



ASSEMBLING THE SKINS

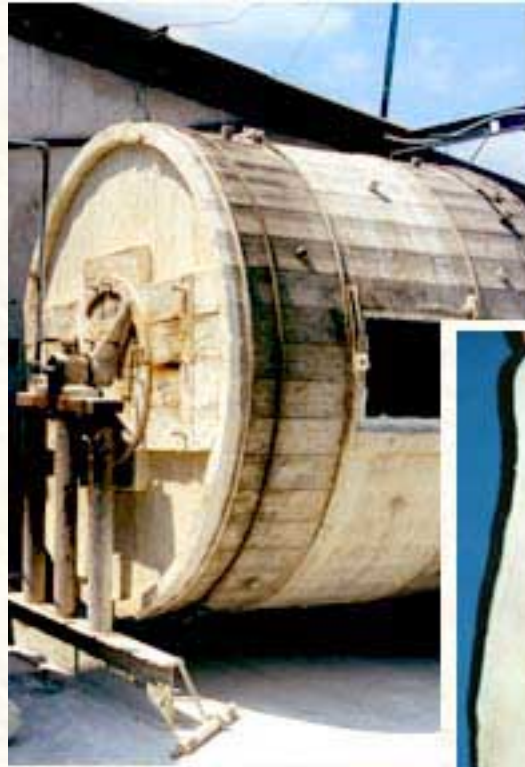
The high-quality batim - the hard black boxes that house the parchments - are made from the skin of an ox. Only one pair of tefillin is made from one ox.

True, one is allowed to make the batim from the skin of a sheep; however, the skin from the neck of an ox is stronger, more durable, and less likely to suffer damage over the years.

After slaughtering the ox, the soft and pliant skin is stripped off the neck. We can now begin processing it with lime in a large drum.

The object of the lime is to seal the perforations in the skin and to dry it so that it will not decay. The lime also dilutes the smell, removes the hairs, the fat, and any remaining flesh, and makes the process easier.

After this, the leather is cut into the shape of the letter **T**, and stretched



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STRETCHING

It is important to deal with the leather, after it has absorbed the lime, while it is still moist and pliable.

With the help of a hydraulic press, we push certain parts of the leather that have been marked in advance, into glasses set in the instrument, thereby forming bulges in the leather (called bulkelech in Yiddish.)

In the leather designed for head tefillin, we form four bulges that will be used to insert the four strips of parchment on which the four Biblical passages are written.



In the leather designed for the hand tefillin, we form one bulge into which one strip of parchment bearing the four passages will be inserted.

After every stretching of the batim leather, it must be dried in the fresh air (without heaters or any other means of artificial heating) for a period of weeks - and even months! For this reason, preparing a set of perfect tefillin may take as long as a year.



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After several months of drying out, the leather reaches the second stage. We dampen it somewhat so that we will be able to manipulate it.

Into the bulges formed in the first stretching process, we insert flat pieces of iron.

Then we insert the leather with the iron pieces into a press (an instrument that supplies several tons of pressure) and press it from every direction.

The bulges are now already converted into four compartments, though they have not yet been planed. The leather is placed in the machine, where are iron pieces which provide great pressure that keep the compartments in shape. Once again we leave the leather to dry out for a long period of time.





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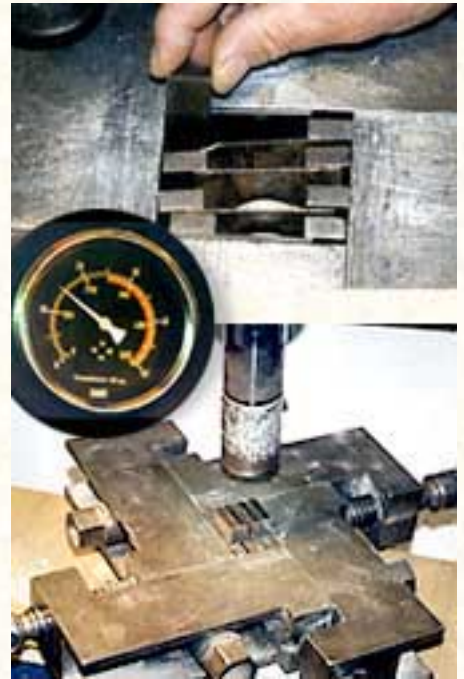
At this stage, we insert four pieces of iron into the hollows of the batim, right down to the base. They are intended to press out the shape of the batim into compartments which will later house the scrolls.

On the outer side, we separate the batim by means of a springy sheet of metal one millimeter thick, and put them into the press - a machine with hydraulic pressure.



