

**SLOVENSKI STANDARD**  
**oSIST prEN ISO 13916:2015**  
**01-december-2015**

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**Varjenje - Navodilo za merjenje temperature predgrevanja, medvarkovne temperature in temperature dogrevanja (ISO/DIS 13916:2015)**

Welding - Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature (ISO/DIS 13916:2015)

Schweißen - Anleitung zur Messung der Vorwärm-, Zwischenlagen- und Haltetemperatur (ISO/DIS 13916:2015)

Soudage - Lignes directrices pour le mesurage de la température de préchauffage, de la température entre passes et de la température de maintien du préchauffage (ISO/DIS 13916:2015)

**Ta slovenski standard je istoveten z: prEN ISO 13916:2015**

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**ICS:**

25.160.10 Varilni postopki in varjenje Welding processes

**oSIST prEN ISO 13916:2015**

**en**



# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 13916

ISO/TC 44/SC 10

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## Welding — Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature

*Soudage — Lignes directrices pour le mesurage de la température de préchauffage, de la température entre passes et de la température de maintien du préchauffage*

ICS: 25.160.10

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### ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

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ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13916 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC , .

This second/third/... edition cancels and replaces the first/second/... edition (ISO 13916:1996), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

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# Welding — Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature

## 1 Scope

This standard specifies requirements for the measurement of preheating temperature, interpass temperature and preheat maintenance temperature for fusion welding. This standard may also be applied as appropriate in the case of other welding processes. This standard does not cover the measurement of post weld heat treatment temperatures.

## 2 Terms and definitions

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

### 2.1

#### preheating temperature

$T_p$

temperature of the workpiece in the weld zone immediately prior to any welding operation

Note 1 to entry: It is normally expressed as a minimum and is usually equal to the minimum interpass temperature.

### 2.2

#### interpass temperature

$T_i$

temperature in a multi-run weld and adjacent parent metal immediately prior to the application of the next run.

Note 1 to entry: It is normally expressed as a maximum temperature.

### 2.3

#### preheat maintenance temperature

$T_m$

minimum temperature in the weld zone which shall be maintained if welding is interrupted

## 3 Requirements

### 3.1 Point of measurement

The temperature measurement shall normally be made on the surface of the workpiece facing the welder, at a distance of  $A = 4 \times t$ , but not more than 50 mm, from the longitudinal edge of the groove (see Figure 1). This shall apply for workpieces thickness  $t$  not exceeding 50 mm in the weld.

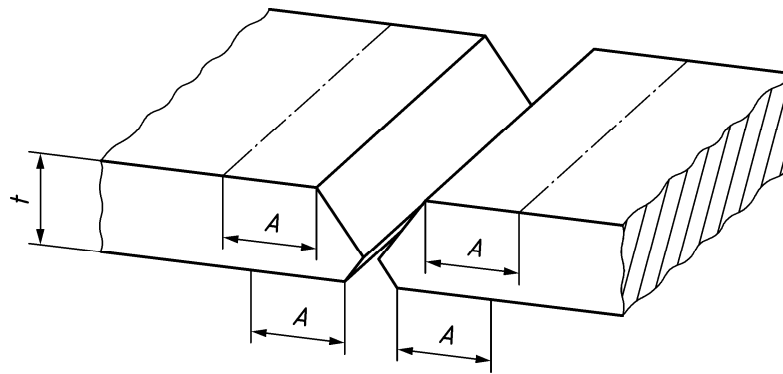
When the thickness exceeds 50 mm, the required temperature shall exist in the parent metal for a distance of minimum 75 mm or as otherwise agreed in any direction from the Joint preparation. Where practicable, the temperature shall be measured on the face opposite to that being heated. Otherwise, the temperature shall be

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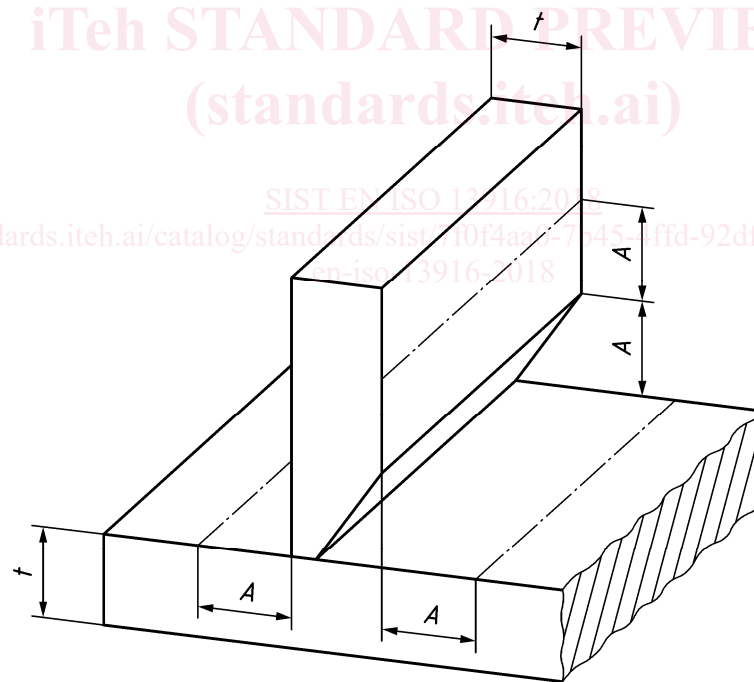
confirmed on the heated face at a time after removal of the heat source related to parent metal thickness to allow for temperature equalization. Where fixed permanent heaters are in use and there is no access to the reverse face for temperature measurement, readings shall be taken on the exposed parent metal surface immediately adjacent to the weld preparation. The time allowed for the temperature equalization shall be of the order of 2 min for each 25 mm of parent metal thickness.

Interpass temperature shall be measured on the weld metal or the immediately adjacent parent metal.

Dimensions in millimetres



a) butt joint



b) fillet joint

### Key

$t \leq 50$  mm:  $A = 4 \times t$ , max. 50 mm

$t > 50$  mm:  $A = \text{min. } 75$  mm

Figure 1 — Distance between points of measurement



### 3.2 Time of measurement

Interpass temperature shall be measured in the weld area immediately before passage of the arc.

If the preheat maintenance temperature is specified it shall be monitored during the period of welding interruption.

### 3.3 Test equipment

Equipment used for temperature measurement should be specified in the welding procedure specifications, e.g.:

- temperature sensitive materials (e.g. crayons or paints) (TS);
- contact thermometer (CT);
- thermocouple (TE);
- optical or electrical devices for contactless measurement (TB).

## 4 Test report

If a test report is required, it shall refer to this standard and give the following minimum information in accordance with the specification in welding procedure specification:

- measured preheating temperature, in °C;
- measured interpass temperature, in °C;
- measured preheat maintenance temperature, in °C;
- any deviation from this standard, if applicable.

## 5 Designation

Examples of designation, which should be used in test reports:

### 5.1 Example 1

A preheating temperature  $T_p$  measured only once in accordance with this standard as 155 °C ( $T_p$  155) using a contact thermometer (CT) shall be designated as follows:

Temperature ISO 13916:2015 —  $T_p$  155 — CT

### 5.2 Example 2

An interpass temperature  $T_i$  measured more than once in accordance with this standard as 130 °C, 153 °C and 160 °C ( $T_i$  130/160) using a thermocouple (TE) shall be designated as follows:

Temperature ISO 13916:2015 —  $T_i$  130/160 — TE

## Bibliography

- [1] ISO 17662, *Welding — Calibration, verification and validation of equipment used for welding, including ancillary activities*

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