

वेल्डिंग और संबद्ध प्रक्रियाएं — शब्दावली  
भाग 1 सामान्य शर्तें  
( पहला पुनरीक्षण )

Welding and Allied Processes —  
Vocabulary  
Part 1 General Terms  
( First Revision )

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## NATIONAL FOREWORD

This Indian Standard (Part 1) (First Revision) which is identical to ISO/TR 25901-1 : 2016 'Welding and allied processes — Vocabulary — Part 1: General terms' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendation of the Welding General and its Applications Sectional Committee and approval of the Metallurgical Engineering Division Council.

This standard was first published in 1957. In order to ensure harmonization of the vocabulary used in the field of welding on an international level, the Committee decided to revise this standard to bring it in line with ISO standards by splitting in four parts as the requirements of IS 812 : 1957 are covered in multiple ISO standards.

This Indian Standard is published in four parts. The other parts in this series are:

- Part 2 Health and safety
- Part 3 Welding processes
- Part 4 Arc welding

The text of ISO standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminologies and conventions are, however, not identical with those used in Indian Standard. Attention is especially drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, it should be read as 'Indian Standard'; and
- b) Comma (,) has been used as a decimal marker, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Indian Standard

# WELDING AND ALLIED PROCESSES — VOCABULARY

## PART 1 GENERAL TERMS

( First Revision )

### 1 Scope

This part of ISO/TR 25901 contains general terms and definitions applicable to welding and allied processes.

It does not contain terms and definitions related to specific processes or particular aspects of welding and allied processes that are covered in other parts of this Technical Report (see Foreword) or in other ISO standards.

In the main body of this part of ISO/TR 25901, terms are arranged in a systematic order. [Annex A](#) provides an index in which all terms are listed alphabetically with reference to the appropriate subclause. In addition, it provides French translations, covering two of the three official ISO languages (English, French and Russian). German translations are also provided; these are published under the responsibility of the member body for Germany (DIN), and are given for information only.

NOTE 1 Only the terms given in the official languages (English, French and Russian) are to be considered as ISO terms and definitions.

NOTE 2 All these terms and definitions are also available on the ISO Online Browsing Platform (OBP): <https://www.iso.org/obp/ui/>

### 2 Terms and definitions

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

#### 2.1 Terms related to welding and allied processes

##### 2.1.1 General terms

###### 2.1.1.1

###### **welding**

joining process in which two or more parts are united producing a continuity in the nature of the workpiece material(s) by means of heat or pressure or both, and with or without the use of *filler material* ([2.1.10.4](#))

Note 1 to entry: Welding processes may be used also for *surfacing* ([2.1.9.1](#)) and remelting.

###### 2.1.1.2

###### **fusion welding**

*welding* ([2.1.1.1](#)) involving localized melting without the application of external force in which the fusion surface(s) has (have) to be melted with or without addition of *filler material* ([2.1.10.4](#))

###### 2.1.1.3

###### **weld**

result of *welding* ([2.1.1.1](#))

Note 1 to entry: The weld includes the *weld metal* ([2.1.2.1](#)) and the *heat-affected zone* ([2.1.2.2](#)).

**2.1.1.4**

**weldment**

assembly incorporating one or more *welded joint(s)* ([2.1.4.2](#))

**2.1.1.5**

**parent material**

**base material**

material to be joined, or surfaced, by *welding* ([2.1.1.1](#)), braze welding or brazing

**2.1.1.6**

**parent material thickness**

**material thickness**

*nominal thickness* ([2.1.7.7](#)) of the materials to be welded

**2.1.1.7**

**parent metal**

**base metal**

metallic *parent material* ([2.1.1.5](#))

**2.1.1.8**

**manual welding**

*welding* ([2.1.1.1](#)) in which the *electrode* ([2.3.8](#)) holder, gun, *torch* ([2.3.9](#)) or blowpipe is manipulated by hand

**2.1.1.9**

**partly mechanized welding**

**semiautomatic welding**

*manual welding* ([2.1.1.8](#)) where wire feed is mechanized

**2.1.1.10**

**mechanized welding**

**fully mechanized welding**

*welding* ([2.1.1.1](#)) where the required *welding parameters* ([2.4.1](#)) are maintained by mechanical or electronic means

Note 1 to entry: Manual adjustment of welding parameters by the *welding operator* ([2.5.25](#)) during welding is possible.

**2.1.1.11**

**automatic welding**

*welding* ([2.1.1.1](#)) in which all operations are performed without *welding operator* ([2.5.25](#)) intervention during the process

Note 1 to entry: Manual adjustment of *welding parameters* ([2.4.1](#)) by the welding operator during welding is not possible.

**2.1.1.12**

**robotic welding**

*welding* ([2.1.1.1](#)) that is performed and controlled by robotic equipment

**2.1.1.13**

**gouging**

thermal cutting process variation that forms a groove by melting or burning

**2.1.1.14**

**arc gouging**

*gouging* ([2.1.1.13](#)) using an arc cutting process variation

**2.1.1.15**

**air-arc gouging**

*gouging* ([2.1.1.13](#)) using a carbon *electrode* ([2.3.8](#)) and compressed air

## 2.1.2 Characterization of welds

### 2.1.2.1

#### **weld metal**

all metal melted during *welding* (2.1.1.1) and retained in the *weld* (2.1.1.3)

### 2.1.2.2

#### **heat-affected zone**

##### **HAZ**

portion of non-melted *parent metal* (2.1.1.7) whose microstructure has been affected

### 2.1.2.3

#### **weld zone**

zone containing the *weld metal* (2.1.2.1) and the *heat-affected zones* (2.1.2.2)

### 2.1.2.4

#### **deposited metal**

filler metal that has been added during *welding* (2.1.1.1)

### 2.1.2.5

#### **fusion line**

interface between the *weld metal* (2.1.2.1) and the non-melted *parent metal* (2.1.1.7) as determined on the cross section of a *weld* (2.1.1.3)

### 2.1.2.6

#### **fusion zone**

in the *weld metal* (2.1.2.1), part of the *parent metal* (2.1.1.7) that has been melted, as determined on the cross section of a *weld* (2.1.1.3)

### 2.1.2.7

#### **all-weld metal**

*weld metal* (2.1.2.1) consisting of *deposited metal* (2.1.2.4) without *dilution* (2.1.2.12)

### 2.1.2.8

#### **weld pool**

##### **molten pool**

pool of liquid metal formed during *fusion welding* (2.1.1.2)

Note 1 to entry: In electroslag welding, the term includes the *slag* (2.1.10.9) bath.

### 2.1.2.9

#### **as welded**

condition of the *weld* (2.1.1.3) after *welding* (2.1.1.1), prior to any subsequent thermal, mechanical, or chemical treatments

Note 1 to entry: For alloys that may undergo natural ageing (e.g. some aluminium alloys), the as welded condition lasts only for a limited period of time.

### 2.1.2.10

#### **ferrite number**

##### **FN**

arbitrary standardized value designating the ferrite content of nominally austenitic or austenitic-ferritic (duplex) type stainless steel *weld metal* (2.1.2.1) based on its magnetic properties

### 2.1.2.11

#### **metallurgical deviation**

<*welding*> changes in the mechanical properties and/or metallurgical structure of the *weld metal* (2.1.2.1) or *heat-affected zone* (2.1.2.2) compared to the properties of the *parent metal* (2.1.1.7)

#### 2.1.2.12

##### **dilution**

mixing of melted *parent metal* (2.1.1.7) and *deposited metal* (2.1.2.4) expressed as a ratio of the melted parent metal to the total melted mass

#### 2.1.2.13

##### **dilution rate**

*dilution* (2.1.2.12) expressed as a percentage

#### 2.1.2.14

##### **residual welding stress**

stress remaining in a metal part or structure as a result of *welding* (2.1.1.1)

#### 2.1.2.15

##### **strength weld**

*weld* (2.1.1.3) designed to withstand stress

#### 2.1.2.16

##### **joint efficiency**

ratio of strength of a *joint* (2.1.4.1) to the strength of the *parent metal* (2.1.1.7), expressed as a percentage

### 2.1.3 Imperfections

#### 2.1.3.1

##### **imperfection**

discontinuity in the *weld* (2.1.1.3) or a deviation from the intended geometry

Note 1 to entry: Imperfections are cracks, lack of penetration, porosity, *slag* (2.1.10.9) inclusions.

#### 2.1.3.2

##### **internal imperfection**

*imperfection* (2.1.3.1) that is not open to a surface or not directly accessible

#### 2.1.3.3

##### **systematic imperfection**

*imperfections* (2.1.3.1) that are repeatedly distributed in the *weld* (2.1.1.3) over the weld lengths to be examined

#### 2.1.3.4

##### **projected area**

area where *imperfections* (2.1.3.1) distributed along the volume of the *weld* (2.1.1.3) under consideration are imaged two-dimensionally

#### 2.1.3.5

##### **hot crack(s)**

material separations occurring at high temperatures along the grain boundaries (dendrite boundaries) when the level of strain and the strain rate exceed a certain level

Note 1 to entry: Small cracks visible only at magnifications greater than 50×, are often described as microcracks.

