
**Plastics pipes and fittings — Equipment for
fusion jointing polyethylene systems —**

**Part 3:
Operator's badge**

*Tubes et raccords en matières plastiques — Appareillage pour l'assemblage
par soudage des systèmes en polyéthylène —*

Partie 3: Carte d'identification de l'opérateur



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 12176 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12176-3 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 4, *Plastics pipes and fittings for the supply of gaseous fuels*.

ISO 12176 consists of the following parts, under the general title *Plastics pipes and fittings — Equipment for fusion jointing polyethylene systems*:

- Part 1: *Butt fusion*
- Part 2: *Electrofusion*
- Part 3: *Operator's badge*
- Part 4: *Traceability coding*

Annex A forms a normative part of this part of ISO 12176.

Plastics pipes and fittings — Equipment for fusion jointing polyethylene systems —

Part 3:

Operator's badge

1 Scope

This part of ISO 12176 describes the format and the contents of a fusion operator's badge.

The operator's badge is used during the construction of polyethylene (PE) piping systems for gas supply to identify the fusion operator. The operator's badge can be used to activate or deactivate the fusion-jointing equipment or to identify the operator.

The objective of this part of ISO 12176 is to achieve international interoperability between the operator's badge and the card-reading equipment of fusion-jointing equipment conforming to ISO 12176-1 or ISO 12176-2. The fusion-jointing equipment is required to read either the bar code or the magnetic-stripe code of the badge and to call up the corresponding data within the equipment in a standard format.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12176. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12176 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*.

ISO/IEC 7810:1995, *Identification cards — Physical characteristics*.

ISO/IEC 7811-2:1995, *Identification cards — Recording technique — Part 2: Magnetic stripe*.

ISO/IEC 7811-4:1995, *Identification cards — Recording technique — Part 4: Location of read-only magnetic tracks — Tracks 1 and 2*.

ISO/IEC 7811-6:1996, *Identification cards — Recording technique — Part 6: Magnetic stripe — High coercivity*.

ISO/IEC 16390:1999, *Information technology — Automatic identification and data capture techniques — Bar code symbology specifications — Interleaved 2 of 5*.

3 Terms and definitions

For the purposes of this part of ISO 12176, the following terms and definitions apply.

3.1 fusion operator

person trained to carry out fusion jointing between polyethylene (PE) pipes and/or fittings based on a written procedure agreed by the pipeline operator

The fusion operator is trained for one or more fusion-jointing procedures, involving the operation of manual and/or automatic fusion-jointing machines.

3.2 competent organization

company authorized by the national authorities or by the pipeline operator to organize training courses for fusion operators and to issue fusion operators' badges

4 Data carrier

The fusion operator's badge shall be designed in the form of a bar code card, magnetic-stripe card or microchip card.

In the case of a bar code card, the code shall be the "2 of 5 interleaved" type conforming to ISO/IEC 16390.

In the case of a magnetic card, the card shall conform to the requirements for ID-1 given in ISO/IEC 7810. The characteristics of the magnetic stripe shall conform to the International Standards given in Table 1, depending on stripe coercivity. The data shall be stored on track 1.

The card shall not contain physically embossed characters.

Table 1 — Magnetic-stripe characteristics

Attribute	Low coercivity	High coercivity
Stripe properties and encoding method	ISO/IEC 7811-2	ISO/IEC 7811-6
Track location and dimensions	ISO/IEC 7811-4	ISO/IEC 7811-6
NOTE The use of high coercivity is recommended, for reasons of durability.		

Both bar code and magnetic-stripe cards shall contain the same data.

In the case of a microchip card, the code shall contain the same data, in the same order, as the other types of card. The data shall be encoded in accordance with a relevant International Standard.

5 Encoding of data

5.1 General

Whatever the type of badge, all data stored on the badge shall be arranged in a single sequential series representing a unique code.

The only difference between the magnetic-card and bar code systems is that the magnetic-card code starts with an identifier, whereas the bar code uses an entrance code and has the identifier at the end.

