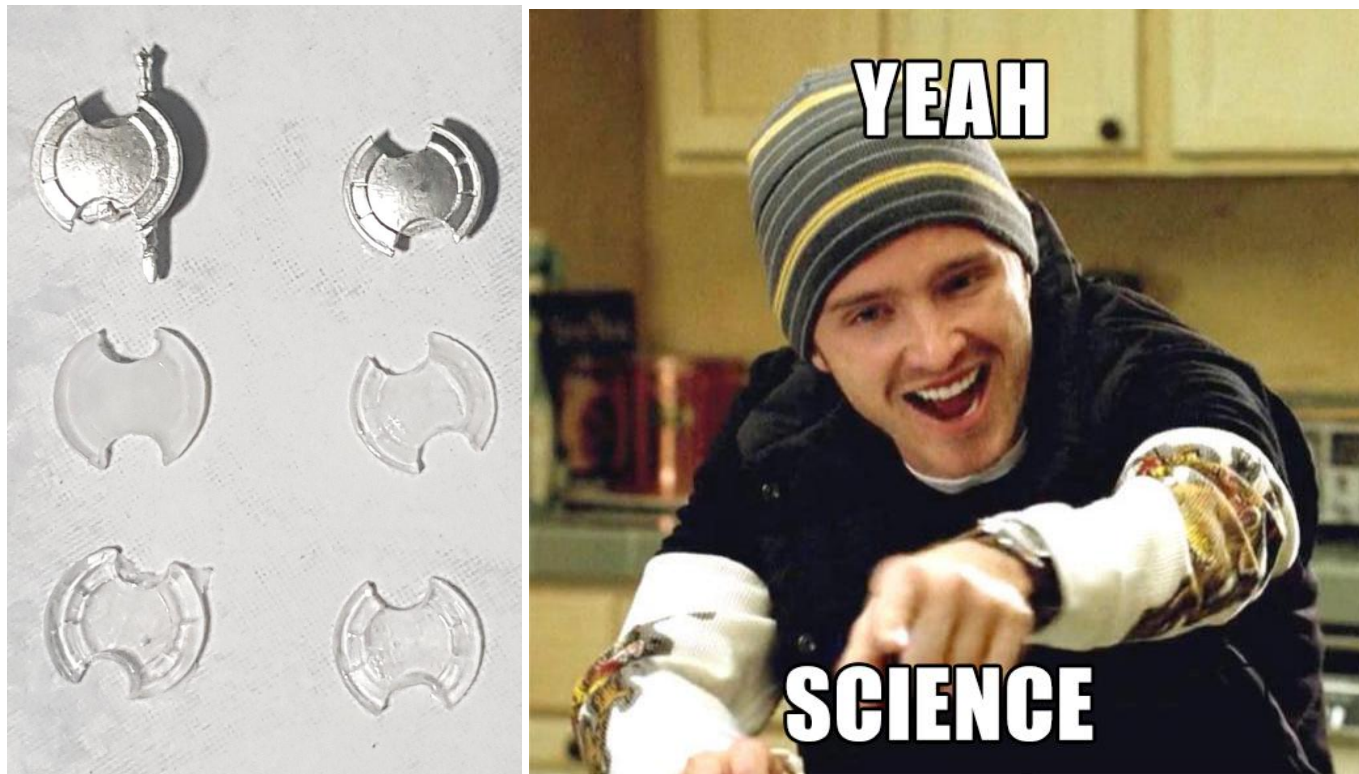


# Thorakitai Shield Casting Guide

After some experimentation I've discovered the most efficient and reliable method of making additional shields for my old N2 & N3 Thorakitai minis so that they can match the aesthetic of the new N4 Blackwind Thorakitai. This is a variation on the classic pressmould method of casting parts from minis but with added science, and I love me some science.



## Materials Needed

For this process you'll need the following parts and materials:

- The shield & backpack from at least one of the Operation Blackwind Thorakitai minis.
  - Note that there are 3 shields in the box and they are of two different sizes. I found it was easier to take the two shields that were attached to backpacks and not the one attached to the arm as it has a small nub on the front.



- Oyumaru Transparent Molding Clay
  - This is a clear, heat activated and reusable silicone molding putty that is also sold under a couple of other names. It's very useful stuff and comes in a range of colours but for this process we want the clear transparent kind.
  - The material softens in hot water, becoming malleable and able to take excellent levels of detail. When cool the material is more rigid and since it is silicone based is non stick to most types of casting resins.