On both sides of the bayit (singular for batim), four iron props are adjusted by means of a caliper .
Altogether, there are eight such props

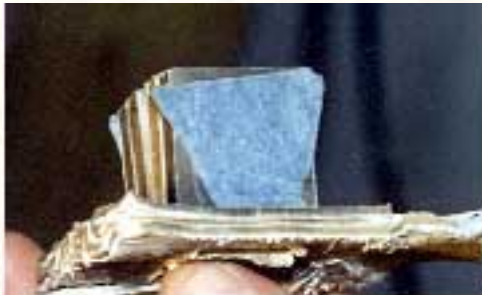
The press is closed manually, and **fifteen tons of hydraulic pressure** are set in motion from above! The process is simpler for the hand tefillin, where there is only one hollow compartment to deal with.



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FORMING THE "SHIN"



In order to produce the letter "**Shin**" on the bayit of the tefillin, we carefully and expertly moisten the area of the letter, in order to process the leather only where the "**Shin**" will appear. Next, we attach to the two sides of the bayit two pieces of iron upon which the letter "**Shin**" is stamped





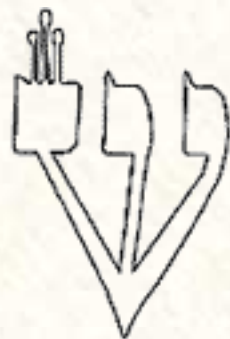
We now insert the bayit into a hydraulic press. As a result, the letter "**Shin**" protrudes on both sides of the bayit. However, Jewish Law stipulates that the letter must be drawn **out** of the surrounding leather, and not press the surrounding leather **in**.



To accomplish this, we paint the "**Shin**" (so that its position can easily be seen), and press it inward with a smooth piece of iron.



Finally, we pull the "**Shin**" out manually, thus making it protrude.



על פי ה"בית יוסף"
מנהג אשכנזים



על פי האר"י
מנהג חסידים



על פי מנהג
הספרדים

The Letters (From the left):

According to Beit Yoseph
the Ashkenazi custom

According to the ARI
the Chasidic custom

the Sepharadi custom



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GLUING

During the gluing stage, the folds of the leather in the area of the brim are glued together.



For this purpose, glue made from the skin of an ox is used. The glue is made by boiling and cooking left-over pieces of leather, and is referred to as, "two of the same kind stuck together." Care must be taken that the glue not come into contact with the batim so that these remain separated.



The batim are then dried under pressure in a screw press.



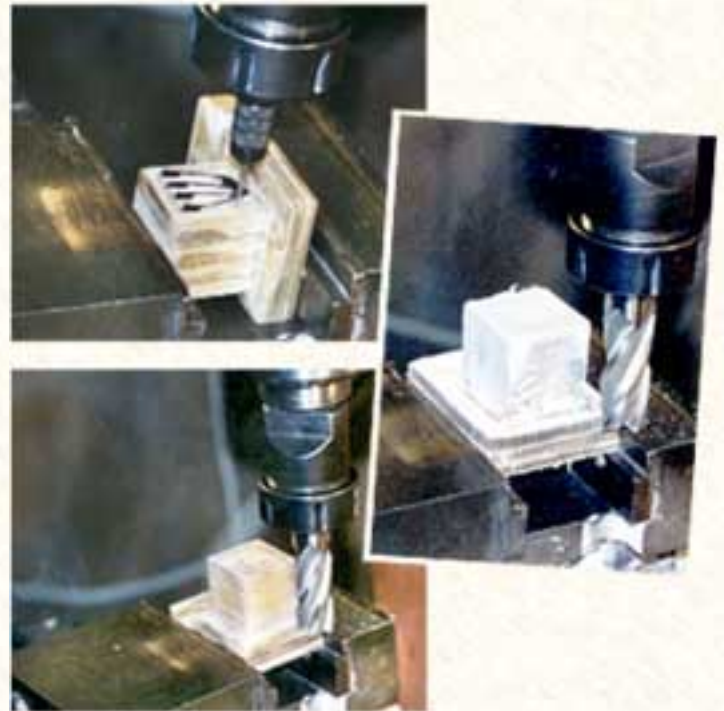
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Three parts of the tefillin must be in the shape of a square: the bayit itself, the brim, and the stitching. This is a law that originates at Mt. Sinai, without further explanation, as the Talmud states: "Square tefillin - halachah from Moshe at Sinai.... in their stitching and diagonally..."

We are punctilious about maximum precision in a square, even as much as tenths of a millimeter - less than the width of a hair on one's head.



The measuring is carried out by means of a digital caliper. The distances between the holes formed by the needle in stitching are measured, so that they will be equal, in order to fulfill the precept, "This is my G-d and I will exalt him."



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WRITING THE VERSES

The Torah passages are carefully hand-written by a sofer (scribe). A sofer must be even more G-d-fearing than a ritual slaughterer (shochet) - because a shochet who errs can cause people to transgress a commandment on *one* animal alone, while a sofer may prevent people from fulfilling the positive commandment of laying tefillin *every day*.

In order to become a worthy sofer, one must practice diligently - not only writing, but also preparing the quill and the parchment. He must be extremely knowledgeable in the halachot (laws) of "Stam" - the writing of Torah scrolls, tefillin and mezuzot. Such expertise is often shown by Rabbinic approbation.