5.2 Characters to be used

Whatever the type of badge, all characters shall be taken from the ASCII series unless otherwise specified, as follows:

- the upper-case letters A to Z: ASCII 65 to 90;
- the digits 0 to 9: ASCII 48 to 57;
- three special characters "space", "asterisk" and "semi-colon": ASCII 32, 42 and 59.

For encoding a magnetic card, the seven-bit ASCII coded character set shall be used rather than the six-bit coded character set specified in Table 4 of ISO/IEC 7811-2:1995 and ISO/IEC 7811-6:1996.

For the code on a magnetic stripe, a separator shall be used as the identifier and to separate fields.

No separators shall be used in a bar code.

5.3 Language codes

The language code shall be taken from Table 2:

Table 2 — Language codes

01 English	14 Czech/Slovak
02 French	15 Polish
03 Spanish	16 Hungarian
04 German	17 Bulgarian
05 Italian	18 Romanian
06 Portuguese	19 Chinese
07 Dutch	20 Russian
08 Danish	21 Japanese
09 Norwegian	22 Korean
10 Swedish	23 Arabic
11 Finnish	24 Hebrew
12 Greek	25 Croatian
13 Turkish	26 Slovenian

NOTE If there is a need for other languages, additional language codes will be included at the first revision of this part of ISO 12176.

5.4 Examples of codes

5.4.1 EXAMPLE 1: Codes on magnetic cards

NOTE The data is located on track 1.

Z2,MSA,AAAAAA;BB;BB;CCC;DD;EEE;FF;

5.4.2 EXAMPLE 2: Bar codes

See Table 3.

Table 3 — Example of a bar code

Structure	NAAAAAAAAAAAAABBBBCCDDDEEEFFZ Encoding: 2 of 5 interleaved	
Example	300000041424312017564039002033	
3	Entrance code	Number of characters used in the next field
Badge number (fusion operator identification)	414243	IJK
Expiry date	1201	December 2001
Country	756	Switzerland
Competent organization	4039	HG
Skill	002	Electrofusion jointing, automatic
Language	03	Spanish
3	Identifier	Symbol check + 2

6 Data on badge

The operator's badge shall have an entrance code or identifier followed by a series of data fields. All fields shall be completely filled with the relevant coding; when no data are available or no check is required, the field shall be completed with the necessary number of "0" (zero) characters.

In the set of codes for the operator's skills, two codes (64 and 128) shall be left unused for further updating of this part of ISO 12176. These unused codes shall not be used for any other purpose.

The number of characters given in Table 4 shall be considered as fixed; this means that the code structure cannot be shortened. Empty spaces in a field shall be filled with zeros in front (i.e. on the left-hand side) of the characters already in the field.

Table 4 — Code structure

Field	Information given	Code	
		Magnetic card	Bar code
Identifier	Code indicating that the information concerns an operator's badge	Z2,MSA, (at start of code)	One single-digit numeric character, Z (at end of code) Contents = symbol check + 2
Entrance code	Code indicating the number of digits used in the next field to identify the operator (for bar codes only)		One single-digit numeric character, N Maximum value 6
Operator	Operator's personal identification code	Six numeric characters, AAAAAA;	Six two-digit numeric characters, AAAAAA (ASCII)
Expiry date	Expiry date of badge (month and year)	Two two-digit numeric characters with a separator in the middle, BB;BB;	Two two-digit numeric characters, BBBB
Country	Country where badge was issued (country code in accordance with ISO 3166-1)	One three-digit numeric character, CCC;	One three-digit numeric character, CCC
Competent organization	Organization that issued the batch (codes to be defined at national level)	Two alphanumeric characters, DD;	Two two-digit numeric characters, DDDD (ASCII)
Skills	List of authorized tasks (one or more can be indicated by adding the applicable code-numbers together): 1: Electrofusion, manual 2: Electrofusion, automatic 4: Butt fusion, manual 8: Butt fusion, automatic 16: Socket/saddle fusion 32: Induction fusion 64: See clause 6 128: See clause 6 256: Responsible person	Three numeric characters, EEE;	Three numeric characters, EEE
Language	Language of operator (language code in accordance with Table 2) (determines language of display on control unit)	One two-digit numeric character, FF	One two-digit numeric character, FF