

BS EN 10360:2015



BSI Standards Publication

# Hot, warm or cold forging — Repair conditions prior to delivery

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**National foreword**

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A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

## Hot, warm or cold forging - Repair conditions prior to delivery

Pièces forgées à chaud, à mi-chaud ou à froid - Conditions  
de réparation avant livraisonWarm-, Halbwarm- oder Kaltschmiedeteile - Nacharbeit vor  
Lieferung

This European Standard was approved by CEN on 6 June 2015.

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## European foreword

This document (EN 10360:2015) has been prepared by Technical Committee ECISS/TC 111 "Steels castings and forgings", the secretariat of which is held by AFNOR.

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## **Introduction**

Visual inspection or other non-destructive tests carried out on steel forgings can identify surface discontinuities. Before delivery and where applicable, these discontinuities can be removed by grinding or by any other process, without affecting the workpiece/component functionality (see Clause 5).

## 1 Scope

This European Standard defines the forged components surface repair conditions and control to preserve their functionality.

## 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 2.1

#### **functionality of forging**

set of properties and characteristics of a workpiece/component that provides it with the capability of complying with the specified requirements

### 2.2

#### **repair**

set of operations carried out in order to remove detected surface defects

### 2.3

#### **prohibited repair area**

area of a workpiece/component where the repair is not permitted

### 2.4

#### **surface imperfection**

discontinuity identified as not affecting the function of the workpiece/component, which may be left without repair [1]

### 2.5

#### **surface defect**

discontinuity identified as affecting the workpiece/component function which shall be repaired [1]

## 3 Prohibited repair areas

The prohibited repair areas shall be specified by the purchaser, at time of enquiry and order.

Supplementary prohibited areas, which can be defined as consequence of the manufacturing process, shall be agreed between manufacturer and purchaser at time of enquiry and order.

## 4 Removal of surface imperfections

Surface imperfections shall be removed only by request of the purchaser. In case of agreement, the removal procedure shall be the same as for surface defects.

## 5 Removal of surface defects

### 5.1 Surface defects removal method

Surface defects shall be removed by grinding, scraping, polishing, chipping, machining or by any other process that preserves the workpiece/component functionality.

Surface defects shall be removed by welding or powder metallurgy only with the agreement of the purchaser.

The equipment used to remove the surface defects shall be suitable for the grade of the material, the location, the surface defect form and the workpiece/component geometry.

The manufacturer shall develop the method to avoid masking the imperfections and increasing the repairs.

If applicable, the processing should be carried out by successive passes perpendicular to surface defect direction.

Following agreement between the purchaser and the manufacturer, the repaired area of the workpiece/component can be retested by the original non-destructive testing (NDT) method

## **5.2 Surface condition of the repaired area**

In the repaired area, the surface shall not be altered by an excessive temperature rise and by the presence of sharp edges, chatter marks or grooves. Pits may remain after repair; their surface should remain in the continuity of the vicinity surface of the workpiece.

## **5.3 Operations carried out after the surface defects removal**

Upon agreement between the purchaser and the manufacturer, an operation which ensures the surface properties similar to those preceding repair can be carried out on the repaired area of the workpiece/component (e.g. shot-blasting, etc.)

If, at time of enquiry and order, no agreement has been made between manufacturer and purchaser, the operation is left at the discretion of manufacturer.

## **5.4 Acceptance rules for the repair process**

After repair, the surface of the workpiece/forged component shall fulfil the specified tolerances.

Surface tolerances shall be agreed at time of enquiry and in accordance with published standards, e.g. for the hot closed die steel forgings with EN 10243-1 or EN 10243-2, unless otherwise specified.

If the repaired workpiece/component does not fulfil the specified tolerances, a new agreement may be done between the purchaser and manufacturer.

## **6 Operator training**

The manufacturer shall take any necessary measures to train, qualify and follow up the operators entitled to perform the repair operation.



## Bibliography

- [1] ISO 7788:1985, *Steel — Surface finish of hot-rolled plates and wide flats — Delivery requirements*
- [2] EN 10243-1, *Steel die forgings — Tolerances on dimensions — Part 1: Drop and vertical press forgings*
- [3] EN 10243-2, *Steel die forgings — Tolerances on dimensions — Part 2: Upset forging made on horizontal forging machines*





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