Sefaradim use a reed for writing the verses, while
Ashkenazim write with a feather.



It is imperative that the verses be written in proper order - **Kadesh** (Sanctify), **V'haya Ki Y'viacha** (When He brings you to the Land), **Sh'ma** (Hear O Israel), and **V'haya Im Shamo'a** (If you hearken). If the verses have not been written in this order, they are unacceptable, and must be discarded to genizah (for burial).

The letters and words of each passage must be written in the order in which they appear in the Torah. This is a law that applies only to tefillin and to mezuzot, but not to Torah scrolls.

The sofer writes in ink produced from gall-nuts and blue vitriol. He writes on parchment - actually, processed leather - that has passed through all the stages of lime-and-salt processing, stretching, sanding and smoothing.



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PROOFREADING

After the sofer writes the Torah passages, a qualified proof-reader - one with expert knowledge in the laws of Biblical text-writing - reviews every letter of the text. He must also be capable of finding solutions to any problems he may discover in the writing.



There are several stages in proofreading:

First, he checks for missing, extra, or mistaken letters.

Second, he checks to make sure that each letter has the required tagim (crownlets).

Third, the paragraphs and the lines (p'tuchot and s'tumot) is checked, to ensure that they comply with tradition.

After all this, the texts are reviewed yet again by computer.



The proofreader requires a strong light, a magnifying glass, and a high level of concentration.





The Biblical passages (parshiot) are inserted into the tefillin in the order that they are written. Each parchment is rolled from the end to the beginning, and wrapped in a covering made of parchment.



The verses and the covering are rolled in hair from a calf's tail.



One must be careful to insert the verses (parshiot) into the batim (boxes) easily, without pressure.



The next stage is to sew the batim with a tendon from a ritually-pure animal, backward and forward, so that there is stitching both above and below.

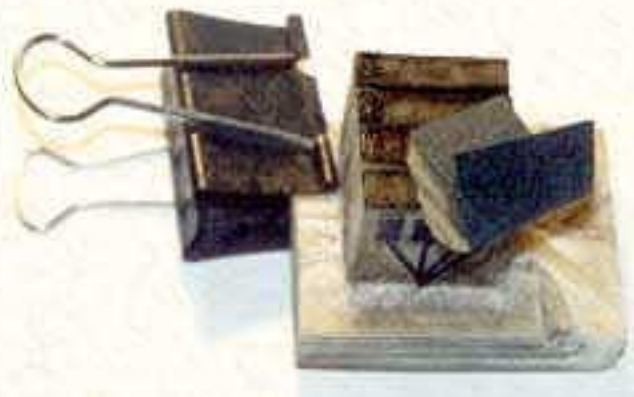
The final sealing of the batim is done by stitching, and not with glue.



PAINTING THE BATIM

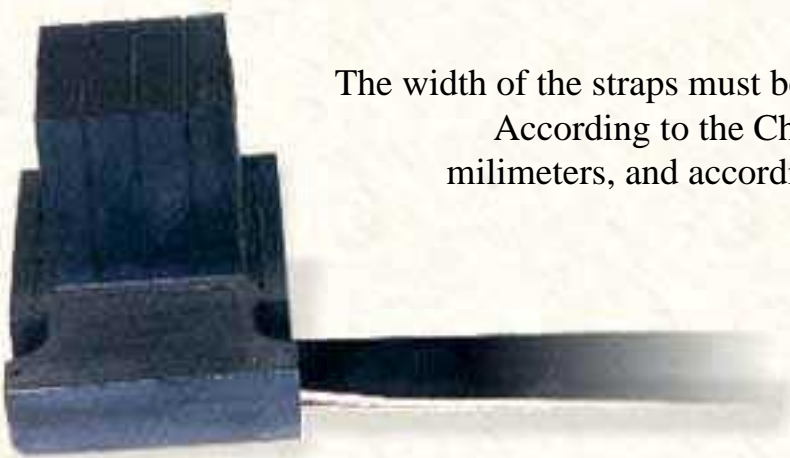


The painting of the batim also requires high professionalism. It is important to paint the tefillin several times in order to obtain a uniform, totally black color. This is not simply a matter of giving extra coats of paint, however. After the first painting, the paint is given time to be absorbed. The batim are then sanded down and painted again. This process is repeated four times, until the desired result is obtained





The width of the straps must be equal to the length of a grain of barley.
According to the Chazan Ish, the width must therefore be 11 millimeters, and according to HaRav Chaim Naeh, it must be 10 millimeters.



The knot of the tefillin, both hand and head, is according to the halach received by Moshe on Mt. Sinai. On the head tefillin we make the knot in the form of the letter "dalet" on the hand tefillin we make the knot in the form of the letter "yod" These two letters, together with the letter "shin" embossed on the head tefillin, form the word "Shadai"



The "yod" knot must be attached to the "ketsitsa" (bayit).



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