#### 2.1.3.6

##### **solidification crack**

*hot crack* (2.1.3.5) formed during solidification from the liquid phase of *weld metals* (2.1.2.1)

Note 1 to entry: It usually extends up to the surface of the weld metal, but sometimes can be subsurface.

#### 2.1.3.7

##### **liquation crack**

*hot crack* (2.1.3.5) formed by liquation in the *heat-affected zone* (2.1.2.2) of the *parent material* (2.1.1.5) or in multirun welds where *weld metal* (2.1.2.1) is reheated by subsequent *runs* (2.1.8.4)



#### 2.1.3.8

##### **ductility dip crack**

*hot crack* ([2.1.3.5](#)) formed during *welding* ([2.1.1.1](#)) by a reduction in hot ductility

Note 1 to entry: As with a *liquation crack* ([2.1.3.7](#)), it can occur in the *heat-affected zone* ([2.1.2.2](#)) of the *parent material* ([2.1.1.5](#)) or in multirun welds.

#### 2.1.3.9

##### **cold crack(s)**

local rupture (intergranular or transgranular) appearing in a *weld* ([2.1.1.3](#)) as a result of a critical combination of microstructure, stress and hydrogen content

### 2.1.4 Type of joints

#### 2.1.4.1

##### **joint**

junction of workpieces or the edges of workpieces that are to be joined or have been joined

#### 2.1.4.2

##### **welded joint**

assembly that is produced by *welding* ([2.1.1.1](#)) together two or more parts

#### 2.1.4.3

##### **multiple joint**

type of *joint* ([2.1.4.1](#)) where three or more parts meet at any required angles to each other

#### 2.1.4.4

##### **parallel joint**

type of *joint* ([2.1.4.1](#)) where the parts lie parallel to each other

EXAMPLE In explosive cladding.

#### 2.1.4.5

##### **butt joint**

type of *joint* ([2.1.4.1](#)) where the parts lie in the same plane and against one another at an angle of 135° to 180°

#### 2.1.4.6

##### **T-joint**

*angle joint* ([2.1.4.8](#)) where the parts meet each other forming a T-shape

#### 2.1.4.7

##### **lap joint**

type of *joint* ([2.1.4.1](#)) where the parts lie parallel to each other (0° to 5°) and overlap each other

#### 2.1.4.8

##### **angle joint**

type of *joint* ([2.1.4.1](#)) where one part meets the other at an acute angle greater than 5° but not more than 90°

Note 1 to entry: For a *fillet weld* ([2.1.6.11](#)), the angle is over 5° and less than 45°.

Note 2 to entry: For a *butt weld* ([2.1.6.3](#)), the angle is between 45° to 90° inclusive.

#### 2.1.4.9

##### **corner joint**

type of *joint* ([2.1.4.1](#)) where two parts meet at their edges at an angle between 30° and 135° to each other

#### 2.1.4.10

##### **edge joint**

type of *joint* ([2.1.4.1](#)) where two parts meet at their edges at an angle of 0° to 30°

#### 2.1.4.11

##### **cross joint**

type of *joint* (2.1.4.1) where two parts lie crossing over each other

EXAMPLE Wires that cross over each other.

#### 2.1.4.12

##### **cruciform joint**

type of *joint* (2.1.4.1) where two parts lying in the same plane each meet, at right angles, a third part lying between them

#### 2.1.4.13

##### **homogeneous joint**

*welded joint* (2.1.4.2) in which the *weld metal* (2.1.2.1) and *parent material* (2.1.1.5) have no significant differences in mechanical properties and/or chemical composition

Note 1 to entry: A *welded joint* (2.1.4.2) made of similar *parent materials* (2.1.1.5) without filler metal is considered homogeneous.

#### 2.1.4.14

##### **heterogeneous joint**

*welded joint* (2.1.4.2) in which the *weld metal* (2.1.2.1) and *parent material* (2.1.1.5) have significant differences in mechanical properties and/or chemical composition

#### 2.1.4.15

##### **dissimilar material joint**

*welded joint* (2.1.4.2) in which the *parent materials* (2.1.1.5) have significant differences in mechanical properties and/or chemical composition

### 2.1.5 Joint preparations

#### 2.1.5.1

##### **edge preparation**

surface prepared on the edges of a part to be welded

#### 2.1.5.2

##### **joint preparation**

##### **weld preparation**

configuration of the workpieces to be joined after each individual part has been suitably prepared and assembled

#### 2.1.5.3

##### **fusion face**

surface of the *parent metal* (2.1.1.7) to be melted during *welding* (2.1.1.1)

#### 2.1.5.4

##### **feather edge**

complete absence of a *root face* (2.1.5.10)

#### 2.1.5.5

##### **gap**

##### **air gap**

distance at any cross section between edges, ends or surfaces to be joined

#### 2.1.5.6

##### **edge distance**

distance between the centre of a *weld* (2.1.1.3) and the nearest edge of the workpiece

#### 2.1.5.7

##### **root**

DEPRECATED: root of weld

zone on the opposite side from where the *welding* (2.1.1.1) was performed

#### 2.1.5.8

##### **root gap**

*gap* (2.1.5.5) between the *root faces* (2.1.5.10)

#### 2.1.5.9

##### **root radius**

radius of the curved portion of the *fusion face* (2.1.5.3) in a part prepared for a single-J, single-U, double-J or double-U weld

#### 2.1.5.10

##### **root face**

portion of a *fusion face* (2.1.5.3) that is not beveled or grooved

#### 2.1.5.11

##### **land**

part of a *fusion face* (2.1.5.3) that supports the *weld pool* (2.1.2.8)

Note 1 to entry: An example is the horizontal area between the *root face* (2.1.5.10) and the curved part of a J or U preparation.

#### 2.1.5.12

##### **bevel angle**

angle between the bevel of a *joint* (2.1.4.1) member and a plane perpendicular to the surface of the member

#### 2.1.5.13

##### **included angle**

##### **groove angle**

angle between the planes of the *fusion faces* (2.1.5.3) of parts to be welded

### 2.1.6 Types of welds

#### 2.1.6.1

##### **full penetration weld**

*weld* (2.1.1.3) with a complete *fusion penetration* (2.1.7.3)

#### 2.1.6.2

##### **partial penetration weld**

*weld* (2.1.1.3) in which the *fusion penetration* (2.1.7.3) is intentionally less than full penetration

#### 2.1.6.3

##### **butt weld**

##### **groove weld**

*weld* (2.1.1.3) other than a *fillet weld* (2.1.6.11) made in a groove or in a square preparation

#### 2.1.6.4

##### **single-J butt weld**

*butt weld* (2.1.6.3) in a single-J preparation

#### 2.1.6.5

##### **double-J butt weld**

*butt weld* (2.1.6.3) in a double-J preparation

#### 2.1.6.6

##### **single-U butt weld**

*butt weld* (2.1.6.3) in a single-U preparation

**2.1.6.7**

**double-U butt weld**

*butt weld* ([2.1.6.3](#)) in a double-U preparation

**2.1.6.8**

**single-V butt weld**

*butt weld* ([2.1.6.3](#)) in a single-V preparation

**2.1.6.9**

**double-V butt weld**

*butt weld* ([2.1.6.3](#)) in a double-V preparation

**2.1.6.10**

**square butt weld**

*butt weld* ([2.1.6.3](#)) in a square preparation

**2.1.6.11**

**fillet weld**

triangular *weld* ([2.1.1.3](#)) between two or more parts for joining a *T-joint* ([2.1.4.6](#)), *corner joint* ([2.1.4.9](#)) or *lap joint* ([2.1.4.7](#))

**2.1.6.12**

**plug weld**

*weld* ([2.1.1.3](#)) made by filling a circular or elongated hole in one part of a workpiece with filler metal so as to join it to the surface of an overlapping part exposed through the hole

**2.1.6.13**

**seal weld**

*weld* ([2.1.1.3](#)) intended primarily to provide tightness against leakage of gas or fluid

**2.1.6.14**

**slot weld**

*weld* ([2.1.1.3](#)) between two overlapping parts made by depositing a *fillet weld* ([2.1.6.11](#)) round the periphery of a hole in one part so as to join it to the surface of the other part exposed through the hole

**2.1.6.15**

**intermittent weld**

series of weld elements made at intervals along a *joint* ([2.1.4.1](#))

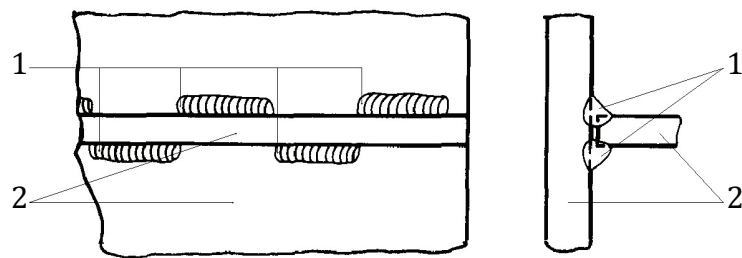
**2.1.6.16**

**staggered intermittent weld**

*intermittent weld* ([2.1.6.15](#)) on each side of a *joint* ([2.1.4.1](#)) arranged so that the welds on one side lie opposite to the spaces on the other side along the joint

Note 1 to entry: These are usually *fillet welds* ([2.1.6.11](#)) in *T-joints* ([2.1.4.8](#)) and *lap joints* ([2.1.4.7](#)).

