קמ. ריבוע הבתים יהיה מגוף הבתים עצמן, ולא על ידי דבר אחר שמטיח עליהם. [משנ"ב ס"ק קעח]. וכן תפילין שעיקר ריבוע זוית הבתים נעשה מאיזה טיח ודבק, באופן שאם היו מסירים טיח זה, היה מתבטל ריבוע התפילין, והיו התפילין נפסלות מן התורה, פסולות תפילין אלו מעיקר הדין. והעושים תפילין כאלו הם מהמחטיאים את הרבים. [שבט הלוי ח"ג סוף סימן ב]

Forming the square shape

140) The leather of the *battim* must be shaped into a perfect square. The *battim* cannot be made to appear square by adding paste or any other material to them.[119] If the *battim* themselves are not actually square, but they appear to be square because of added paste, they are not kosher at all. Whoever manufactures tefillin in this manner is guilty of the terrible crime of causing others to sin.

have been developed that enable the production of *battim* for *tefillin shel rosh* without using any glue, and yet they will maintain their shape for many years despite the fact that the four compartments are not at all connected above the *titura*. (Illustration №56) The responsa *Teshuvot Vehanhagot* (Vol. I, #40), however, complained that if the four compartments are pressed together so tightly that they will not come apart, it is the same as being glued together and the *battim* would not be kosher. Therefore, he ruled that it must be possible to push a thread between the compartments and down to the *titura* without first separating them with a knife.

Harav Yosef Cohen claimed that any *battim* manufacturer who claims that he can produce *battim* for *tefillin shel rosh* without using glue is a liar. Furthermore, no one can claim that he applies glue only at the bottom in order to follow the ruling of Rav Auerbach. Even if he applies a tiny drop of glue, it spreads across the entire expanse due to the enormous pressure of the hydraulic machinery. In order for the *bayit* to be kosher, it is necessary to cut through the glue between the compartments after the *ketzitza* has been brought to its final shape, leaving intact only the glue near the bottom. (Illustration №55) This concurs with the instructions given in the responsa *Teshuvot Vehanhagot* cited above.

What kind of glue?

Tefillin *battim* must be made of kosher materials. Therefore, if glue is used in their basic construction, it must be kosher as well. Traditionally, *battim* manufacturers would take ground up leather shavings of kosher animal leather (the "sawdust" left from cutting *battim* into shape and sanding them) and boil it into a thick paste. The responsa *Da'at Torah*, cited by the *Piske Teshuvot* (*Siman* 32, footnote 426), expressed his reservations about using this type of glue since it literally becomes part of the leather and would really convert the four compartments into one. Therefore, he recommended using glue made from vegetable sources or to use synthetic glue. (Illustration №59)

119. This halakha is based on the ruling of responsa *Noda Bihuda* (#1), cited in the *Mishna Berura* (32:178).

Paste made of ground leather

The responsa *Minhat Yitzhak* (Vol. VI, #1; Vol. VII, #1) ruled that if a *battim* manufacturer shapes a *bayit* but it is left with nicks or holes, it is permissible to fill them with paste made of boiled leather shavings. This paste was described in the previous footnote. He permitted this only for finishing the final shape of the *titura*, (Illustration №60) however, and not for finishing the *ketzitza*.

The responsa *Shevet Halevi* (Vol. III, #2), however, ruled against the use of this paste, explaining that once leather has been ground into tiny shavings and cooked into a paste it is no longer considered leather at all. Therefore, he ruled that this paste cannot be used as a filler to repair a *bayit* that would not be kosher otherwise. It may be used only in places where any material at all may be used.