- UV activated casting resin.
  - This is a type of clear resin that cures rapidly when exposed to UV light. It can usually be found in the crafting sections of hobby stores and comes in various viscosities. I got this large bottle online, it has a small nozzle and a viscosity like runny syrup.
  - UV resin cures via an exothermic reaction meaning it generates heat as it hardens. For large casts this can be an issue but for anything as small as these shield pieces the effect is negligible.



- A strong UV light source.
  - To cure the UV resin you'll need UV light and the stronger the source the better. There are dedicated UV lamps used in nail salons, UV lamps for 3D printers and small handheld UV torches such as the one pictured.
  - I got this particular UV torch at a pet store, it's designed to detect cat urine on wooden floors and carpets since cat urine fluoresces under UV light.



- A set of diamond files and jeweler's saw.

- Only necessary if you want to perform the final steps in the guide and get shields with no backpacks or other bits attached.

## Casting Steps

### Step 1:

Clean the two shields/backpacks of any flash or casting defects. You want the originals to be as clean as possible since you'll be relying on them to form the basis of your cast pieces.

### Step 2:

Cut four pieces of the Oyumaru that are larger than the objects you'll be casting. Two pieces will form the base half of the molds and the remaining two parts the cap half.

### Step 3:

Fill a ceramic bowl or mug with hot water. Boiling water from an electric kettle is best but if you live in a part of the world with hilariously low mains voltages then heat the water however you would normally, like on a stove or something...

Drop two pieces of Oyumaru in the filled bowl for a few minutes, you'll see the material become almost water clear as it softens.



### Step 4:

Using a fork or other implement (not your bare hands for christ sake) take a piece of Oyumaru out of the bowl and drop it on a cool flat surface. I've used a ceramic tile for this as it's flat and heat resistant.

While the Oyumaru is still soft, press the FRONT of a shield/backpack piece into the material until it is about halfway submerged. The reason we start with the front will become clear later. The reason for the cool surface is so that the bottom of the mold becomes rigid quickly and prevents you pressing the piece too far through the Oyumaru.



Make sure there is plenty of Oyumaru surrounding the pressed piece. It's now very useful to press small holes into the Oyumaru surrounding the piece using a fork or other implement. This will create holes that

act as keying for the cap piece of the mold which will make your life much easier during the casting process.

Repeat the above for the other shield/backpack piece.

## Step 5:

Let the Oyumaru of the base piece cool fully. Do not remove the piece(s) from the base molds yet! You'll know when the Oyumaru has gone rigid again as it will go from glass clear to a slightly more cloudy transparency.

## Step 6:

Make sure your water is still hot, refill or reheat as required. Place the two remaining parts of Oyumaru in the water and wait until they soften.

Once they are ready, fish them out one by one and press them over the entire base part of both molds. It's a good idea to press the Oyumaru completely over the sides of the base sections to act as additional keying.

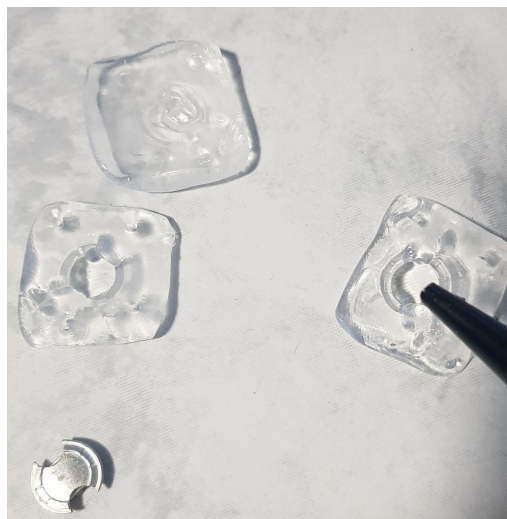
Once again wait for the Oyumaru to cool and become rigid.



## Step 7:

Now we get to the technical part. Have the UV resin and UV light source ready.

First separate the two halves of both molds and remove the metal shield/backpacks from the centers. Take note of how the molds fit back together. The molds may stick a little at the first separation but this is a good sign as it means the final fit will be tight.



Pour the UV resin into the base section of the mold, be sure to over fill the center of the mold. You want the edges of the mold filled with resin and for there to be a bead of resin formed above the center of the mold.

It can sometimes be worth back filling the upper part of the mold with some UV resin to guarantee that there are no air bubbles trapped in the center.

Place the two halves of each mold together and gently force them together until they key into place. It's ok for UV resin to flow out over the edges and sides, that means the mold center is full.

