

ABOUT URETHANE

Urethane is a type of plastic that can be deformed, pushing the metal into a die, after which, the urethane returns to its original form. Urethane cannot be compressed; it maintains its volume when changing form. Like a waterbed, if you push down in one spot, urethane raises elsewhere, causing metal to flow into the contours of the punch or die. Because the force is spread over the entire surface of the metal, damage is minimized and fragile "married metals" and "mokume gane" can be formed without de-laminating. Upon release of pressure, the urethane returns to its original shape with no lasting impression of what you have just put it through.

The choice of which thickness pad to use is determined by how deep you want to push the form into the pad. A general guideline when using urethane is to avoid pushing more deeply than 1/3 to 1/2 of the depth of the urethane. Surprisingly, this fluid material can shatter if over-stressed.

DUROMETER

The hardness of a urethane is referred to in terms of durometers. Urethane is a yellowish translucent substance that can be dyed different colors to help identify different hardnesses.

- 95 durometer is the hardest that we use. Bonny Doon's 95D urethane is dyed red. Hard urethane is best for embossing details.
- 80 durometer is the medium hardness that we use. BD's is orange or the natural translucent in color. The softer the urethane, the better it is at moving larger volumes of metal.
- 60 durometer is the softest urethane that we use with the press. Because it is so soft, it must be used with restraining walls, as in a forming box. Containing the urethane helps assure that the urethane pushes upward, forming the metal, rather than squishing sideways. Thus, contained urethane has more "pushing power"-- IF it is contained in a box.

Bonny Doon has its urethanes specifically formulated for jewelers' and silversmiths' uses--- to move metal further, for increased cut resistance, and memory retention. Used properly, a pad can easily last ten years or more. Be sure that the tools and metals used with your urethane do not have sharp edges, which could cut or tear the urethane.

Basic Rules For Using Urethane for Forming in a Hydraulic Press:

- **The harder the urethane, the better the details of forming, but less depth.**
- **The softer the urethane is, the better it is at moving a larger area of metal.**
- **The thinner and softer the metal, the better the details, but the more easily torn.**
- **The thinner the urethane the better the details, but the metal will form less deeply.**
- **HOWEVER, never press more deeply than 1/2 of the depth of the urethane. The urethane should be twice as thick as the tool.**

Tips:

- Large areas of metal form with urethane more easily than small areas
- To get the details of the smaller areas, it may be necessary to press a second time (or third, or more) with small pieces of urethane over the "problem areas" These small pieces of urethane are called intensifiers.
- The higher the pressure the better the detail
- However, avoid excess pressure, which can damage the tools and materials