

Inspection instructions of the Prussian Clothing Office for pickelhauben and shakos, dated 1897

(Source: Dienstanweisung für die Bekleidungsämter - Royal Prussian Ministry of War, 1897)

Translation of Appendix 6, Section V (finished pieces), Subsection C (helmets and shakos), page 183 to 188:

Helmet

1. The leather used for the helmet shell must be tanned with oak tan and catechu. The inner side, the grain side, must have a natural brown color and retain this color even after painting.
The thickness of the leather in the upper part is 2.2 - 2.8 mm, in the lower part 1.8 - 2.4 mm. Up to about 5 cm below the plate, the leather must be stiff enough that it cannot be pressed in with moderate pressure by hand or thumb. The lower part, at the height of the ear leather, may bend slightly.
Stiffening the leather with glue or something similar is not permitted.
2. Only the best oil varnish is allowed to be used for varnishing. It must have a smooth surface and should not appear cloudy. Leather and lacquer has to be so firmly joined together that the latter doesn't separate when exposed to air, moisture or heat, nor does it come off when the helmet shell is firmly compressed.
3. To check the correct level of tanning and the varnish, a completed helmet is placed in water for 24 hours. The varnish is not allowed to show any blisters or peel off from the leather. Rubbed with a soft leather cloth, the varnish should show the old shine, but may appear slightly cloudy.
The head has to be dried slowly in the air or in moist weather and in winter in a room at a moderate temperature to keep its original shape; the resistance has to be the same as before the test.*
4. The height of the helmet shell is the same for all head sizes, namely 9.0 cm or 10.5 cm without front and rear visor. This is measured by placing a ruler across the helmet shell below the ear leather or over the front and back of the head and then measuring the vertical distance to the center using a wooden measuring stick.
Helmets with fittings and spikes have to have the same height of 21.0 - 21.3 cm, measured side by side over the spikes.
5. The sheepskin used as sweat leather has to be sumac tanned - which can be recognized by a yellowish-white colour on the back - to increase its waterproofness. The blackened side is not allowed to fade at all when rubbed with white paper and only slightly when rubbed with a moistened cloth. Machine sewing of the leather is allowed.
6. The helmet visors, of the same tanning and lacquering as the shell, are used in three sizes, depending on the head size. Like the ear leather, they can be machine-stitched; the number of stitches on the visors is ten to eleven per 3 cm.
The thickness of the leather is 2.0 - 2.8 mm for the front visor and 2.4 - 3.2 mm for the rear visor.
7. The split pins used to attach the visor trim and the spikebase to the helmet shell have to be hard soldered into the shell. The use of split pins inserted into the shell without solder is not permitted.
8. The metals used for the fittings have to be of the same alloy or color.
 - Aluminum bronze: 94 - 96 % copper, 6 - 4 % aluminum.
 - Nickel silver: 22 - 25 % nickel, 65 - 63 % copper, 13 - 12 % zinc.
 - The tombac sheet used for emblem contains 86 - 89 % copper, 14 - 11 % zinc.

A chemical analysis of the metal is only necessary if the coloration, durability and weight indicate the use of improper alloys.

* The helmet is considered dry as soon as it has regained about the same weight as before the water test.

9. The emblems have to rest exactly in the middle above the front visor, on the upper edge of the latter and fit snugly against the helmet shell. As there is only one size for each type, the emblems have a different distance from the edge of the spikebase disk for the different head sizes; for helmets with the smallest head size, they almost touch the edge of the spikebase disk.
10. The inside of the spikebase, around the cut-out into which the spike is soldered, has to have a bead-like elevation which, like the outside, rests on the leather of the helmet shell. This prevents the spikebase or spike from being pressed in or deformed. The actual spike has to be pressed out of one piece, i.e. without a soldered seam.
11. It is the weight:
- a) of the entire helmet:*
- | | |
|---------------------|------------------|
| for line infantry | : 360 g +/- 30 g |
| for line grenadiers | : 425 g +/- 35 g |
| for guard infantry | : 445 g +/- 35 g |
- for head sizes over 58 cm, the weight increases by up to 20 g.
- b) the individual parts, namely,
- 1) the helmet shell with visors, sweat leather, binding and adjustment straps :* 185,0 g +/- 20,0 g
 - 2) the fitting attached to the helmet shell, namely the

visor trim with two split pins	:* 17,0 g +/- 1,5 g
the back spine with washer and nut	: 15,5 g +/- 1,5 g
the spikebase with the spike and four split pins,	
- with fixed spike	: 55,0 g +/- 3,5 g
- with screwed spike	: 70,0 g +/- 3,5 g
- the metal disk inside of the helmet	: 15,0 g +/- 1,5 g
the two side rosettes with washers	: 11,0 g +/- 1,0 g
the front plates:	
- with FR, FWR or the Baden griffin	: 32,0 g +/- 3,0 g
- the guard eagle with star	: 52,0 g +/- 4,0 g

 with award ribbon and for Baden nickel-silver griffin with star the weight increases by 15 - 20 g compared to the eagle plate with FR.
 - 3) the chinstrap with fittings : 25,0 g +/- 3,0 g
 - 4) the chinscales with strap and buckle : 75,0 g +/- 8,0 g
 - 5) the cockade for enlisted men : 4,5 g +/- 0,5 g
 - 6) the hair bush funnel with top pin : 54,0 g +/- 6,0 g
12. Each helmet has to be stamped on the rear visor with the number of the head size, and inside the shell, below the washer, with the manufacturer's company name.

Shako

13. With regard to the leather and paintwork, the same requirements have to be applied as for the helmet (No. 1 to 3, 5 and 6), except that durability against pressure is not required. The thickness of the leather in the shell, including the lid, is 2.0 - 2.5 mm. The outer edge of the lid has to be slightly raised.
14. The height of the shako is the same for all head sizes; it is 11.5 cm on the side, measured from the lower edge of the lining to the upper edge of the lid. The total height with visors, measured vertically, is 15.5 cm; this is the same at the front and back. The lid has a diameter of 12.5 - 14.5 cm, depending on the head size.
15. The thickness of the leather on the front and rear visor is 2.5 - 3.3 mm. The bulge at the rear edge of the front visor has to be 4 mm thick and 6 mm wide.
16. The weight is:
- a) the complete shakos, *

* Due to the hygroscopic properties of the leather, the helmet or shako head is allowed to be 20 g heavier when delivered in winter or in summer in persistently wet weather.

for line and guard hunters	: 310,0 g +/- 20,0 g
b) the individual parts, namely,	
the shako with visors, valves, sweat leather,	
binding and adjustment straps*	: 244,0 g +/- 14,0 g
the eagle and the guard star	: 20,0 g +/- 2,0 g
the two rosettes with washers	: 11,0 g +/- 1,0 g
the chinstrap with fittings	: 25,0 g +/- 3,0 g
the National	: 12,0 g +/- 2,0 g
the hair bush funnel	: 40,0 g +/- 4,0 g

17. As for 12; the company stamp has to be on the inside in the center of the lid.

Helmet and shako covers

1. The fabric has to be completely shrink-free, but doesn't have to be waterproof. Thread count to the square centimeter: In the warp 15 in the weft 13 - 14. Slight deviations in the color shade compared to the sample can be disregarded.
2. The shape should be as close as possible to the shape of the helmet or shako; in particular, the front edge should not hang down over the lower edge of the front visor.
3. The weight is 30.0 g +/- 3.0 g for the helmet cover and the shako cover.

* See comments on No. 11

