Shiny Molten Metal
-or-
How to Make Terminator II on a Really Low Budget

First of all, some physical information: What is pewter? Pewter is an alloyed metal composed primarily of lead and tin (in period, that is). More modern pewters, seeking to eliminate the lead component, substitute antimony or bismuth for the lead, and sometimes add a hint of real silver (makes it real purty-like) to the mix. In either case, medieval or modern, the result is similar. You end up with a shiny, easily polished, silver-gray metal, ductile and easily shaped which melts at a (comparatively) low temperature, has considerable density, and looks pretty. In America, the antimony-tin mixture is sometimes referred to as "American Pewter", or "White metal", by the way, to distinguish it from "real", leaded pewters. England, one of the last holdouts for original formula pewter castings, stopped around 1976. That might become important later, so remember it. You can make things out of it in a lot of different ways, too. It's malleable enough to shape with a hammer, you can melt it and cast things out of it and you don't have to anneal it if you're pounding on it, plus it welds easily. With a decent thickness of material, it's even pretty strong—for some uses.

Some cautions:

Let's start with the obvious. We're going to be pouring molten pewter, with an average temperature of about 500-600 degrees Fahrenheit. Yes, this <u>can</u> burn you. When working with this stuff, take reasonable precautions, like NOT wearing open toed shoes, wearing non-baggy clothes, and preferably long, <u>snug</u> sleeves—this leaves out a lot of common garb. Keep your hair -back-, and out of your face. Have someone else watch the kids, and for crying out loud, don't leave dangerously hot materials, just to go answer the phone or whatever. Use the potty <u>before</u> you start.

Less obviously, we are dealing with very hot materials you might not know all about, so do this in a well-ventilated area, so any fumes can escape. Likewise, the soapstone carving we'll be doing for molds will make a lot of very fine dust that could *possibly* contain some asbestos, so do it outside. The tools will be sharp, so don't stick one in your eye—ok, that belongs to the obvious category, but given that we live in the land of the lawsuits…

The last piece of safety advice is this: take your time. Whether it is carving, or pouring pewter, work slowly and deliberately, and you can avoid most any problem that will occur. It'll take a lot more time than the extra three minutes it took you to lay everything out, than to heal because you rushed the job and botched it.

History (hey, we are a historical group!)

The use of pewter dates back to the Greeks and Romans, at the very least. You often hear about the "Rome Fell Early" theory that says because the ruling Romans drank acidic wine out of lead cups, they collectively were stupider and did stupid things. True or not, they did use pewter, with a high lead content, and that lead <u>does</u> leach out in acidic conditions, and that's <u>bad</u> for you. It was a metal often used by their upper middle classes and above, because it LOOKED good, was durable, was cheaper than silver and could be easily made into a lot of tableware and decorative items. And once you had the mold, you could cast a LOT of these things, very quickly. One reason the Romans…ah, <u>visited</u> Britain is that Britain had, at that time, some of the best tin mines around. The Romans <u>needed</u> tin to make pewter, among other things.

In the Middle Ages, it was again used for plates, tableware of all sorts, decorations on clothing (buttons, jewelry, stone settings, etc) and showing off. Since it wasn't as expensive or as difficult to make things out of pewter, as it was to make them out of silver, the upper middle class and the truly rich again used it. You COULD have matching place settings for visiting dignitaries. One reference made to the Hampton Roads Kitchens in the early 1500's indicates that high ranking visiting diplomats and the like, who didn't have their own tableware, could expect to use a pewter salver, to rest their bread trencher on, a pewter salt box, a pewter tankard, and pewtered serving dishes, with pewter decorations cast separately, and welded on. It was also very easy to add gold leaf to the surface, and would give the appearance of solid gold

It was used until midway through the 20th century, again, for the upper middle class as a workable substitute for silver, until concerns about lead slowed, then halted it's use. Additionally, the use of more durable materials like cast aluminum, which had the added benefit of not tarnishing, killed it as a commonly used material, even when lead-free alternate formulations were introduced. Now, the most common use for it, pretty much, is in the war-gaming stores, for miniatures.