Several decades ago, it was suddenly discovered that the world's major producer of tefillin *battim* was regularly using this paste to fill in the nicks and crannies of the *titura* to make them perfectly square. The *Shevet Halevi* ruled that the *battim* were still kosher. He explained that the *Noda Bihuda*, who ruled that paste cannot be used to make the *battim* square, was dealing with *battim* that were not at all square, but that the manufacturer used the paste to make them appear square. In the case at hand, however, the dimensions of the *titura* are already square. The paste is used only to fill in the nicks and crannies caused by imperfections in the leather. Furthermore, the *Noda Bihuda* was referring to a paste that did not fuse into the leather. It simply covered the *battim*, and it could easily be peeled or chipped away. In the case at hand, the paste that is used becomes fused integrally with the leather to which it is applied. This can be compared to the halakha regarding filling a hole in the side of a shofar, discussed in *Shabbat* (102b) and in the *Shulhan Arukh* (*Siman* 586).

קמא. תפילין שיצירת הבית הגולמי נעשה על ידי מכשיר לחץ שעושה את צורת הבתים על ידי מכה אחת (שטאנץ) (תמונה ס"א), ולאחר מכן ריבעו אותם במשחזת המסתובבת בכח החשמל והאדם מקרב אותם למכונה (תמונה ס"ב), הבתים כשרים. [אור לציון ח"ב עמ' לג, הליכות שלמה תפלה עמ' נד]

Using machines to shape *battim*

141) After the original leather is placed into a machine and the basic shape of the compartments is formed, (Illustration №61) an electric saw can be used to cut away any extra leather so that the *bayit* becomes square. Since a person controls the position of the *bayit* and pushes it onto the blade of the saw by hand, (Illustration №62) it is considered a manual process and not an automated process. Therefore, the *battim* are kosher.[120]

The *Shevet Halevi* concluded that ideally the *battim* manufacturer should use pieces of genuine leather to fill in the nicks and crannies. If that is not possible, then the paste made from leather shavings may be used. Although the paste cannot really be considered to be leather anymore, when it becomes fused to regular leather it becomes part of that leather and fills the nicks and crannies to make the *bayit* flawless. But the paste cannot be used to change the dimensions of the *bayit* and make it square if it is not square without the paste.

In Vol. IX (#4) the *Shevet Halevi* added that any flaws in a *bayit* that do not render it nonkosher should nevertheless be repaired using a small piece of leather, but if that is not possible, one may use paste made of boiled leather shavings to repair a small imperfection, but never to make the *bayit* square. Therefore, anyone who purchased these tefillin and has now discovered that paste was used to fill in cracks and crevices can rest assured that the *battim* are perfectly kosher. If the paste was used for a major repair affecting the general shape of the *battim*, the customer has a legitimate complaint against the manufacturer, who must replace them for him. See more about this in the *Piske Teshuvot* (page 310).

Forming corners with tefillin paint

The author of *Hazon Ish*, cited in *Orhot Rabbenu* (Vol. I, page 33) ruled that if a corner of someone's tefillin has become a bit rounded, he can repair it by covering the corner with tefillin paint and then sanding the sides until it forms a sharp point. Tefillin paint cannot be compared to the thick paste that is used to fill nicks and crannies in *battim*.

120. The *Or Letziyon* (Vol. II, page 33) explained that the original basic shape of the compartments is performed by the technician without any electric machinery. Although the saw used afterward runs on electricity, the technician manually moves the *bayit* onto the saw, and therefore it is considered a manual process. Therefore, his intentions to make the *bayit* for the sake of the sanctity of tefillin count, and the *bayit* is kosher. This is likewise the ruling of Harav Shelomo Zalman Auerbach (*Halikhot Shelomo Tefilla* page 54).

The *Poskim* debated whether it is possible to spin tzitzit strands by machine, or to use machines to knead matzo dough and roll the matzo into shape, since the tzitzit strands and matzot must be made with intentions for the sake of the mitzvah. Regarding tefillin, there is a stronger basis for leniency, since the electric machine works only as long as the technician keeps his foot down on the pedal, like a sewing machine or a dental drill. Therefore, every moment that the machine works can be attributed to the technician, whose intentions sanctify the tefillin.