Note 2 to entry: A staggered intermittent weld is illustrated in [Figure 1](#).



**Key**

- 1 weld
- 2 workpiece

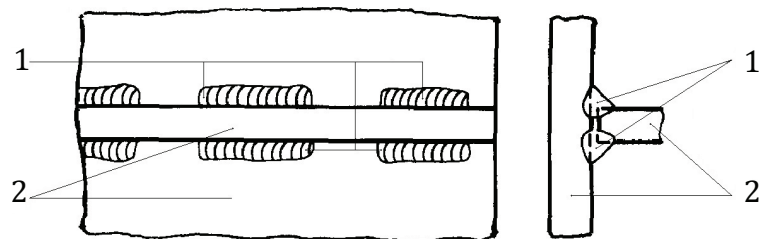
**Figure 1 — Staggered intermittent weld**

**2.1.6.17  
chain intermittent weld**

*intermittent weld* (2.1.6.15) on each side of a *joint* (2.1.4.1) arranged so that the welds lie opposite to one another along the joint

Note 1 to entry: These are usually *fillet welds* (2.1.6.11) in *T-joints* (2.1.4.8) and *lap joints* (2.1.4.7).

Note 2 to entry: A chain intermittent weld is illustrated in [Figure 2](#).



**Key**

- 1 weld
- 2 workpiece

**Figure 2 — Chain intermittent weld**

**2.1.6.18  
flare-bevel weld**

*butt weld* (2.1.6.3) between a joint member with a curved surface and another with a planar surface

**2.1.6.19  
flare-V weld**

*butt weld* (2.1.6.3) between two members with curved surfaces

**2.1.7 Weld details**

**2.1.7.1  
weld width**

shortest distance between the outer toes of the surface of a *weld* (2.1.1.3)

2.1.7.2

**weld thickness**

thickness of the *weld metal* (2.1.2.1), including any reinforcements

2.1.7.3

**fusion penetration**

depth to which the *fusion face* (2.1.5.3) of the *parent metal* (2.1.1.7) has been fused

2.1.7.4

**penetration depth**

**deposit thickness**

DEPRECATED: weld metal thickness

thickness of the *weld metal* (2.1.2.1), excluding any reinforcement

2.1.7.5

**leg length**

distance from the actual or projected intersection of the *fusion faces* (2.1.5.3) and the toe of a *fillet weld* (2.1.6.11), measured across the fusion face

2.1.7.6

**throat thickness**

thickness of a *fillet weld* (2.1.6.11)

2.1.7.7

**nominal thickness**

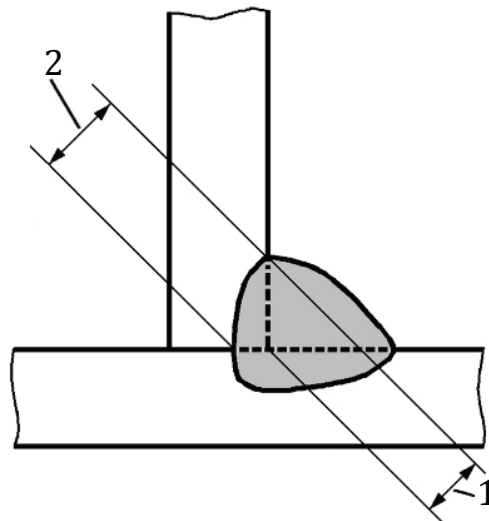
thickness specified in material standards without tolerances

2.1.7.8

**nominal throat thickness**

design value of the height of the largest isosceles triangle that can be inscribed in the section of a *fillet weld* (2.1.6.11)

Note 1 to entry: Nominal throat thickness is illustrated in [Figure 3](#) as item 1.



**Key**

- 1 nominal throat thickness
- 2 deep penetration throat thickness

**Figure 3 — Nominal throat thickness**

### 2.1.7.9

#### **deep penetration throat thickness**

*nominal throat thickness* (2.1.7.8) or *effective throat thickness* (2.1.7.10) to which a certain amount of *fusion penetration* (2.1.7.3) is added

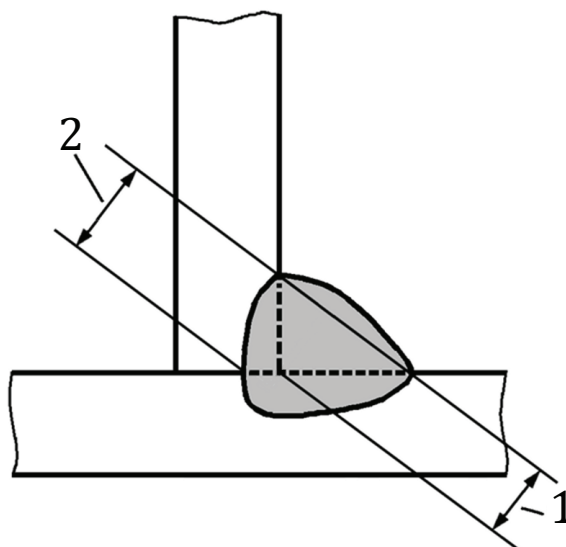
Note 1 to entry: Deep penetration throat thickness is illustrated in Figures 3 and 4 as item 2.

### 2.1.7.10

#### **effective throat thickness**

design value of the height of the largest triangle that can be inscribed in the section of a *fillet weld* (2.1.6.11)

Note 1 to entry: Effective throat thickness is illustrated in Figure 4 as item 1.



#### **Key**

- 1 effective throat thickness
- 2 deep penetration throat thickness

**Figure 4 — Effective throat thickness**

### 2.1.7.11

#### **actual throat thickness**

*throat thickness* (2.1.7.6) of the finalized *weld* (2.1.1.3)

Note 1 to entry: Actual throat thickness depends on the chosen *design throat thickness* (2.1.7.12).

### 2.1.7.12

#### **design throat thickness**

*throat thickness* (2.1.7.6) specified by the designer

## 2.1.8 Welding execution

### 2.1.8.1

#### **welding process**

particular method of *welding* (2.1.1.1) involving the application of certain metallurgical, electrical, physical, chemical or mechanical principles

### 2.1.8.2

#### **welding technique**

manner in which an *electrode* ([2.3.8](#)), a blowpipe or a similar appliance is manipulated

### 2.1.8.3

#### **keyhole technique**

*welding technique* ([2.1.8.2](#)) in which concentrated heat source penetrates through a workpiece, forming a hole (keyhole) at the leading edge of the *weld pool* ([2.1.2.8](#))

Note 1 to entry: As the heat source progresses, the hole moves with it.

### 2.1.8.4

#### **run**

#### **pass**

#### **bead**

metal melted or deposited during one passage of an *electrode* ([2.3.8](#)), *torch* ([2.3.9](#)) or blowpipe

Note 1 to entry: The term pass is commonly used in beam welding.

### 2.1.8.5

#### **stringer bead**

*run* ([2.1.8.4](#)) formed without appreciable weaving

### 2.1.8.6

#### **temper bead**

<*multirun welding*> run which normalizes the *runs* ([2.1.8.4](#)) below and provides *preheating* ([2.4.13](#)) for the successive runs

### 2.1.8.7

#### **bead on plate**

single *run* ([2.1.8.4](#)) made with *filler material* ([2.1.10.4](#)) on the surface of a *parent material* ([2.1.1.5](#))

### 2.1.8.8

#### **melt run**

line of *parent material* ([2.1.1.5](#)) that has been melted by passing a welding heat source such as a flame, arc, electron or laser beam along the surface of the material

Note 1 to entry: No *filler material* ([2.1.10.4](#)) is used.

### 2.1.8.9

#### **melting rate**

#### **burn-off rate**

mass or length of *electrode* ([2.3.8](#)) consumed per unit of time

### 2.1.8.10

#### **deposition rate**

mass of metal deposited per unit of productive weld time

### 2.1.8.11

#### **capping run**

<*multilayer welding*> *run(s)* ([2.1.8.4](#)) visible on the weld face(s) after completion of *welding* ([2.1.1.1](#))

### 2.1.8.12

#### **cosmetic run**

#### **cosmetic pass**

*run* ([2.1.8.4](#)) for superficial remelting of the *weld* ([2.1.1.3](#)) in order to enhance appearance

### 2.1.8.13

#### **layer**

stratum of *weld metal* ([2.1.2.1](#)) consisting of one or more *runs* ([2.1.8.4](#))



#### 2.1.8.14

##### **finishing welding**

*production welding* (2.5.15) carried out in order to remove casting defects and core openings to ensure the agreed quality of castings

#### 2.1.8.15

##### **overlap**

<*lap joint*> minimum distance between the edges of overlap plates

Note 1 to entry: The term “overlap” also represents the concept defined in [2.1.8.16](#).

