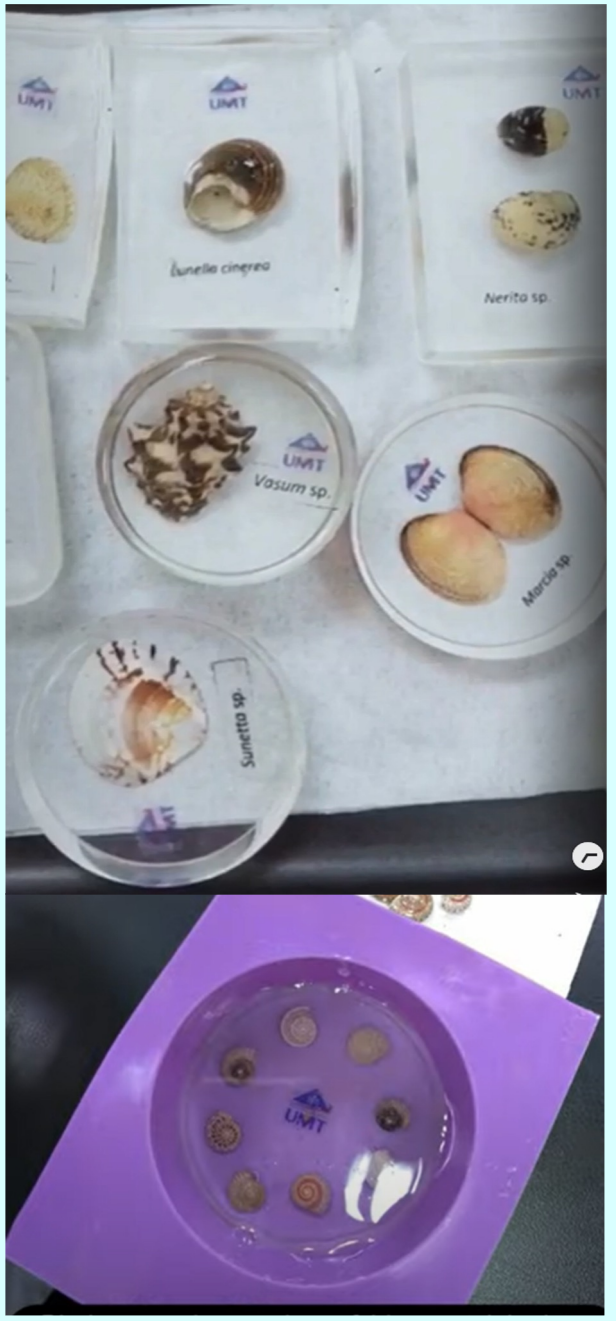
- One of the joys of epoxy is that it generally has a much longer pot-life (how long your batch remains workable before it starts to harden up) than polyester resins.
- If you don't get polyester resins where you need them in 5-10 minutes, you've got a mess on your hands. Epoxy usually gives you 15-30 minutes, even in the tropics (assuming you mix small batches and use a "slow-cure" hardener).

Pour into mould

- Carefully pour the mixed resin into the lowest part of the silicone mould. Continue pouring into the same place and allow the resin to fill up the mould.

Allow to cure and then de-mould

- Let the resin rest for more than 24 hour depend on the resin types. Place the specimen and apply the second layer.
- The cast resin will cure and be ready to de-mould within an 12 -24 hours.
- Once the resin feels fully hardened the new casting can be removed from the mould (separating two halves of the mould if necessary).
- The mould can now be used to create many castings in a single day!
- Other resin need 12 to 24 hour to cure.
- Do finishing if necessary. Use sandpaper to shape and smooth the edge of the resin block.



Cleaning up

- Vinegar
- Acetic acid
- Detergent etc.
- Most folks think that you need plenty of Acetone to clean up epoxy and to keep it from hardening where you don't want it.
- But acetone is actually getting hard to buy in some places. Apparently it's an ingredient in the manufacture of certain illicit drugs, so some countries don't like to sell it at all.
- More to the point, we've now discovered that normal white **vinegar** works even better than acetone!
- Vinegar is also cheaper, easier on your skin, doesn't affect some plastics the way acetone can, and is far less dangerous to carry.

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Thank You