

ICS 77.140.10

English Version

## Guidance for forming of structural steels in processing

Guide pour le formage des aciers de construction lors de  
leur mise en oeuvre

Hinweise für das Umformen von Baustählen bei der  
Verarbeitung

This Technical Report was approved by CEN on 13 March 2006. It has been drawn up by the Technical Committee ECISS/TC 10.

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## Contents

Page

Foreword .....	3
1 Scope .....	4
2 Terms and definitions .....	4
3 General principles .....	4
4 Hot forming .....	5
5 Cold forming .....	7
6 Flame-straightening .....	8
Bibliography .....	11

## Foreword

This Technical Report (CEN/TR 10347:2006) has been prepared by Technical Committee ECISS/TC 10 "Structural steels – Grades and qualities", the secretariat of which is held by NEN.

In the ECISS/TC 10 meeting of 8 and 9 December 1998 it was decided with Resolution ECISS/TC 10 no 2/1998 to publish ECSC IC 2 as a CEN report. The part on welding in ECSC IC 2 has been revised by CEN/TC 121 and has resulted in EN 1011-2. The part on formability has been revised in this CEN Technical Report.

## 1 Scope

This CEN Technical Report provides guidance for forming during processing of structural steel products conforming to EN 10025 Parts 2 to 6 and EN 10149 Parts 2 and 3. This Technical Report covers hot and cold forming processes and local hot forming used in flame-straightening operations.

This Technical Report does not cover the special measures necessary for the fabrication of structural components that are subjected predominantly to alternating stresses or that come into contact with aggressive media.

## 2 Terms and definitions

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

### 2.1

#### **hot forming**

forming at temperatures in the austenite range, generally around 900 °C depending on the chemical composition of the steel grade

### 2.2

#### **cold forming**

forming up to the highest temperature permissible for stress relieving, generally in the range of 530 °C to 580 °C

NOTE See the relevant part of EN 10025 (e.g. 7.3.1.1 of EN 10025-1:2004 and 7.4.1.1 of EN 10149-1:1995).

### 2.3

#### **flame-straightening**

local quick heating of a component with a short holding time (generally less than one minute) at the flame-straightening temperature

### 2.4

#### **flame-straightening temperature**

highest temperature arising in the component during flame-straightening

## 3 General principles

With rising minimum yield strength values for structural steels and with an increasing wall thickness of structural steel products, extra care needs to be taken during subsequent processing of steel products. Furthermore, the technical delivery conditions of steel products complying with EN 10025 and EN 10149 will depend on the actual process route used by the steel product manufacturer.

In general, suitable steel grades for the special forming situation should be selected. EN 10025 also defines special steel grades for cold forming and additional options for ensuring forming properties which should be preferably used. In cases which are not covered by these order options the steel manufacturer should be consulted. All steel grades of EN 10149 are suitable for cold forming.

In individual cases outside of the specific guidance given here, especially when using structural steels for the first time, forming should be based on prior experience. This may be based on pre-production procedure trials undertaken by the fabricator or on documented trials undertaken by the steel product manufacturer.

If a manufacturer wants to ensure that the hot forming, cold forming or flame-straightening process intended to be applied will not detrimentally influence the mechanical properties of the structure, a process verification should be performed.