#### 2.1.8.16

##### **overlap**

<*multirun welding*> portion of the welding *run* (2.1.8.4) remelted by the adjoining run

Note 1 to entry: The term “overlap” also represents the concept defined in [2.1.8.15](#).

#### 2.1.8.17

##### **bead toe**

longitudinal boundary line between the *runs* (2.1.8.4), or between a run and the *parent material* (2.1.1.5)

#### 2.1.8.18

##### **weld toe**

boundary between the surface of the *weld* (2.1.1.3) and the *parent metal* (2.1.1.7)

#### 2.1.8.19

##### **root run**

##### **root pass**

first *run* (2.1.8.4) deposited in the *root* (2.1.5.7) of a *multirun weld* (2.1.1.3)

#### 2.1.8.20

##### **filling run**

<*multilayer welding*> *run(s)* (2.1.8.4) deposited after the *root run(s)* (2.1.8.19) and before the *capping run(s)* (2.1.8.11)

#### 2.1.8.21

##### **back run**

DEPRECATED: sealing run

final *run* (2.1.8.4) deposited on the *root* (2.1.5.7) side of a *fusion weld* (2.1.1.3)

#### 2.1.8.22

##### **continuous weld**

*weld* (2.1.1.3) extending along the entire length of a *joint* (2.1.4.1)

#### 2.1.8.23

##### **single-run welding**

*welding* (2.1.1.1) in which the *weld* (2.1.1.3) is made in one *run* (2.1.8.4)

#### 2.1.8.24

##### **single-side welding**

##### **one side welding**

*welding* (2.1.1.1) in which the *weld* (2.1.1.3) is made from one side of the workpiece

#### 2.1.8.25

##### **both-side welding**

##### **double-side welding**

##### **two side welding**

*welding* (2.1.1.1) in which the *weld* (2.1.1.3) is made from both sides of the workpiece

#### 2.1.8.26

##### **both-side single-run welding**

*both-side welding* (2.1.8.25) in which the *weld* (2.1.1.3) is made by single *runs* (2.1.8.4) from each side

#### 2.1.8.27

##### **both-side multirun welding**

##### **multirun welding from both sides**

*both-side welding* (2.1.8.25) in which the *weld* (2.1.1.3) is made by multiruns from each side

#### 2.1.8.28

##### **multirun welding**

*welding* (2.1.1.1) in which the *run* (2.1.8.4) is made on a previous run

#### 2.1.8.29

##### **back-step sequence**

*weld sequence* (2.1.8.36) in which short lengths of *run* (2.1.8.4) are deposited in a direction opposite to the general progress of *welding* (2.1.1.1) the *joint* (2.1.4.1)

Note 1 to entry: The short lengths eventually produce a *continuous weld* (2.1.8.22) or an *intermittent weld* (2.1.6.15).

#### 2.1.8.30

##### **back-step welding**

*welding technique* (2.1.8.2) in which short lengths of *weld* (2.1.1.3) are deposited in a direction opposite to the general progress of *welding* (2.1.1.1) the *joint* (2.1.4.1), in such a way that the end of one length overlaps the beginning of the previous length

#### 2.1.8.31

##### **tack weld**

*weld* (2.1.1.3) used to fix the workpieces or assemblies to be joined in their proper position for *welding* (2.1.1.1)

#### 2.1.8.32

##### **tack welding**

making of a *tack weld* (2.1.8.31)

#### 2.1.8.33

##### **tacking run**

##### **tacking pass**

*run* (2.1.8.4) made to hold the parts to be welded in proper alignment until the final *welds* (2.1.1.3) are made

#### 2.1.8.34

##### **welding cycle**

complete series of events involved in the making of a weld

#### 2.1.8.35

##### **workplace**

area(s) in which the worker's activities are carried out

#### 2.1.8.36

##### **weld sequence**

order in which *welds* (2.1.1.3) are made on a workpiece

#### 2.1.8.37

##### **weld run sequence**

order in which the *runs* (2.1.8.4) of a *weld* (2.1.1.3) are made

#### 2.1.8.38

##### **temporary weld**

*weld* (2.1.1.3) made to attach a piece(s) to a *weldment* (2.1.1.4) for temporary use in handling, shipping or working on the weldment

#### 2.1.8.39

##### **stud welding**

joining of a metal stud or similar part to a workpiece

Note 1 to entry: *Welding* (2.1.1.1) may be accomplished by arc, resistance, friction or other suitable process with or without external gas shielding.

#### 2.1.8.40

##### **field weld**

##### **site weld**

*weld* (2.1.1.3) made outside workshops usually at the place of final installation

### 2.1.9 Surfacing

#### 2.1.9.1

##### **surfacing**

deposition of material on a surface to obtain desired properties and/or dimensions

#### 2.1.9.2

##### **overlay welding**

*surfacing* (2.1.9.1) by means of *welding* (2.1.1.1)

#### 2.1.9.3

##### **heat resistant overlay welding**

*overlay welding* (2.1.9.2) in which the *cladding* (2.1.9.10) is used to obtain improved heat resistance

#### 2.1.9.4

##### **corrosion resistant overlay welding**

*overlay welding* (2.1.9.2) in which the *cladding* (2.1.9.10) is used to obtain improved corrosion resistance

#### 2.1.9.5

##### **buttering**

*overlay welding* (2.1.9.2) to provide a suitable transition between the *parent material* (2.1.1.5) and subsequent *welds* (2.1.1.3)

#### 2.1.9.6

##### **buffering**

*buttering* (2.1.9.5) prior to *welding* (2.1.1.1) together of highly dissimilar materials

#### 2.1.9.7

##### **building up**

##### **build up**

*overlay welding* (2.1.9.2) to obtain or restore required dimensions

#### 2.1.9.8

##### **hardfacing**

*overlay welding* (2.1.9.2) to increase wear and/or impact resistance

#### 2.1.9.9

##### **strip surfacing**

##### **strip cladding**

*overlay welding* (2.1.9.2) with a *strip electrode* (2.3.8)

#### 2.1.9.10

##### **cladding**

material deposited on the *parent material* (2.1.1.5) in order to produce a clad material

#### 2.1.9.11

##### **cladding process**

*surfacing* ([2.1.9.1](#)) used for applying *cladding* ([2.1.9.10](#))

Note 1 to entry: Cladding processes are *overlay welding* ([2.1.9.2](#)), hot rolling, explosive welding, etc.

#### 2.1.10 Welding consumables

##### 2.1.10.1

##### **welding consumable**

material consumed in the making of a *weld* ([2.1.1.3](#))

Note 1 to entry: The term includes *filler material* ([2.1.10.4](#)) and *auxiliary material* ([2.1.11.1](#)).

##### 2.1.10.2

##### **consumable insert**

##### **fusible insert**

*filler material* ([2.1.10.4](#)) that is placed at the *root* ([2.1.5.7](#)) of the *joint* ([2.1.4.1](#)) before *welding* ([2.1.1.1](#)) to be completely fused into the *weld metal* ([2.1.2.1](#))

##### 2.1.10.3

##### **consumable electrode**

*electrode* ([2.3.8](#)) that is consumed during *welding* ([2.1.1.1](#)) and forms a part of the *weld* ([2.1.1.3](#))

##### 2.1.10.4

##### **filler material**

*welding consumable* ([2.1.10.1](#)) added during *welding* ([2.1.1.1](#)) to form the *weld* ([2.1.1.3](#))

##### 2.1.10.5

##### **filler rod**

##### **rod**

##### **welding rod**

*filler material* ([2.1.10.4](#)) in the form of a rod which can be a part of the *welding* ([2.1.1.1](#)) circuit

##### 2.1.10.6

##### **solid rod**

*filler rod* ([2.1.10.5](#)) that is solid, not being a part of the *welding* ([2.1.1.1](#)) circuit

##### 2.1.10.7

##### **filler wire**

*filler material* ([2.1.10.4](#)) in the form of a wire which can be a part of the *welding* ([2.1.1.1](#)) circuit

##### 2.1.10.8

##### **flux**

##### **welding flux**

substantially non-metallic *auxiliary material* ([2.1.11.1](#)) used to clean the surfaces of the *joint* ([2.1.4.1](#)) chemically, to prevent atmospheric oxidation, and to reduce impurities or float them to the surface in the form of *slag* ([2.1.10.9](#))

##### 2.1.10.9

##### **slag**

non-metallic substance that results from fusion of an *electrode* ([2.3.8](#)) covering or a *flux* ([2.1.10.8](#)), and which, after solidification, partly or totally covers the *weld metal* ([2.1.2.1](#))

##### 2.1.10.10

##### **shielding gas**

protective gas used to prevent or reduce atmospheric contamination

**2.1.10.11**  
**clad steel**

combination of two or more dissimilar metals bonded inseparably together by a *cladding process* ([2.1.9.11](#))

Note 1 to entry: The *parent metal* ([2.1.1.7](#)) is always steel.

