CUTTING EDGES

GET INVOLVED!

Cutting edges are the point at which a core meets the mould, and is crucial in creating a fine edge in many appliances. In flat moulds, there can be something similar even though a core isn't involved, as it establishes where the appliance actually stops and the skin begins.

A cutting edge and overflow are critical in foam appliances, especially where a mould has foam latex added and a core is pushed into it.

A gap between the core and the mould face would ensure the excess foam could escape, and the contact point where the mould meets the core would be decided carefully and precisely.

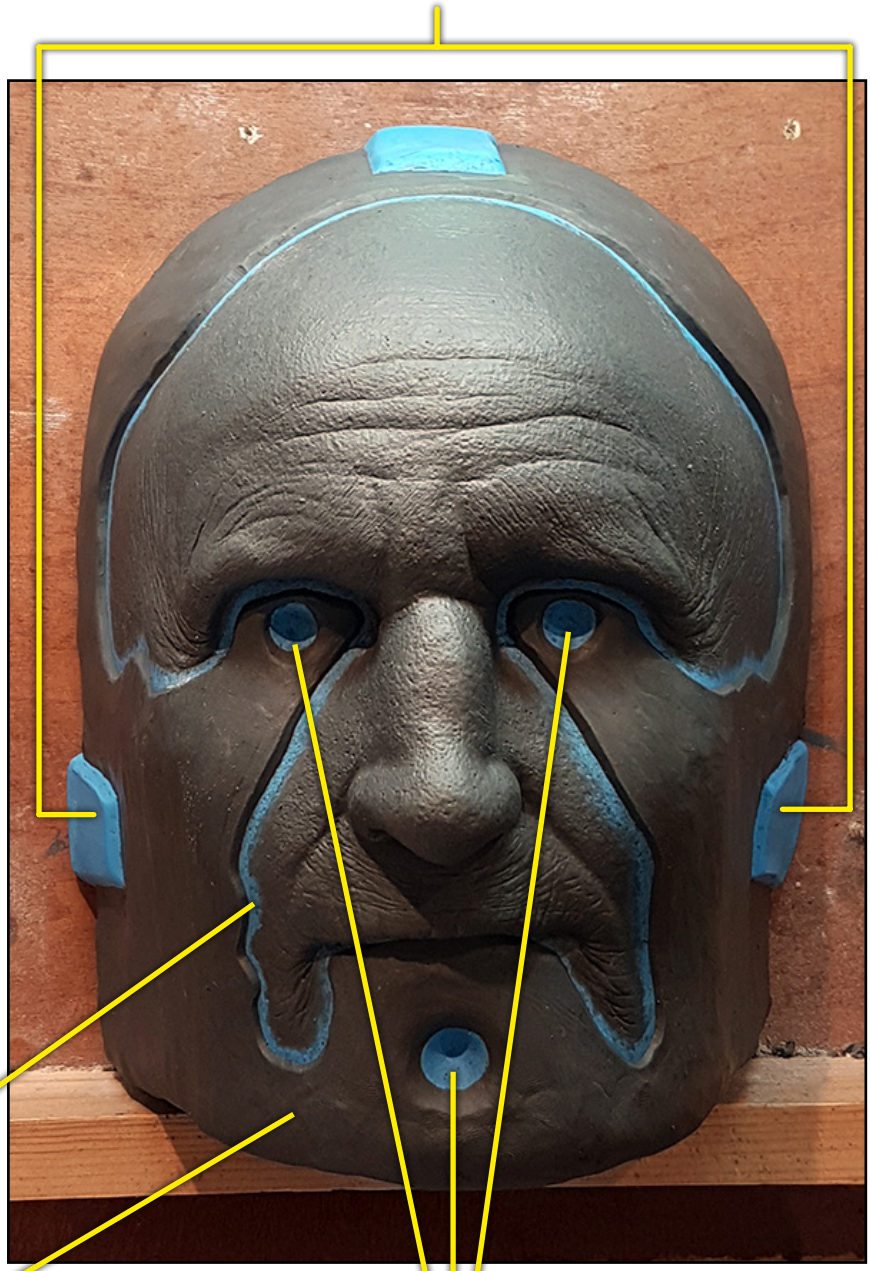
This principle has carried on with silicone, although usually excess waste is minimised owing to the fact silicone isn't mostly made of air, as is the case with foam latex.

Such a narrow and neat margin would mean the pressure from any clamp, strap or bolts used would be exerted on as small an area as possible.

