

Getting the correct base-resin-to-hardener ratio in epoxy is **critical** because the chemistry only works properly when the proportions are right. Here's why:

## 1. Epoxy cures by a chemical reaction, not by drying

Epoxy resin (Part A) and hardener (Part B) react in a precise stoichiometric ratio (Stoichiometry is a section of chemistry that involves using relationships between reactants and/or products in a chemical reaction to determine desired quantitative data). If the ratio is wrong, the reaction cannot complete.

- **Too much hardener:**  
Unreacted hardener remains in the cured epoxy → soft, brittle, or sticky surface.
- **Too little hardener:**  
Resin molecules can't fully crosslink → flexible, gummy, or never fully hard.

## 2. Mechanical strength depends on the correct ratio

Correctly mixed epoxy forms a rigid 3-D network of crosslinked polymers.

If the ratio is off:

- Strength can drop **30–70%**
- Bonding to substrates is weaker
- The cured resin may crack under load or peel off

## 3. Chemical resistance depends on proper cure

Improperly cured epoxy is more vulnerable to:

- Solvents
- Water (blushing, whitening)
- Heat
- UV degradation

Fully cured epoxy is much more chemically stable.

## 4. An incorrect ratio can cause surface defects

Off-ratio mixes commonly cause:

- Amine blush (waxy layer)
- Cloudy finish
- Stickiness or soft spots
- Oily or wet-looking patches
- "Crazing" (micro-cracks)

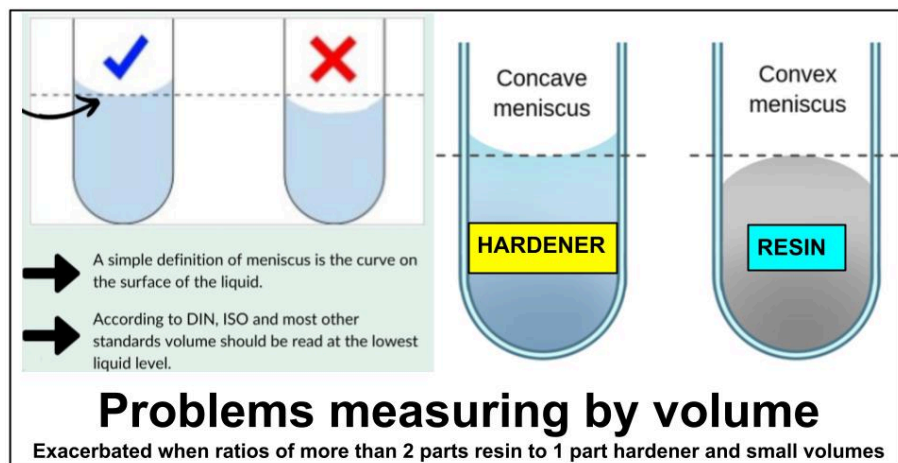
## 5. Heat generation (exotherm) changes with the ratio

The resin-hardener reaction is exothermic.

- Too much hardener may cause a **hotter, uncontrolled reaction** → cracking, foaming, yellowing.
- Too little hardener → incomplete reaction → stays soft or tacky.

**\* Epoxy is engineered to cure only when the resin and hardener molecules match up in the correct amounts.**

**\* If the ratio is wrong, the reaction can't complete, and you don't get a proper cure.**



Platinum Epoxies make over 50 different Epoxy Resins (from crafting thru to complex space & aviation resins). Resins with varying ratio's from 1:1 through to odd ratio's of 100:27. Preference is to have all resins 1:1 ratio by weight (not practical due to the chemistry). We do not encourage pumps (notorious for trapping air, leading to a mismatch in ratio). Measuring by volume can also be problematic as shown.