**2.1.10.12**  
**baking**

heating of *welding consumables* ([2.1.10.1](#)) to produce a specific diffusible hydrogen level in the *weld metal* ([2.1.2.1](#))

Note 1 to entry: Baking is usually carried out by the consumable manufacturer.

**2.1.10.13**  
**drying**

<*welding*> heating of *welding consumables* ([2.1.10.1](#)) to remove moisture

**2.1.10.14**  
**drying oven**

heated receptacle in which the *welding consumables* ([2.1.10.1](#)) are dried to remove or keep out all the moisture

**2.1.11 Welding materials**

**2.1.11.1**  
**auxiliary material**

*welding consumable* ([2.1.10.1](#)) not part of the finished *weld* ([2.1.1.3](#))

Note 1 to entry: Auxiliary materials are *shielding gases* ([2.1.10.10](#)), *fluxes* ([2.1.10.8](#)), etc.

**2.1.11.2**  
**gas shield**

shroud of gas surrounding the *weld zone* ([2.1.2.3](#)) to protect the *weld pool* ([2.1.2.8](#)) from chemical reaction with the surrounding atmosphere

**2.1.11.3**  
**trailing gas shield**

additional supply of *shielding gas* ([2.1.10.10](#)) protecting the *weld* ([2.1.1.3](#)) and the weld area during cooling

**2.1.11.4**  
**carrier gas**

gas used to transport metal powder to the *weld pool* ([2.1.2.8](#))

Note 1 to entry: Typical carrier gases are nitrogen, helium and argon.

**2.1.11.5**  
**backing**

material, *flux* ([2.1.10.8](#)) or gas in contact with the reverse side of a *joint preparation* ([2.1.5.2](#))

**2.1.11.6**  
**backing gas**  
**root gas**

gas used for *gas backing* ([2.1.11.7](#))

**2.1.11.7**  
**gas backing**

*backing* ([2.1.11.5](#)) using gas primarily for the purpose of preventing atmospheric reaction

#### 2.1.11.8

##### **purging gas**

gas used for the purpose of replacing the atmosphere in a hollow section and subsequently for *gas backing* ([2.1.11.7](#))

#### 2.1.11.9

##### **backing flux**

*flux* ([2.1.10.8](#)) used for *flux backing* ([2.1.11.10](#))

#### 2.1.11.10

##### **flux backing**

*backing* ([2.1.11.5](#)) using *flux* ([2.1.10.8](#)) primarily for the purpose of preventing atmospheric reaction

Note 1 to entry: In submerged arc welding flux backing may also reduce the risk of a *weld pool* ([2.1.2.8](#)) collapse.

#### 2.1.11.11

##### **material backing**

*backing* ([2.1.11.5](#)) using material for the purpose of supporting molten *weld metal* ([2.1.2.1](#))

#### 2.1.11.12

##### **permanent backing**

*material backing* ([2.1.11.11](#)) that is not intended to be removed from the workpiece after *welding* ([2.1.1.1](#))

Note 1 to entry: It may be partially fused or remain unfused.

#### 2.1.11.13

##### **temporary backing**

*material backing* ([2.1.11.11](#)) intended to be removed from the workpiece after *welding* ([2.1.1.1](#))

#### 2.1.11.14

##### **run-on plate**

piece of material that extends beyond the beginning of the *joint* ([2.1.4.1](#)), enabling the full section of *weld* ([2.1.1.3](#)) to be obtained at the beginning of a joint

#### 2.1.11.15

##### **run-off plate**

piece of material that extends beyond the end of the *joint* ([2.1.4.1](#)), enabling the full section of *weld* ([2.1.1.3](#)) to be maintained up to the end of a joint

## 2.2 Terms related to testing

### 2.2.1 General tests

#### 2.2.1.1

##### **macroscopic examination**

examination of a *test specimen* ([2.2.1.6](#)) by the naked eye, or under low magnification (generally less than 50×), with or without etching

#### 2.2.1.2

##### **microscopic examination**

examination of a *test specimen* ([2.2.1.6](#)) by a microscope with a magnification of generally 50× to 500×, with or without etching

#### 2.2.1.3

##### **all-weld metal test**

test to determine the properties of *all-weld metal* ([2.1.2.7](#))

#### 2.2.1.4

##### **all-weld metal test specimen**

*test specimen* (2.2.1.6) that is composed of *all-weld metal* (2.1.2.7) over the portion to be tested

#### 2.2.1.5

##### **test piece**

welded assembly which is used for testing purposes

#### 2.2.1.6

##### **test specimen**

part or portion cut from the *test piece* (2.2.1.5) in order to perform specified *destructive testing* (2.2.3.1)

#### 2.2.1.7

##### **testing organization**

internal or external organization carrying out *destructive testing* (2.2.3.1) or *non-destructive testing* (2.2.4.1)

### 2.2.2 Weldability tests

#### 2.2.2.1

##### **cracking test**

test to determine the susceptibility to cracking of the *weld metal* (2.1.2.1) or *parent metal* (2.1.1.7)

#### 2.2.2.2

##### **cold cracking test**

*cracking test* (2.2.2.1) to determine the susceptibility to cold cracking of a *welded joint* (2.1.4.2)

#### 2.2.2.3

##### **hot cracking test**

*cracking test* (2.2.2.1) to determine the susceptibility to hot cracking of a *welded joint* (2.1.4.2)

#### 2.2.2.4

##### **tested welding consumable**

*welding consumable* (2.1.10.1) or consumable combination tested in accordance with appropriate standards for the testing of welding consumables

### 2.2.3 Mechanical tests

#### 2.2.3.1

##### **destructive testing**

testing to detect internal or external *imperfections* (2.1.3.1), or assess mechanical or metallurgical properties by mechanical means, which generally result in the destruction of the material

#### 2.2.3.2

##### **face bend test**

bend test where the surface of the *weld* (2.1.1.3) is in tension

#### 2.2.3.3

##### **face bend test specimen**

*test specimen* (2.2.1.6) used in a *face bend test* (2.2.3.2)

#### 2.2.3.4

##### **root bend test**

bend test where the *root* (2.1.5.7) of the *weld* (2.1.1.3) is in tension

#### 2.2.3.5

##### **root bend test specimen**

*test specimen* (2.2.1.6) used in a *root bend test* (2.2.3.4)

#### 2.2.3.6

##### **side bend test**

bend test in which the face of the transverse section of the *weld* (2.1.1.3) is in tension

#### 2.2.3.7

##### **side bend test specimen**

*test specimen* (2.2.1.6) used in a *side bend test* (2.2.3.6)

#### 2.2.3.8

##### **longitudinal bend test specimen**

*test specimen* (2.2.1.6) for a bend test that is longitudinally bisected by the portion of the *weld* (2.1.1.3) included in it

#### 2.2.3.9

##### **transverse bend test specimen**

*test specimen* (2.2.1.6) for a bend test that is transversely bisected by the portion of the *weld* (2.1.1.3) included in it

### 2.2.4 Non-destructive tests

#### 2.2.4.1

##### **non-destructive testing**

act of determining the suitability of some material or component for its intended purpose using techniques that do not affect its serviceability

#### 2.2.4.2

##### **indication**

<*non-destructive testing*> representation or signal from a discontinuity

#### 2.2.4.3

##### **linear indication**

<*non-destructive testing*> *indication* (2.2.4.2) having a length greater than three times its width

#### 2.2.4.4

##### **non-linear indication**

<*non-destructive testing*> *indication* (2.2.4.2) having a length less than, or equal to three times its width

#### 2.2.4.5

##### **testing level**

degree of thoroughness and selection of parameter settings with which a *non-destructive testing* (2.2.4.1) method is applied

#### 2.2.4.6

##### **evaluation level**

test level above which an *indication* (2.2.4.2) is evaluated

#### 2.2.4.7

##### **recording level**

<*non-destructive testing*> *evaluation level* (2.2.4.6) from which an *indication* (2.2.4.2) is recorded

### 2.3 Terms related to welding equipment

#### 2.3.1

##### **welding equipment**

individual apparatus used in *welding* (2.1.1.1)

EXAMPLE Power source, wire feeder, etc.



### 2.3.2

#### **welding unit**

*welding installation* (2.3.3) including auxiliary apparatus

EXAMPLE Jigs and fixtures, robot(s), *manipulators* (2.3.4) and rotating devices.