Keys would ensure the unique contours of the core and mould aligned perfectly.

Wherever the core meets or touches the mould - be it keys, the cutting edge or an unintentional, is known as a touchdown.

Key - this type is a tapered, angled key which was made as part of the core.



Cutting edge - the exposed portion of the core. Seen here as a thin line following the shape of the sculpted edge.

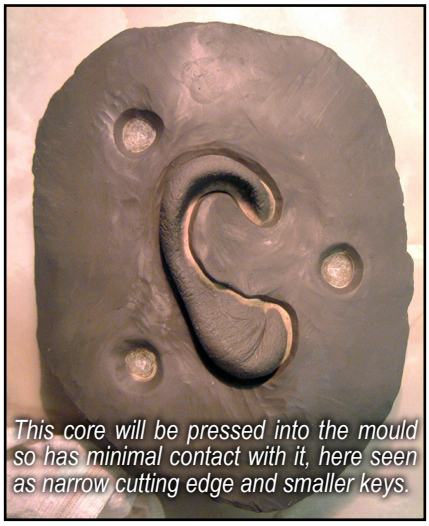
Flashing - an even thickness, usually about 2-3 mm thick, of plastiline, extending over everything except the keys and cutting edge.

Key - this type can be drilled into the core after it was made using a countersink bit.

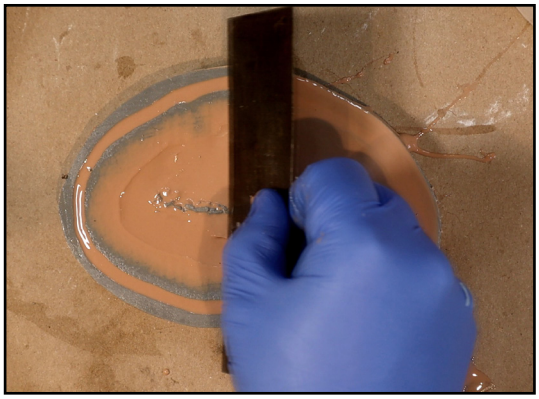
This core is relatively flat, with all the contours on roughly the same plane.

This core is more rounded, the chin being a more prominent form.

Flat pieces are usually made by scraping the back of the mould, which means the softness of the mould can affect the result. Pressing too hard means the mould compresses more, resulting in a shallower fill and a wider cap plastic border.



This core will be pressed into the mould so has minimal contact with it, here seen as narrow cutting edge and smaller keys.



A flat mould being scraped with a steel 'busk' or plasterers scraper to remove excess material and expose a clean, neat edge.

This core will be assembled before silicone is injected into it. The large circular patches are touch-downs for bolts.

CUTTING EDGES AT WORK

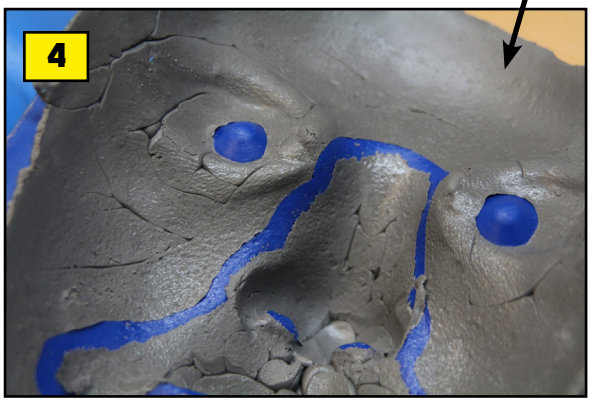
1. Sculpt finished, cutting edge and overflow in place.

Everything is covered except for a thin border around the sculpted edge and the keys.

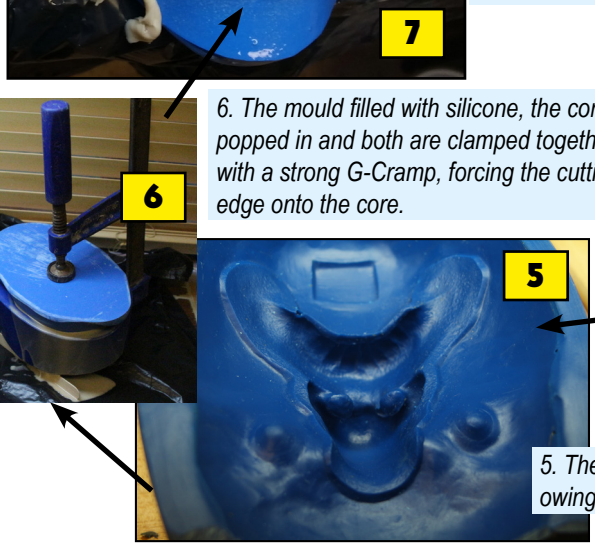
Here I have used the same plastiline as the sculpt, and it is approx. 2mm thick all over, like a thin blanket.

