SVENSK STANDARD
SS-EN 10372:2020

Kvalitetsspårning för platta stålprodukter – Märkning, läsning och informationshantering

Quality tracking system for flat steel products using barcode – Printing, reading and information processing

Svenska Institutet för Standarder

Språk: engelska/English
Utgåva: 1

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Fastställd: 2020-04-27
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Europastandarden EN 10372:2020 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 10372:2020.

The European Standard EN 10372:2020 has the status of a Swedish Standard. This document contains the official version of EN 10372:2020.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10372

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ICS 35.040.50; 77.140.50

English Version

Quality tracking system for flat steel products using barcode - Printing, reading and information processing

Système de suivi de la qualité des produits plats en acier utilisant des codes barres - Marquage, lecture et traitement de l'information

Qualitätsverfolgungssystem für Flachstahlprodukte mittels Barcode - Druck, Erfassung und Informationsverarbeitung

This European Standard was approved by CEN on 16 January 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 10372:2020) has been prepared by Technical Committee CEN/TC 459 "ECISS - European Committee for Iron and Steel Standardization[1]", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2020 and conflicting national standards shall be withdrawn at the latest by October 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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[1] Through its subcommittee SC 9 “Coated and uncoated flat products to be used for cold forming” (secretariat: AFNOR).

1 Scope

This document specifies a method using a barcoding system for tracing isolated defects that can be present in the following kinds of coated or uncoated steel flat products, for example:

— electro-galvanised surface;

— galvanised surface;

— galvannealed surface;

— cold rolled surface.

This method, named “quality tracking”, aims to transfer additional material information to steel users, in particular the location of some isolated defects, in a reliable way. This method enables the manufacturer or purchaser to remove blanks or coils containing defects.

The method uses a 1D barcode to identify each section of steel strip.

NOTE 1 The stakeholders most involved in this technique are suppliers of steel flat products, car makers, appliance makers, part manufacturers, blanking line builders, steel processors, service centres, etc. All stakeholders can benefit from this project since defects can be traced, and, therefore, the steel containing defects can be eliminated or set apart from the production line.

NOTE 2 In the first stages of development, this method was called “defect tracking” (see [3]) and has been changed into “quality tracking” at the beginning of the standardization process.

NOTE 3 Quality tracking can be applied to other types of coated or uncoated steel flat products such as pickled and oiled, organic coated, and steels for packaging. Quality tracking can be applied to coiled materials for which the technology of quality tracking is applicable.

NOTE 4 If quality tracking data are used outside of the purpose of quality tracking, it is under the responsibility of the user.

NOTE 5 Quality tracking can be applied to other materials than steel.

NOTE 6 The way to collect the information to be transferred to the user is out of the scope of this document.

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.

EN 1556, *Bar coding - Terminology*

EN 10020:2000, *Definition and classification of grades of steel*

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10079, *Definition of steel products*

EN 10204, *Metallic products - Types of inspection documents*

EN ISO/IEC 15416, *Information technology - Automatic identification and data capture techniques - Bar code print quality test specification - Linear symbols (ISO/IEC 15416)*

ISO /IEC 15417:2007, *Information technology - Automatic identification and data capture techniques - Code 128 barcode symbology specification*

ISO/IEC 16022, *Information technology - Automatic identification and data capture techniques – Data Matrix bar code symbology specification*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 10020:2000, EN 10021:2006, EN 10079, EN 10204, EN 1556, EN ISO/IEC 15416, ISO/IEC 15417, ISO IEC 16022 and the following apply.

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

• IEC Electropedia: available at http://www.electropedia.org/

• ISO Online browsing platform: available at https://www.iso.org/obp

3.1
quality tracking
action of finding previously detected isolated defects in a steel strip at the blanking line of the steel user by printing a barcode on the strip at regular intervals aiming at sorting out of the supply chain the parts containing defects

3.2
barcode
array of parallel rectangular bars and spaces arranged according to the encoding rules of a particular symbol specification in order to represent data in machine readable form

Note 1 to entry: See EN 1556.

3.3
code 128C
specific barcode that is used to mark positions on steel strips according to this document

Note 1 to entry: See ISO/IEC 15417.

3.4
barcode reading unit
BRU
device used to capture the data encoded in a barcode symbol consisting of two parts

a) the scanner, an input device sending signals proportional to the reflectivity of each successive element of the symbol to the decoder, and

b) the decoder, examining the signals from the scanner to translate them into recognizable or computer-compatible data

Note 1 to entry: See EN 1556.

Note 2 to entry: The decoder itself is sometimes erroneously called a reader.

3.5
compact data carrier
CDC
information carrier generated by the information system of the steelmaker containing the complementary information on the shape of a character string to be passed on by the steelmaker to the steel user

Note 1 to entry: The compact data carrier is dedicated to complementary information. It does not aim to address all 1D barcodes, but only to provide selected complementary information.

Note 2 to entry: The compact data carrier is considered as a second information carrier since the first one is the printed barcode to identify each metal unit.

3.6
mother coil
primary coil with a printed 1D barcode containing its specific coil identification (coil-ID)

Note 1 to entry: 1D barcode printing is performed by the steelmaker at the finishing line of the coil.

3.7
delivered coil
coil delivered to the steel user by the steelmaker

Note 1 to entry: It can be identical to the mother coil or constituted of several parts of mother coils.

3.8
metal unit
length of product that is linked to one barcode

3.9
barcode period
distance between the starting points of two consecutive barcodes on the mother coil

4 Abbreviations

BC	1D Barcode printed on the strip
BRU	Barcode Reading Unit reading the 1D barcode on the strip
CDC	Compact Data Carrier containing the complementary information on the shape of a character string to be passed on by steelmaker to the user
CPU	Central Processing Unit interpreting the 1D barcode content with the corresponding quality information to provide the right output to the user
URS	User Reading Solution combining BRU and CPU to provide the relevant information to the user
EDI	Electronic Data Interchange
QT	Quality Tracking

5 Principle

Isolated defects are unintentionally generated in steel strip at steelmaking and rolling stages.

NOTE 1 Slivers, blisters, local scratches are typical examples of isolated defects that can be present at the surface of coiled strips.

Advanced online automatic surface inspection systems can detect the defects at rolling stage. However, once the strip is coiled for delivery, it is then impossible to discern the position of the defects in the strip if no specific tracking system is implemented.

The steelmaker will print 1D barcodes on the strip surface in its finishing lines, such as this 1D barcode will be printed at evenly spaced intervals (typically every meter) all along the coil. Each specific 1D barcode will guarantee the traceability of each metal unit.

Quality Tracking involves the use of the CDC to pass on the complementary information to the user. This solution is the easiest way to start up Quality Tracking for both parties (steelmaker and user).

The steelmaker shall print the 1D barcodes on the strip surface at finishing line stage.

NOTE 2 Hot dip galvanising or electro-galvanising lines are typical examples of finishing lines.

Then, the steelmaker shall identify the quality related data (for example isolated defects) by means of an Inspection System (e.g. automatic surface inspection system) and transfer the relevant information to the user in a suitable format with the content of the CDC (the complementary information).

The steel user shall read the relevant information provided by the steelmaker in the CDC for a coil before using the coil.

The BRU of the steel user reads the 1D barcodes on the strip with their position information and combines this information with the data of the CDC and provides signals for processing actions. The processing actions should be agreed between supplier and user.

NOTE 3 There are several ways of transferring the CDC from the steel manufacturer to the steel user.

The sequence of operations performed by the steelmaker and steel user is shown in Figure 1.