### 2.3.3

#### **welding installation**

DEPRECATED: welding plant

complete apparatus used in *welding* (2.1.1.1) consisting of *welding equipment* (2.3.1) and *welding accessories* (2.3.5)

### 2.3.4

#### **manipulator**

device to hold, tilt and rotate the workpiece to the desired position

### 2.3.5

#### **welding accessories**

auxiliary items used in *welding* (2.1.1.1)

EXAMPLE Welding guns, welding heads, gas cylinders, cables, *torches* (2.3.9), safety equipment, etc

### 2.3.6

#### **a.c. welding generator**

*welding* (2.1.1.1) generator producing alternating current

### 2.3.7

#### **d.c. welding generator**

*welding* (2.1.1.1) generator producing a direct current

### 2.3.8

#### **electrode**

component that transfers electrical energy to the metal in order to form a *weld* (2.1.1.3) or make a cut

### 2.3.9

#### **torch**

device that conveys all services necessary to the arc for *welding* (2.1.1.1), cutting or allied processes

EXAMPLE Current, gas, coolant or wire *electrode* (2.3.8)

## 2.4 Terms related to welding parameters

### 2.4.1

#### **welding parameters**

information needed for the performance of *welding* (2.1.1.1) with a specified *welding procedure* (2.5.3)

Note 1 to entry: Examples of welding parameters are: *welding consumables* (2.1.10.1), welding current, welding voltage, *travel speed* (2.4.7), pre- and post-heating times and temperatures, *interpass temperatures* (2.4.12), and *weld sequence* (2.1.8.36).

### 2.4.2

#### **welding variable**

variable which influences the characteristics of the *welded joint* (2.1.4.2)

### 2.4.3

#### **welding data**

numerical values for *welding variables* (2.4.2)

### 2.4.4

#### **essential variable**

*welding parameter* (2.4.1) that requires qualification

#### 2.4.5

##### **non-essential variable**

*welding parameter* (2.4.1) addressed in the *welding procedure specification* (2.5.4) but not requiring qualification

#### 2.4.6

##### **welding speed**

<*fusion welding*> length of a single or multirun *weld* (2.1.1.3) completed in a unit of time

#### 2.4.7

##### **travel speed**

rate at which the heat source progresses relative to the workpiece(s)

#### 2.4.8

##### **welding time**

time required for making a *weld* (2.1.1.3), excluding preparatory or finishing operations

#### 2.4.9

##### **dwelt time**

<*fusion welding*> time during which the energy source pauses at any point in each oscillation

#### 2.4.10

##### **heat input**

energy introduced into the weld region during *welding* (2.1.1.1)

Note 1 to entry: Heat input is usually expressed per unit length.

#### 2.4.11

##### **heat time**

duration of each successive current impulse

#### 2.4.12

##### **interpass temperature**

temperature in the most recently completed *run* (2.1.8.4) of a multirun *weld* (2.1.1.3) and adjacent *parent metal* (2.1.1.7) immediately prior to the application of the next run

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

#### 2.4.13

##### **preheating**

heating of an appropriate area of a workpiece before *welding* (2.1.1.1), normally to achieve the *preheat temperature* (2.4.14)

#### 2.4.14

##### **preheat temperature**

##### **preheating temperature**

temperature of the workpiece in the *weld zone* (2.1.2.3) immediately prior to any *welding* (2.1.1.1) operation

#### 2.4.15

##### **preheat maintenance temperature**

minimum temperature in the *weld zone* (2.1.2.3) to be maintained if *welding* (2.1.1.1) is interrupted

#### 2.4.16

##### **post-weld heat treatment**

application of heat to an assembly after *welding* (2.1.1.1), brazing, soldering, thermal spraying or cutting

Note 1 to entry: Post-weld heat treatment is typically used as a stress relief treatment.

## 2.5 Terms related to welding management, personnel and organization

### 2.5.1

#### welding coordination

coordination of manufacturing operations for all *welding* (2.1.1.1) and welding-related activities

### 2.5.2

#### welding inspection

conformity evaluation of *welding variables* (2.4.2) by observation and judgment accompanied as appropriate by measurement or testing

Note 1 to entry: Welding inspection is a part of *welding coordination* (2.5.1).

### 2.5.3

#### welding procedure

specified course of action to be followed in making a *weld* (2.1.1.3), including the *welding process(es)* (2.1.8.1), reference to materials, *welding consumables* (2.1.10.1), preparation, *preheating* (2.4.13) (if necessary), method and control of *welding* (2.1.1.1) and *post-weld heat treatment* (2.4.16) (if relevant), and necessary equipment to be used

### 2.5.4

#### welding procedure specification

##### WPS

document that has been qualified and provides the required variables of the *welding procedure* (2.5.3) to ensure repeatability during *production welding* (2.5.15)

### 2.5.5

#### standard welding procedure specification

*welding procedure specification* (2.5.4) which has been qualified by a *welding procedure test* (2.5.7) not related to the manufacturer and qualified by an *examiner* (2.5.29) or *examining body* (2.5.30)

Note 1 to entry: A standard welding procedure may then be made available to any manufacturer.

### 2.5.6

#### preliminary welding procedure specification

##### pWPS

document containing the required variables of the *welding procedure* (2.5.3) which has to be qualified

### 2.5.7

#### welding procedure test

*welding* (2.1.1.1) and testing of a standardized *test piece* (2.2.1.5), as indicated in the *preliminary welding procedure specification* (2.5.6), in order to qualify a *welding procedure* (2.5.3)

### 2.5.8

#### pre-production welding test

welding test having the same function as a *welding procedure test* (2.5.7), but based on a non-standard *test piece* (2.2.1.5), representative of the production conditions

### 2.5.9

#### function test

test of a *welding unit* (2.3.2) set-up in accordance with a *welding procedure specification* (2.5.4)

### 2.5.10

#### production sample testing

testing of actual welded products sampled from a continuous production

### 2.5.11

#### production test

welding test carried out in the production environment with the *welding unit* (2.3.2), on actual products or on simplified *test pieces* (2.2.1.5), before or during an interruption of normal production

**2.5.12**  
**welding procedure qualification record**  
**WPQR**

record comprising all necessary data needed for qualification of a *preliminary welding procedure specification* ([2.5.6](#))

**2.5.13**  
**previous welding experience**

practice authenticated by test data demonstrating that established *welding procedures* ([2.5.3](#)) in *production welding* ([2.5.15](#)) have been capable of consistently producing welds of acceptable quality over a period of time

**2.5.14**  
**welding conditions**

conditions under which welds are made

Note 1 to entry: Welding conditions can include environmental factors (e.g. weather), stress and ergonomic factors (e.g. noise, heat, cramped working conditions) and workpiece-related factors [e.g. *parent metal* ([2.1.1.7](#)), *joint preparation* ([2.1.5.2](#)) and *welding procedure* ([2.5.3](#))].

**2.5.15**  
**production welding**

*welding* ([2.1.1.1](#)) carried out during manufacture before final delivery to the end user

**2.5.16**  
**work instruction**

simplified specification of the *welding procedure* ([2.5.3](#)), suitable for direct application in the workshop

**2.5.17**  
**quality level**

description of the quality of a *weld* ([2.1.1.3](#)) on the basis of type, size and amount of selected *imperfections* ([2.1.3.1](#))

**2.5.18**  
**range of qualification**

extent of qualification for an *essential variable* ([2.4.4](#))

**2.5.19**  
**fitness-for-purpose**

ability of a product, process or service to serve a defined purpose under specific conditions

**2.5.20**  
**batch**

collection of one or more units of product, made in a single production run

**2.5.21**  
**weld batch**

several welds made by the same *welder* ([2.5.24](#)) or *welding operator* ([2.5.25](#)) using a single *welding procedure* ([2.5.3](#))

**2.5.22**  
**qualified person**

person whose competence and knowledge have been obtained by education, training and/or relevant practical experience

Note 1 to entry: In order to demonstrate the level of competence and knowledge, a qualification test may be required.

**2.5.23**  
**welding coordinator**

*qualified person* ([2.5.22](#)) responsible for *welding coordination* ([2.5.1](#))

**2.5.24**

**welder**

person who holds and manipulates the *electrode* ([2.3.8](#)) holder, *torch* ([2.3.9](#)) or blowpipe during *welding* ([2.1.1.1](#))

**2.5.25**

**welding operator**

person who controls or adjusts any *welding parameter* ([2.4.1](#)) for *mechanized welding* ([2.1.1.10](#)) or *automatic welding* ([2.1.1.11](#))

**2.5.26**

**weld setter**

person who sets up *welding equipment* ([2.3.1](#)) for *mechanized welding* ([2.1.1.10](#)) or *automatic welding* ([2.1.1.11](#))

**2.5.27**

**manufacturing organization**

<*welding*> workshop or site or both which is (are) under the same technical and quality management

**2.5.28**

**welding inspector**

*qualified person* ([2.5.22](#)) responsible for *welding inspection* ([2.5.2](#))

**2.5.29**

**examiner**

person who has been appointed to verify compliance with the applicable standard

Note 1 to entry: In certain cases, an external independent examiner can be required.

**2.5.30**

**examining body**

organization that has been appointed to verify compliance with the applicable standard

Note 1 to entry: In certain cases, an external independent examining body can be required.

