DRAFT EAST AFRICAN STANDARD

Hammer — Specification — Part 1: Steel hammerhead

EAST AFRICAN COMMUNITY
Copyright notice

This EAC document is copyright-protected by EAC. While the reproduction of this document by participants in the EAC standards development process is permitted without prior permission from EAC, neither this document nor any extract from it may be reproduced, stored or transmitted in any form for any other purpose without prior written permission from EAC.

Requests for permission to reproduce this document for the purpose of selling it should be addressed as shown below or to EAC’s member body in the country of the requester:

© East African Community 2019 — All rights reserved
East African Community
P.O. Box 1096,
Arusha
Tanzania
Tel: + 255 27 2162100
Fax: + 255 27 2162190
E-mail: eac@eachq.org
Web: www.eac-quality.net

Reproduction for sales purposes may be subject to royalty payments or a licensing agreement. Violators may be prosecuted.
Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 042, Production and general engineering.

During the preparation of this standard, reference was made to the following document:

ISO 15601, Hammers — Technical specifications concerning steel hammer heads — Test procedures

Acknowledgement is hereby made for the assistance derived from this source.
Hammers — Specification — Part 1: Steel hammerhead

1 Scope

This Draft East Africa Standard specifies technical requirements, methods of sampling and testing of hammers with head made of steel. It applies to hammers only used to strike items having a maximum hardness of 46 HRC.

This Standard does not apply to steel hammer heads with a head mass of less than 100 g.

NOTE: Striking items of a greater hardness is liable to cause chipping, this necessitates choosing hammers with properties different from those defined in this Standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13061-1, Physical and mechanical properties of wood — Test methods for small clear wood specimens — Part 1: Determination of moisture content for physical and mechanical tests


3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Requirements

4.1 Heat-treatment and hardness

4.1.1 The head shall have a hardness of not less than 50 HRC and not more than 58 HRC.

4.1.2 The hardness at different points of the striking face shall be uniform within a total tolerance of 5 HRC.

4.1.3 The central portion of the hammer shall not be hardened and in the area near the eye of the hammer the hardness shall not exceed 35 HRC.

4.1.4 The hardened zone of the striking faces shall extend to a minimum depth of 3 mm; at this depth, the hardness shall be not less than 46 HRC and not more than that of the surface (see Figure 1).
4.1.5 In the case of ball pein hammer ends (see Figure 2) the 3 mm depth of hardness shall only apply at the centre of the ball along the centre line and tapering towards the ball diameter, in order to avoid the hardened zone extending to the rest of the hammer.

![Figure 1 — Depth of hardened zone](image1.png)

![Figure 2 — Depth of hardened zone for ball pein hammer heads](image2.png)

4.2 Cracks

All hammer heads shall be free of cracks.

Cracks are detected with appropriate means.

Other equivalent non-destructive test methods may be used.

4.3 Chamfer

When a chamfer on the edge of the striking face is necessary, it shall be at least 1/15 of the head width and have a slant of 40° to 50°.

![Figure 3 — Chamfer](image3.png)
4.4 Handle

Handles may be made of either steel, wood, plastic or any other material. For hammers fitted with a wooden handle, the moisture content of the handle at the time the test is carried out shall be between 10 % and 15 % in accordance with ISO 13061-1.

5 Test methods

5.1 Pull apart test

5.1.1 Prior to carrying out this test, two series of 25 vigorous blows with varying delivery angle (see Figure 4) shall be applied to a surface of hardness equal to or less than 46 HRC.

![Figure 4 — Variation of delivery angle](image)

5.1.2 The hammer head and the end of the handle shall be securely worked in a tensile testing machine or other suitable device.

5.1.3 A tensile load on the handle side (see Figure 5) and a compression load on the head side (see Figure 6) shall be applied gradually and without jerking.

5.1.4 Loads to be applied are given in Table 1.

5.1.5 For reverse assembled hammers with thermoplastic handles, only the compressive load shown in Figure 6 shall be applied.

5.1.6 After this test the hammer head and handle shall show no damage such as shifting of the handle in the eye or other defects that may reduce to its solidity.
Table 1 — Loads to be applied according to head mass

<table>
<thead>
<tr>
<th>Hammer head mass $M_g$</th>
<th>Tensile/compression load $F$ (min.) $N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100 \leq m &lt; 200$</td>
<td>1 400</td>
</tr>
<tr>
<td>$200 \leq m &lt; 300$</td>
<td>1 800</td>
</tr>
<tr>
<td>$300 \leq m &lt; 400$</td>
<td>2 500</td>
</tr>
<tr>
<td>$400 \leq m &lt; 500$</td>
<td>3 500</td>
</tr>
<tr>
<td>$500 \leq m &lt; 700$</td>
<td>3 500</td>
</tr>
<tr>
<td>$700 \leq m &lt; 1 250$</td>
<td>5 200</td>
</tr>
<tr>
<td>$1 250 \leq m &lt; 2 000$</td>
<td>7 000</td>
</tr>
<tr>
<td>$2 000 \leq m &lt; 4 000$</td>
<td>8 000</td>
</tr>
<tr>
<td>$4 000 \leq m &lt; 8 000$</td>
<td>9 000</td>
</tr>
<tr>
<td>$8 000 \leq m &lt; 12 000$</td>
<td>10 000</td>
</tr>
</tbody>
</table>

5.2 Handle bending test for claw hammers

5.2.1 Firmly keep the hammer head in a holding fixture with the axis of the handle parallel to the surface of the fixture (see Figure 7).
5.2.2 Apply a load, $F'$, perpendicular to the axis of the handle and close to the end, so as to obtain a 125 N.m torque, irrespective of the size of the hammer.

5.2.3 The load shall start at zero and be applied gradually, without jerking.

5.2.4 The test load shall be held for at least 10 s, after which the handle shall show no sign of damage nor exhibit any defect.

5.3 Grip adhesion test

5.3.1 For handles equipped with a grip, the grip shall not turn with respect to the handle when a 10 N.m torque is applied.

5.3.2 The test shall be carried out by applying an evenly distributed pressure on the whole of the grip surface. The necessary pressure shall not warp the grip.

5.4 Crack detection

The magnetic particle flow detection technique shall be used for checking cracks in which an alternating current of at least 15 mA/mm² is applied to the hammer head (see Figure 8).
6 Marking

Hammers shall be marked on the head permanently and legibly with the following information;

a) name of the manufacturer or initials or registered trademark;

b) mass of the hammer; and

c) country of origin.
Bibliography

ISO 15601, Hammers — Technical specifications concerning steel hammer heads — Test procedures