## Step 8:

The good thing about UV curing resin is that it will remain fluid until UV light is applied so any bubbles can be teased out of the center of the mold or the mold topped up if needed.

Once you're happy that the two halves are keyed and the centers entirely full it's time to cure the resin.

Apply the UV light source to each piece for a few minutes. The clear Oyumaru will not block the UV light and will actually refract it around the center of the mold, curing the piece from all angles!

Additionally if you place the molds on a white or reflective surface then more of the light will enter the mold center.

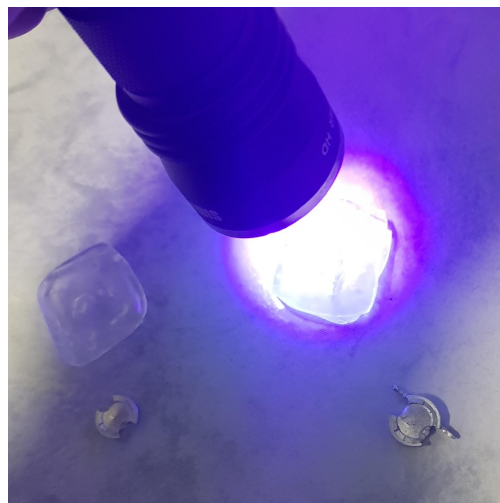
After applying the UV light source to the resin let the molds rest for about 10 minutes. As previously mentioned the curing process is exothermic so there is the potential to damage the mold and the cast pieces if they are removed before everything has cooled.

## Step 9:

After 10 minutes separate the two halves and all being well the finished casts can be popped out of the mold centers.

If the UV resin is still a bit soft, hit it with another blast of UV light. UV resin should be very hard like clear plastic when the reaction is complete and fully cured.

There will be some flashing around the edges from over filling the mold and this can be pulled or broken off with your fingers. After a bit of standard cleaning with a hobby knife and files you should have two more or less perfect copies of the original metal pieces in clear resin.



You could stop here and swap these parts onto the old Thorakitai mins bit with a bit of extra work we can get much more versatile shields and molds.

## Step 10:

Take your cast parts and using hobby tools cut away the excess parts from the shields themselves.

I used a jeweler's saw to cut away the backpacks and diamond files to add concave surfaces to the rear of each shield. A sharp craft knife will also remove any remaining flash from the casting and allow the edges to be neatened up.

Note that the clear cast UV resin will become hazy when worked with tools just like clear styrene or resin. This will not affect the final casts unless you want to keep the shields completely transparent for some reason and not paint them. If you do want them to remain clear, use a coat of gloss varnish to remove the haziness.

You should now have two shields that can go anywhere on the old Thorakitai minis. What if we want more of these shields but don't want to go through the trimming process again?

That's where the reusable properties of Oyumaru and our previous mound preparation comes into play.



## Step 11:

Take your newly cut down shields back to the original base molds. If you've cleaned them up well you should find that they can fit back into place within the base molds snugly. Remember when I said to put the shields face down, now you can see why.

Get another bowl of hot water and place the previous top mold halves back into it so that they soften back down to become malleable.

One of the excellent things about Oyumaru is that it is nearly infinitely reusable. The material from old molds can be repurposed as many times as needed. I've only come across one instance of Oyumaru discolouration over time from perfect clarity and this was when I used Epoxy resin as the casting medium. Epoxy resin can leave oily residue behind after curing which can contaminate the silicone of Oyumaru.



Once the old top mold halves have softened down, fish them out of the water and repeat Step 6, pressing the two pieces over the base molds with the shields in place. Any cavities in the base molds from sections that were removed have the advantage of acting as extra keying now.

## Step 12:

Once the mold tips have cooled and become rigid, repeat Step 7 and you'll be able to cast perfect backless shields to your heart's content.



## Additional Notes

This process of press mold casting can of course be used to make copies of any small parts but be aware that the larger the part the more heat will be generated in the curing process of the UV resin. There is probably an upper limit where the curing process will generate enough heat to deform the Oyumaru and thereby ruin the mold. I don't think it's going to be possible to copy an entire 32mm miniature even in parts with this process as the pieces are too big.. I've found that this method works great for making copies of small parts like weapons, shields, those tiny Pano antennas and the occasional whole arm.

I've also used it to make clear parts for use on bases as the resin can be dyed to a limited degree with pigments and inks. If you do this any haziness of the resin after working can be fixed using a coat of gloss varnish.

*Guide authored by Killian Mc Keever V 1.0 [08/10/2022]*