2. The mould is made. The mould here is the same material as the core - F40 resin, a fast setting urethane.

3. The mould is opened. You can see the sculpt detached entirely from the core, and remained stuck in the mould. This is not uncommon.



4. The same mould with detached sculpt in place, just seen a little closer. You can see how the cutting edge and keys are showing through. They have 'touched', hence the name 'touchdown. This tight touchdown should ensure any silicone poured in will be pressed out completely at these points, resulting in a thin, 'cap plastic only' edge.



5. The mould now cleaned with the sculpt now appearing as a raised area owing to the overflow.

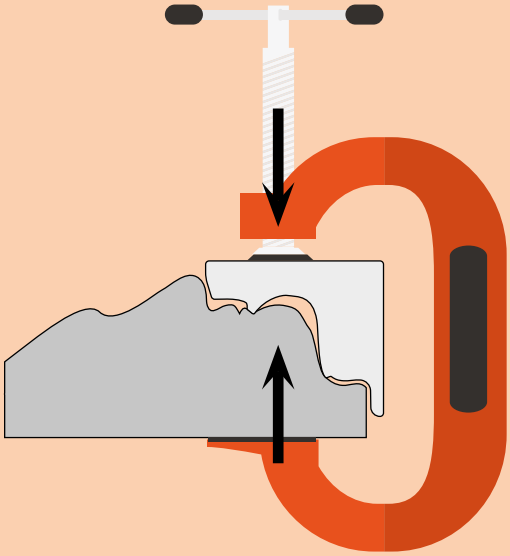
6. The mould filled with silicone, the core popped in and both are clamped together with a strong G-Cramp, forcing the cutting edge onto the core.

7. The finished appliance after the mould has been opened.

There may be a great deal of force needed to part the core from the mould, usually with a screwdriver or similar lever.

This is why moulds need to be made from strong materials.

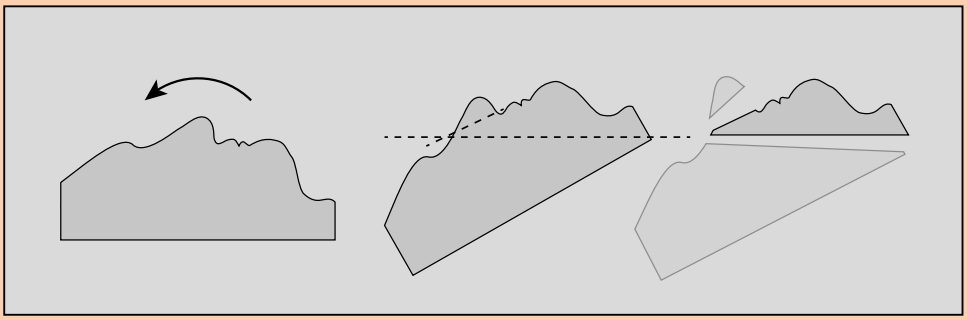
CLAMPING AND ANGLES



The angle of the core, and how it sits on a bench (especially with small block moulds to be clamped) is an important element in how a mould may close. There is no prescriptive single way to approach it, but the main principle is to get even pressure as much as possible.

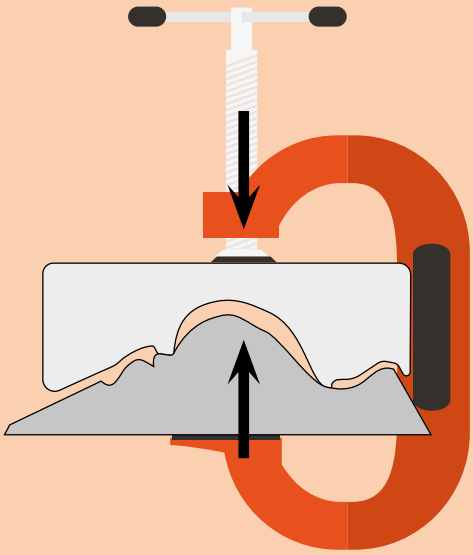
In this instance, the mould and core are closed together using a G-cramp which can exert huge amounts of pressure.

