

Pewter Casting Study Guide

This step asks you to review all of the safety procedures, equipment and terms associated with casting metal objects. Pewter melts at around 450 degrees Fahrenheit. This is like heating something up in your oven at home on the highest setting. It can cause severe burns and ignite fires if proper procedures are not followed, or it is not handled carefully. After reviewing the material that follows, you are required to take a safety test. This test requires a score of 100% to pass. If you don't pass, you don't pour! After an accident happens you don't get another chance to prevent it! Study thoroughly so you are sure you'll get 100% when you take the test. There are no trick questions, each question comes directly from the material below.

Safety Concerns and Procedures:

1. You will be using the metal "Pewter" which melts at a temperature of around 450° F. This is a relatively low melting point for a metal, but still has the potential to burn you seriously! It can also melt your clothes! You **must wear eye protection**, a **face shield**, and long **leather gloves** at all times that there is any molten metal at your workstation.
2. Always assume that items in the work area are **HOT**. They may still be hot from the previous period.
3. Only add pewter to the hotpot if all the metal already in the pot is still solid. This prevents **splashing** of the molten pewter and also evaporates moisture as the pewter melts.
4. **Never** add water or any liquid to hot metal. Even if you have tried to dry something off, don't place it in the **hot pot** until the next day. **Any** moisture on anything placed into the hot pot will cause an explosion of molten metal all over.
5. Make certain that molds are **DRY** and free of any moisture before pouring molten metal into them.
6. Wear **leather gloves** when working with molten metal to protect your fingers, hands, wrists, and forearms. They help insulate you from the heat. Rubber gloves will not protect you from heat. Rubber gloves should be used only when dipping cool figurines into the oxidizer solution which is an acid. Leather gloves will not protect you from acid.
7. Work on top of the **ceramic tiles**. The tiles can stand very high heat. Your tabletop is made of a plastic that will melt.
8. **Unplug** the hot pot when you are done pouring pewter.
9. Keep the hotpot toward the rear of the work area where it will be less likely to be **tipped over** and so you don't have to **reach** over it while setting up your mold.
10. Molds must be clamped with several **clamps** before pouring. If not clamped, molten metal will seep out between the mold halves. Place 2 clamps on the bottom of the mold so they rest on the table. This provides some stability to the mold so it isn't as likely to tip over.
11. Allow the casting to **solidify** for a minimum of 10 minutes before removing it from the mold.
11. **Wash your hands** after handling pewter, or working at the pewter workstation.
12. Don't allow a **crowd to gather** and watch the casting process. Only 2 people should be present at the workstation. Observers can watch from the machine room, behind the glass windows for safety.
13. You should allow **10 minutes** for the metal to melt, and then another **5-10 minutes** for it to continue to heat before attempting to pour. If it is not hot enough, it will cool off in the mold before completely filling the mold.

SUGGESTIONS FOR SUCCESSFUL CASTING:

1. You may wish to “*dummy pour*” a couple of times to heat up the molds. This is especially true with the metal molds as they cool off the metal before it has a chance to flow into the fine details of the mold. By “Pre-heating” the molds, the pewter stays in liquid form longer. This gives better detail in the finished casting. The warmer the metal molds are, the better they work.
2. *Silicon Rubber molds* must also have “*fiber-board*” *stiffeners* placed on either side before they are clamped. This will help hold the molds rigid. Since they are rubber, they will bend and leak if not supported by the stiffeners.
3. Always place the molds on a ceramic tile before pouring. If any molten metal leaks or spills, the ceramic tiles will not be harmed. However, the table top will melt if molten metal spilled on it.

SUGGESTIONS FOR SUCCESSFUL CLEANING AND DECORATING OF CASTINGS:

1. Extra metal is usually left around the edges of your castings where the two halves of the mold came together. This seam in the molds will leak a little creating what is called “*flash*”. This can be cut away with “*side cutter*” (diagonal pliers) and/or filed away using “*needle files*”.
2. When using a file, rub the file with blackboard “chalk”. This will help prevent clogging the file with metal particles.
3. When using a file, support the work piece by holding it against the table. You may find that the “*sprue*” (the unwanted part of the casting that was the pipeline for the molten metal) makes a good handle. Don’t cut it off until much later in the process when you won’t need it to hold on to.
4. When using a file, the file should move across the surface of the metal in one direction only. Push the file. When the stroke is complete, the file should be lifted and returned for another pass across the metal. Pulling the file backwards across the metal dulls the cutting surface quickly.
5. Much of the labor in making a casting involves cleaning it up and removing excess or extra metal. It is normal have extra metal. *Vents* or “*air release cuts*” are often placed in molds to allow the air to pushed out. Without these some parts of the mold will not properly fill since the trapped air will hold back the molten metal. The metal will flow into these vents and leave small metal threads attached to the casting. These, of course, will need to be removed from the casting.
6. Before a casting is painted, it needs to be sandblasted. Most art type paints (like *acrylic* paint) do not stick well to slick metal surfaces. Sandblasting gives the metal a texture that paint can stick to. After sandblasting, go to the paint area outside. Make sure to put newspapers down under your project so you don’t paint the table, wall, or ground on accident. It is much easier to put down the newspapers than it is to clean up spilled or unwanted paint.
7. When painting, get a bottle cap from the teacher. Pour a very small amount of paint into the cap and take it to your work area. When you are done painting the first color, wash out your brush and cap and select another color. Try to let the first color dry before painting another color beside it. Paint some other area while waiting for one region to dry. Acrylic paints dry quickly.
8. Pewter metal was classically never painted. It was antiqued by a process called *oxidizing*. The metal is covered with a mild *acid* solution, called an *oxidizer*. The longer the oxidizer remains on the pewter, the darker the metal becomes. Wear **goggles, rubber gloves, and protective clothing** when working with the oxidizer. Prepare your work area by putting down newspapers. You should work next to the sink if possible. Keep the lid on the oxidizer when not in use so it doesn’t get spilled or contaminated. Dip the metal in the oxidizer by holding it with tongs or tweezers. Remove it in 10 seconds to see if you have obtained the desired effect. If you would like it to be darker, put it in the solution for another 10 seconds and then look at it again. Sixty seconds will usually turn the figure completely black. Wash off the casting to get the remaining oxidizer off.