For those who wish to have *battim* produced without any electric machines, some manufacturers offer what they call *ribuwa regel*. The machine that drills, saws and sands the *bayit* down to its final shape is powered by foot pedals, and so the operation uses only human energy. (Illustration №63) The responsa *Betzel Hahokhma* (Vol. V, #54) recommended a method even more stringent, using only a machine that is powered by hand pedals and not foot pedals (Illustration №64).

This is only a stringency. All the major *Poskim* ruled that these processes may be performed using an electric machine, as explained in the *Zikhron Eliyahu* (page 320) and the *Mishnat Hasofer* (#21).

קמב. יעשה כל הארבעה בתים של ראש בשווה, שלא יהיה אחד גדול מחבירו (תמונה ס"ה). [רמ"א סל"ט]. והוא למצוה לכתחילה, משום נוי תפילין. [קול יעקב ס"ק קפב], אבל אם לא עשה כן ואחד רחב מחבירו כשר, כל זמן שנשמר ריבוע הבית של ראש. [ראה משנ"ב ס"ק ס"ק קפב]

ריבוע התפירות

קמג. תפירות התפילין של יד ושל ראש צריכות להיות במרובע, בין למעלה ובין למטה (תמונות מ"ד, מ"ה). [ראה ש"ע סל"ט, ומשנ"ב ס"ק קעד וס"ק קעז]

ויש להשגיח לגבי ריבוע התפירה, שלא יעשו נקבים גדולים, כי אז ימשך החוט לצדדין, ועל ידי זה אין התפירות שוות בריבוע, זה נכנס וזה יוצא. [משנ"ב ס"ק קעז]. ומכל מקום אין צריך שחוטי התפירה שבריבוע התפילין יהיו נוגעים בפינות זה בזה, אלא כל שנראים כריבוע כשר. (תמונה ס"ו) [אול"צ ח"א סי' ד, ח"ב עמ' רפג]

Four symmetrical compartments

142) All four compartments of the *tefillin shel rosh* should be symmetric – each compartment should be equally wide, and none should be wider or narrower than the others. (Illustration № 65) This is important for the beauty of the tefillin. If the *bayit* turned out to have some compartments wider than the others, it is still kosher as long as the four compartments together form a perfect square.[121]

Day 36

Square Stitching

Stitches form a square

143) The stitches with which the tefillin *battim* are sewn must form a perfect square on top of the *titura* and a corresponding square on its bottom. (Illustrations № 44 and 45) For this reason, the manufacturer must make sure to drill very small holes for the stitches, for if they are too large, the stitches might zigzag instead of forming straight lines. As long as the stitches form straight lines, the *tefillin* are kosher even though the stitches do not meet at the corners to complete the square.[122] (Illustration № 66)

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121. The Rama (32:39) ruled that all four compartments should be of equal width. This is apparently the ruling of the *Shulḥan Arukh* as well, as one may deduce from the halakha in *Siman* 32:14, cited above in halakha 46.

The *Olat Tamid* and Harav Zalman, cited by the *Kol Yaakov* (32:182), explained that by making all four compartments symmetrical, the *bayit* is more beautiful. If this is not done, the *bayit* is still perfectly kosher. The words used by the *Mishna Berura* (32:182), however, suggest that it is not considered perfectly kosher but it may still be used. The *Halakha Berura* (page 426) insisted that the *bayit* is perfectly kosher even according to the *Mishna Berura*, but that he chose the wrong words to explain the halakha.

122. Wide holes for the stitches

The *battim* manufacturer drills twelve holes through the *titura* for the stitches, one in each corner and two on each side. These holes must be positioned in straight lines so that the stitches will form a perfect square, both on the top and the bottom of the *titura*. The *Ḥaye Adam* warned that these holes must not be too large, so that the stitches will follow one another in straight lines. If the stitches zigzag from hole to hole, they do not form a square. Nevertheless, the *Aḥaronim* ruled that as long as the stitches form straight lines, then even if the stitches do not meet at the corners the tefillin are kosher. The *Or Letziyon* (Vol. I, #4) explained that the stitches do not have to form points in the corners of the square.