A clamp has a single line of pressue, shown here with the two arrows. You can see how the majority of the pressure will press on the lower lip edge, whereas the edge under the chin hits at an angle, owing to the shape on this particular part of the face.



A solution here would be to make a core which sits at a better angle, effectively tilting the head back.

Cutting or making the core at this angle means when sat on a bench, the chin is now uppermost. The bottom edge of the lip and the lower end of the chin are in a line now. The nose has been trimmed off to make things more streamlined but this is an optional extra, not essential.

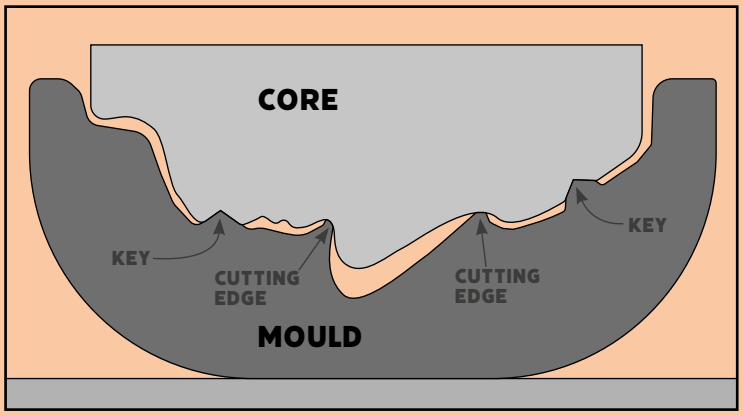


Now when closed, you can see the edges are going to get a more even amount of pressure, ensuring a decent edge all around the piece.

In the top image, the top lip was going to get more of the clamp's pressure, with a good chance the area where the chin becomes neck would have less pressure, and potentially a thicker edge.

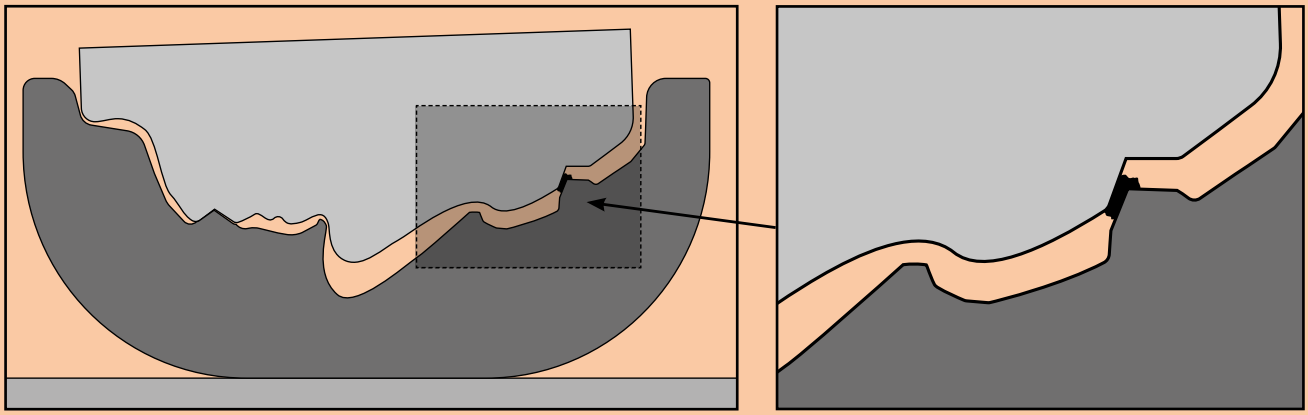
Spotting these things early when cores are being prepped is important, so you make the core correctly at the outset.

CORRECT CLOSURE



Cutting in the mould edges need to meet the core in order to work. Here, an example is shown how something can stop correct mould closure.

A bit of clay or stray silicone stuck between the two on a touchdown, such as the key, means the core is held away from mould, resulting in a thicker edge.