## Annex A (informative)

### Alphabetical index of English terms with French and German translations

English term	Subclause	French translation	German translation
<b>A</b>			
a.c. welding generator	<a href="#">2.3.6</a>	générateur de soudage c.a.	Wechselstrom-Schweißgenerator
actual throat thickness	<a href="#">2.1.7.11</a>	gorge réelle	tatsächliche Nahtdicke; Istnahtdicke
air gap	See: gap ( <a href="#">2.1.5.5</a> )		
air-arc gouging	<a href="#">2.1.1.15</a>	gougeage air-arc	Lichtbogenfugen mit Druckluft
all-weld metal	<a href="#">2.1.2.7</a>	métal fondu hors dilution	reines Schweißgut
all-weld metal test	<a href="#">2.2.1.3</a>	essai du métal fondu hors dilution	Versuch an reinem Schweißgut
all-weld metal test specimen	<a href="#">2.2.1.4</a>	éprouvette d'essai du métal fondu hors dilution	Schweißgutprobe
angle joint	<a href="#">2.1.4.8</a>	assemblage en angle	Schrägstoß
arc gouging	<a href="#">2.1.1.14</a>	gougeage à l'arc	Lichtbogenfugen
as welded	<a href="#">2.1.2.9</a>	brut de soudage	im Schweißzustand
automatic welding	<a href="#">2.1.1.11</a>	soudage automatique	automatisches Schweißen
auxiliary material	<a href="#">2.1.11.1</a>	produit consommable auxiliaire	Hilfsstoff
<b>B</b>			
back run	<a href="#">2.1.8.21</a>	reprise à l'envers	Kapplage
backing	<a href="#">2.1.11.5</a>	dispositif envers	Schweißbadsicherung
backing flux	<a href="#">2.1.11.9</a>	flux envers	Pulver zur Schweißbadsicherung
backing gas	<a href="#">2.1.11.6</a>	gaz envers	Wurzelschutzgas
back-step sequence	<a href="#">2.1.8.29</a>	séquence à pas de pèlerin	Pilgerschrittfolge
back-step welding	<a href="#">2.1.8.30</a>	soudage à pas de pèlerin	Pilgerschrittschweißen
baking	<a href="#">2.1.10.12</a>	étuvage	Rücktrocknen
base material	See: parent material ( <a href="#">2.1.1.5</a> )		
base metal	See: parent metal ( <a href="#">2.1.1.7</a> )		
batch	<a href="#">2.5.20</a>	lot	Los
bead	See: run ( <a href="#">2.1.8.4</a> )		
bead on plate	<a href="#">2.1.8.7</a>	passe déposé	aufgetragene Schweißraupe
bead toe	<a href="#">2.1.8.17</a>	raccordement	Raupenübergang
bevel angle	<a href="#">2.1.5.12</a>	angle du chanfrein	Flankenwinkel
both-side multirun welding	<a href="#">2.1.8.27</a>	soudage multipasse des deux côtés	beidseitiges mehrlagiges Schweißen
both-side single-run welding	<a href="#">2.1.8.26</a>	soudage monopasse des deux côtés	Schweißen in Lage und Gegenlage
both-side welding	<a href="#">2.1.8.25</a>	soudage des deux côtés	beidseitiges Schweißen
buffering	<a href="#">2.1.9.6</a>	exécution d'une couche tampon	Puffern
build up	See: building up ( <a href="#">2.1.9.7</a> )		
building up	<a href="#">2.1.9.7</a>	soudage de reconstitution	Auftragung

English term	Subclause	French translation	German translation
burn-off rate	See: melting rate ( <a href="#">2.1.8.9</a> )		
butt joint	<a href="#">2.1.4.5</a>	assemblage bout à bout	Stumpfstoß
butt weld	<a href="#">2.1.6.3</a>	soudure bout à bout	Stumpfnah
buttering	<a href="#">2.1.9.5</a>	beurrage	Puffern
<b>C</b>			
capping run	<a href="#">2.1.8.11</a>	passe terminale	Decklage
carrier gas	<a href="#">2.1.11.4</a>	gaz vecteur	Trägergas
chain intermittent weld	<a href="#">2.1.6.17</a>	soudures discontinues symétriques	symmetrische, unterbrochene Schweißnaht
clad steel	<a href="#">2.1.10.11</a>	acier plaqué	plattierter Stahl
cladding	<a href="#">2.1.9.10</a>	placage	Plattieren
cladding process	<a href="#">2.1.9.11</a>	procédé de placage	Plattierprozess
cold crack(s)	<a href="#">2.1.3.9</a>	fissure(s) à froid	Kaltriss(e)
cold cracking test	<a href="#">2.2.2.2</a>	essai de fissuration à froid	Kaltrissprüfung
consumable electrode	<a href="#">2.1.10.3</a>	électrode fusible; électrode consommable	abschmelzende Elektrode
consumable insert	<a href="#">2.1.10.2</a>	insert consommable; insert fusible	Schweißzusatzeinlageteil
continuous weld	<a href="#">2.1.8.22</a>	soudure continue	nicht unterbrochene Naht
corner joint	<a href="#">2.1.4.9</a>	assemblage en angle extérieur	Eckstoß
corrosion resistant overlay welding	<a href="#">2.1.9.4</a>	rechargement anticorrosion	Schweißplattieren
cosmetic pass	See: cosmetic run ( <a href="#">2.1.8.12</a> )		
cosmetic run	<a href="#">2.1.8.12</a>	passe de lissage	Kosmetiklage
cracking test	<a href="#">2.2.2.1</a>	essai de fissuration	Rissprüfung
cross joint	<a href="#">2.1.4.11</a>	assemblage de fils (ou de ronds) en croix	Kreuzungsstoß
cruciform joint	<a href="#">2.1.4.12</a>	assemblage en croix	Doppel-T-Stoß
<b>D</b>			
d.c. welding generator	<a href="#">2.3.7</a>	générateur de soudage c.c.	Gleichstrom-Schweißgenerator
deep penetration throat thickness	<a href="#">2.1.7.9</a>	gorge à pénétration profonde	Nahtdicke mit tiefem Einbrand
deposit thickness	See: penetration depth ( <a href="#">2.1.7.4</a> )		
deposited metal	<a href="#">2.1.2.4</a>	métal déposé	reines Schweißgut
deposition rate	<a href="#">2.1.8.10</a>	vitesse de dépôt	Abschmelzleistung
design throat thickness	<a href="#">2.1.7.12</a>	gorge théorique	Sollnahtdicke
destructive testing	<a href="#">2.2.3.1</a>	essai destructif	zerstörende Prüfung
dilution	<a href="#">2.1.2.12</a>	dilution	Aufmischung
dilution rate	<a href="#">2.1.2.13</a>	taux de dilution	Aufschmelzgrad
dissimilar material joint	<a href="#">2.1.4.15</a>	assemblage mixte; assemblage de matériaux dissemblables	Mischverbindung
double-J butt weld	<a href="#">2.1.6.5</a>	soudure en double J	Doppel-HU-Naht; Doppel-J-Naht
double-side welding	See: both-side welding ( <a href="#">2.1.8.25</a> )		
double-U butt weld	<a href="#">2.1.6.7</a>	soudure en double U	Doppel-U-Naht
double-V butt weld	<a href="#">2.1.6.9</a>	soudure en X	Doppel-V-Naht
drying	<a href="#">2.1.10.13</a>	séchage	Rücktrocknen
drying oven	<a href="#">2.1.10.14</a>	four de séchage	Trockenofen

English term	Subclause	French translation	German translation
ductility dip crack	<a href="#">2.1.3.8</a>	fissure par manque de ductilité; fissure due à une baisse de ductilité	Riss durch Verformbarkeitsabfall
dwell time	<a href="#">2.4.9</a>	temps de maintien	Verweilzeit
<b>E</b>			
edge distance	<a href="#">2.1.5.6</a>	distance au bord (de la pièce)	Randabstand
edge joint	<a href="#">2.1.4.10</a>	assemblage sur chant	Stirnstoß
edge preparation	<a href="#">2.1.5.1</a>	préparation des bords	Fugenvorbereitung
effective throat thickness	<a href="#">2.1.7.10</a>	gorge efficace	wirksame Nahtdicke
electrode	<a href="#">2.3.8</a>	électrode	Elektrode
essential variable	<a href="#">2.4.4</a>	variable essentielle	wesentliche Einflussgröße
evaluation level	<a href="#">2.2.4.6</a>	niveau d'évaluation	Beobachtungsschwelle
examiner	<a href="#">2.5.29</a>	examineur	Prüfer
examining body	<a href="#">2.5.30</a>	organisme d'examen	Prüfstelle
<b>F</b>			
face bend test	<a href="#">2.2.3.2</a>	essai de pliage endroit	oberseitige Biegeprüfung
face bend test specimen	<a href="#">2.2.3.3</a>	éprouvette de pliage endroit	oberseitige Stumpfnah-Biegeprobe
feather edge	<a href="#">2.1.5.4</a>	arête vive du chanfrein	scharfe Steglängskante
ferrite number	<a href="#">2.1.2.10</a>	indice de ferrite; FN	Ferritzahl
field weld	<a href="#">2.1.8.40</a>	soudure sur chantier ; soudure sur site	Baustellennaht
filler material	<a href="#">2.1.10.4</a>	produit d'apport; matériau d'apport	Schweißzusatz
filler rod	<a href="#">2.1.10.5</a>	baguette d'apport	Schweißstab; Stabelektrode
filler wire	<a href="#">2.1.10.7</a>	fil d'apport	Schweißdraht; Drahtelektrode
fillet weld	<a href="#">2.1.6.11</a>	soudure d'angle	Kehlnaht
filling run	<a href="#">2.1.8.20</a>	pas de remplissage	Fülllage(n)
finishing welding	<a href="#">2.1.8.14</a>	soudage de finition	Fertigungsschweißen
fitness-for-purpose	<a href="#">2.5.19</a>	aptitude à l'emploi	Gebrauchstauglichkeit
flare-bevel weld	<a href="#">2.1.6.18</a>	soudure en demi-V à bord évasé; soudure évasée à chanfrein	aufgeweitete HY-Naht
flare-V weld	<a href="#">2.1.6.19</a>	soudure en V à bords évasés; soudure évasée en V	aufgeweitete Y-Naht
flux	<a href="#">2.1.10.8</a>	flux	Schweißpulver
flux backing	<a href="#">2.1.11.10</a>	protection envers par flux	Pulver-Schweißbadsicherung
FN	See: ferrite number ( <a href="#">2.1.2.10</a> )		
full penetration weld	<a href="#">2.1.6.1</a>	soudure à pleine pénétration	durchgeschweißte Naht
fully mechanized welding	See: mechanized welding ( <a href="#">2.1.1.10</a> )		
function test	<a href="#">2.5.9</a>	essai de fonctionnement	Funktionsprüfung
fusible insert	See: consumable insert ( <a href="#">2.1.10.2</a> )		
fusion face	<a href="#">2.1.5.3</a>	face à souder	Kehlflanke; Fugenflanke; Stirnfläche
fusion line	<a href="#">2.1.2.5</a>	zone de liaison	Schmelzlinie
fusion penetration	<a href="#">2.1.7.3</a>	pénétration	Einbrand
fusion welding	<a href="#">2.1.1.2</a>	soudage par fusion	Schmelzschweißen