Procedures and Materials:

First of all, you have to have an idea…specifically, something to make. Do you want to make button toggles for that new gown? Cast a medallion for your recent "pilgrimage" to Trimaris? Belt plaques to decorate your boring leather belt? All these are pretty simple. You simply have to first carve the relief out of a piece of soapstone, with a half funnel carved in to pour the molten metal. You can make a two-sided mold, just make sure that your pieces will always line up, either with rods and holes drilled through, or with bumps and pits. The funnels on both pieces need to line up, obviously. Once you're happy with your mold, it's time to pour. Don't forget to make the back piece as smooth and flat as possible, though if you lightly cross-hatch it to allow the now very hot air to escape, you'll probably have a better pour.

Heat your pewter in your crucible…. Hey, what? Crucible? Where'm I getting the pewter? And the heat?

Ok, it's pretty simple. For your initial work, look in thrift stores for pewter things you don't mind melting down. A little experience will tell you if it's pewter, aluminum, or some other material (Example: At the ARC thrift store I found this really large "steak plate" that looked like stainless steel, but you could bend it slightly in your hands, and it weighed too much to be aluminum—cost me a buck and it made LOTS of goodies…) If it's got a date on it after 1976, you're pretty sure it has no lead, so, if all your other equipment is lead-free, you can make table-goodies. Or, well, you can buy lead-free pewter online. It's not all that expensive, except for shipping. For a crucible, you can use one of those miniscule cast iron frying pans that show up in thrift stores all the time—you know, too small to cook with, but there they are, anyway. Like you want to cook a single egg, or something. They hold a lot of heat and are durable. Your heat source is easiest of all—a camp stove. A simple propane stove puts out enough British Thermal Units to melt pewter, and the fuel is pretty darned cheap. And if you camp a lot, you likely already have one anyway.

You'll also want a long handled ladle or spoon to pour the pewter in the mold, a muffin tin to pour the excess pewter in to cool for your own ingots, lots of table space that won't scorch easily, and long, thick oven mitts with a pair of sturdy leather gloves that will fit inside. That's it. You probably also need something to carve the soapstone with, but dental picks, small chisels, and rotary tools make that easy. For finishing your piece, you may find some metal files and wire cutters useful, and always have a bucket of water handy for dispersing heat quickly—or putting out fires. It's also recommended that unless you have a work surface you don't care a whit about, put down some cardboard—the heat disperses fast enough that it won't burn, and you can always toss it when you're done. It also makes it easier to recover those little bits that end up everywhere, and that way you can recycle them.

The pouring is pretty easy. Melt some pewter in your "crucible", and use the ladle or spoon to skim off the scummy oxidized metals. Holding the mold snugly in one hand, while wearing the glove AND mitt, pour carefully into your mold, filling the funnel. Hold this over your crucible so excess has a place to go. When the top of the material in the funnel dulls slightly (usually less than 15 seconds, put the ladle down, and set the mold down. Using your gloved and mitted hands, open the mold and pop out the casted item. Let cool another few minutes. Examine your piece. If your mold needs adjustment, let it cool, then carve more as necessary. If pewter didn't reach everywhere, it could be that you just needed to heat the mold, which you did by casting a few that didn't work, or need to carve more soapstone away. In any case, if you didn't like the result, put it back in the crucible…it's not like you're wasting anything that way.

Some important notes about design: Little frilly lines rarely work as the pewter cools before it can flow through…so make bold designs. Likewise, undercut designs in your mold don't work—you won't be able to get your piece out of the mold without breaking it, and the idea is to make –lots- from one mold. Merewhen recommends using a piece of modeling clay to see what your piece can look like. And there seems to be an almost overwhelming desire to carve columns, which translate as holes through your finished piece. It rarely works. It's a lot easier to use a power drill and make a hole afterwards. Trust me.

Once you've cast a bunch that came out the way you wanted, let everything cool down, pouring your excess pewter into the muffin tin to make an easily stored ingot. Use the cutters to remove the sprues from your piece, and to trim any ragged edges that aren't part of your design. File if necessary. You'd think a rotary tool would make this easier, but oddly enough, it doesn't. Show off what you've made. Plan your next project…