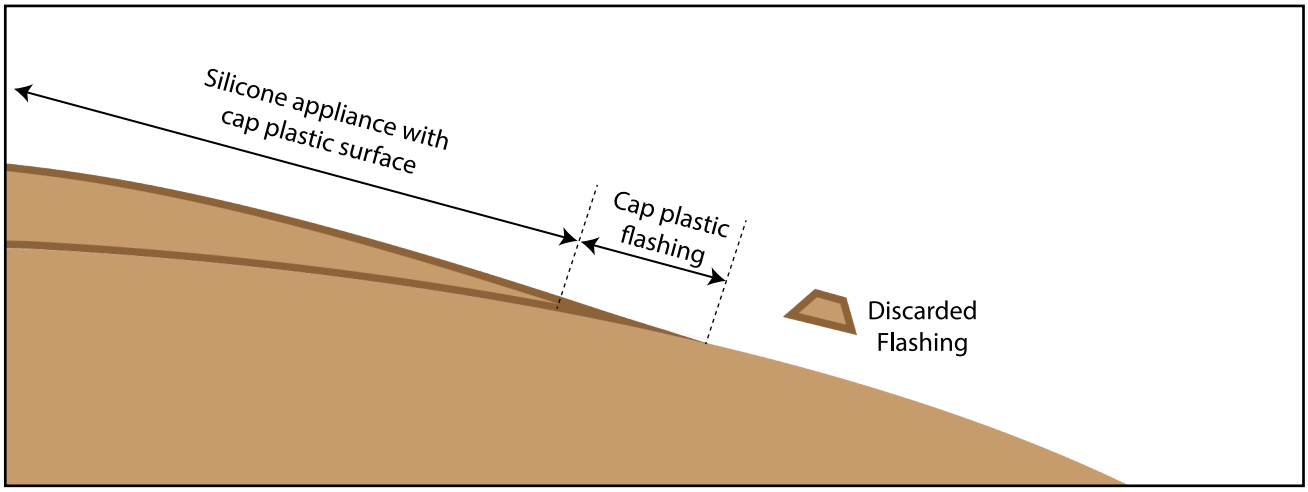
Above: A flat mould showing the cutting edge in place, resulting in a permanent boundary surrounding the appliance. It will create a definitive place where the appliance stops, so every piece will be the same.

Left: Flashing left attached where possible makes it much easier to handle the piece during application. Using the attached flashing, you can pull and stretch the piece into the correct position and hold it during gluing.

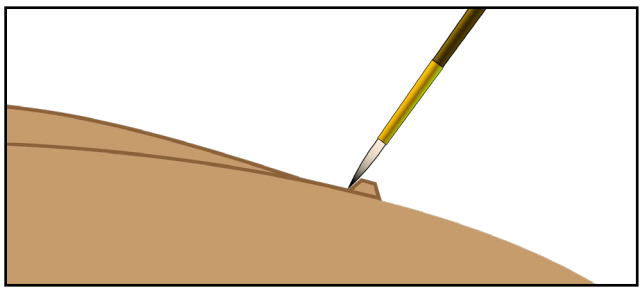
Many make the mistake of being too heavy-handed when removing the flashing, dissolving the cap plastic entirely and exposing a silicone edge which later can cause problems. The intention is to separate the unwanted flashing whilst retaining the cap plastic edge.

DESTROYING EDGES IN APPLICATION

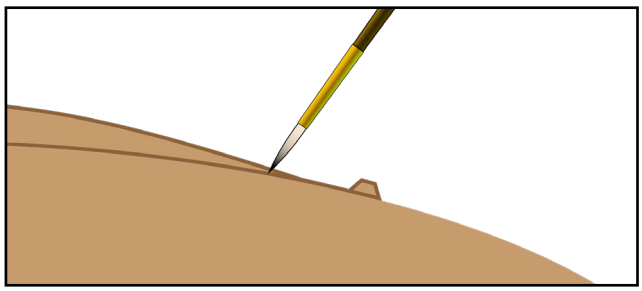
ONE OF THE CARDINAL SINS IS TO MAKE AN APPLIANCE WHICH HAS A BEAUTIFUL EDGE, AND THEN DESTROY IT DURING APPLICATION. I HAVE OFTEN SEEN FOLK USING TOO MUCH SOLVENT TO REMOVE THE EDGE! DON'T!



Above you can see the cross section of a piece applied with flashing removed. The idea is to retain the short (2-3mm) edge of cap plastic 'flashing' which extends just beyond the silicone edge.



Here is an illustration to show where to best remove the flashing. Using a small cotton swab or brush, simply separate the silicone flashing away from the cap plastic edge.



Too often, way too much solvent is used which obliterates all the cap plastic flashing, or as here the brush starts too far back, actually melting away the cap plastic where the silicone is and exposes it.

Here you can see a piece with ruined edges,and midway through repair. It is quite apparent just how noticeable the slightest edge can be on the skin.