English term	Subclause	French translation	German translation
fusion zone	<a href="#">2.1.2.6</a>	zone de dilution	aufgeschmolzener Grundwerkstoff
<b>G</b>			
gap	<a href="#">2.1.5.5</a>	écartement des bords; jeu	Luftspalt; Spalt
gas backing	<a href="#">2.1.11.7</a>	protection gazeuse envers	Gaswurzelschutz
gas shield	<a href="#">2.1.11.2</a>	protection gazeuse	Gasschutz
gouging	<a href="#">2.1.1.13</a>	gougeage	Fugen
groove angle	See: included angle ( <a href="#">2.1.5.13</a> )		
groove weld	See: butt weld ( <a href="#">2.1.6.3</a> )		
<b>H</b>			
hardfacing	<a href="#">2.1.9.8</a>	rechargement dur	Schweißpanzern
HAZ	See: heat-affected zone ( <a href="#">2.1.2.2</a> )		
heat input	<a href="#">2.4.10</a>	apport de chaleur	Wärmeeinbringung
heat resistant overlay welding	<a href="#">2.1.9.3</a>	rechargement réfractaire	Schweißplattieren
heat time	<a href="#">2.4.11</a>	temps chaud	Stromimpulszeit
heat-affected zone	<a href="#">2.1.2.2</a>	zone affectée thermiquement; ZAT	Wärmeeinflusszone; WEZ
heterogeneous joint	<a href="#">2.1.4.14</a>	assemblage hétérogène	heterogene Verbindung
homogeneous joint	<a href="#">2.1.4.13</a>	assemblage homogène	homogene Verbindung
hot crack(s)	<a href="#">2.1.3.5</a>	fissure(s) à chaud	Heißriss(e)
hot cracking test	<a href="#">2.2.2.3</a>	essai de fissuration à chaud	Heißrissprüfung
<b>I</b>			
imperfection	<a href="#">2.1.3.1</a>	défaut	Unregelmäßigkeit
included angle	<a href="#">2.1.5.13</a>	angle d'ouverture	Öffnungswinkel
indication	<a href="#">2.2.4.2</a>	indication	Anzeige
intermittent weld	<a href="#">2.1.6.15</a>	soudure discontinue	unterbrochene Naht
internal imperfection	<a href="#">2.1.3.2</a>	défaut interne	innere Unregelmäßigkeit
interpass temperature	<a href="#">2.4.12</a>	température entre passes	Zwischenlagentemperatur
<b>J</b>			
joint	<a href="#">2.1.4.1</a>	assemblage; joint	Schweißstoß
joint efficiency	<a href="#">2.1.2.16</a>	coefficient de joint	Ausnutzungsgrad der Verbindung
joint preparation	<a href="#">2.1.5.2</a>	préparation de joint	Schweißnahtvorbereitung
<b>K</b>			
keyhole technique	<a href="#">2.1.8.3</a>	soudage en trou de serrure; soudage en mode keyhole	Stichlochtechnik
<b>L</b>			
land	<a href="#">2.1.5.11</a>	lèvre	Lippe
lap joint	<a href="#">2.1.4.7</a>	assemblage à recouvrement	Überlappstoß
layer	<a href="#">2.1.8.13</a>	couche	Lage
leg length	<a href="#">2.1.7.5</a>	côté	Schenkellänge
linear indication	<a href="#">2.2.4.3</a>	indication linéaire	linienartige Anzeige
liquation crack	<a href="#">2.1.3.7</a>	fissure par liquation	Wiederaufschmelzungsriss
longitudinal bend test specimen	<a href="#">2.2.3.8</a>	éprouvette de pliage longitudinal	Längsbiegeprobe
<b>M</b>			
macroscopic examination	<a href="#">2.2.1.1</a>	examen macroscopique	makroskopische Untersuchung
manipulator	<a href="#">2.3.4</a>	manipulateur	Dreh-Kipp-Tisch

English term	Subclause	French translation	German translation
manual welding	<a href="#">2.1.1.8</a>	soudage manuel	Handschweißen
manufacturing organization	<a href="#">2.5.27</a>	constructeur ou fabricant	Herstellungsorganisation
material backing	<a href="#">2.1.11.11</a>	support envers	Schweißbadsicherung
material thickness	See: parent material thickness ( <a href="#">2.1.1.6</a> )		
mechanized welding	<a href="#">2.1.1.10</a>	soudage mécanisé; soudage totalement mécanisé	mechanisches Schweißen
melt run	<a href="#">2.1.8.8</a>	ligne de fusion	Blindraupe ohne Zusatzwerkstoff
melting rate	<a href="#">2.1.8.9</a>	vitesse de fusion	Abschmelzgeschwindigkeit
metallurgical deviation	<a href="#">2.1.2.11</a>	altération métallurgique	metallurgische Abweichung
microscopic examination	<a href="#">2.2.1.2</a>	examen microscopique	mikroskopische Untersuchung
molten pool	See: weld pool ( <a href="#">2.1.2.8</a> )		
multiple joint	<a href="#">2.1.4.3</a>	assemblage à joints multiples	Mehrfachstoß
multirun welding	<a href="#">2.1.8.28</a>	soudage multipasse	Mehrlagenschweißen
multirun welding from both sides	See: both-side multirun welding ( <a href="#">2.1.8.27</a> )		
<b>N</b>			
nominal thickness	<a href="#">2.1.7.7</a>	épaisseur nominale	Nenndicke
nominal throat thickness	<a href="#">2.1.7.8</a>	gorge nominale	Nahtdicke
non-destructive testing	<a href="#">2.2.4.1</a>	contrôle non destructif	zerstörungsfreie Prüfung
non-essential variable	<a href="#">2.4.5</a>	variable non-essentielle	unwesentliche Einflussgröße
nonlinear indication	<a href="#">2.2.4.4</a>	indication non linéaire	nichtlinienartige Anzeige
<b>O</b>			
one side welding	See: single-side welding ( <a href="#">2.1.8.24</a> )		
overlap	<a href="#">2.1.8.15</a> , <a href="#">2.1.8.16</a>	recouvrement	Überlappung
overlay welding	<a href="#">2.1.9.2</a>	rechargement par soudage	Auftragschweißen
<b>P</b>			
parallel joint	<a href="#">2.1.4.4</a>	assemblage à recouvrement total	Parallelstoß
parent material	<a href="#">2.1.1.5</a>	matériau de base	Grundwerkstoff
parent material thickness	<a href="#">2.1.1.6</a>	épaisseur du matériau de base	Dicke des Grundwerkstoffes
parent metal	<a href="#">2.1.1.7</a>	métal de base	metallischer Grundwerkstoff
partial penetration weld	<a href="#">2.1.6.2</a>	soudure à pénétration partielle	nicht durchgeschweißte Naht
partly mechanized welding	<a href="#">2.1.1.9</a>	soudage semi-automatique; soudage partiellement mécanisé	teilmechanisches Schweißen
pass	See: run ( <a href="#">2.1.8.4</a> )		
penetration depth	<a href="#">2.1.7.4</a>	profondeur de pénétration	Nahtdicke
permanent backing	<a href="#">2.1.11.12</a>	support envers subsistant	Beilage
plug weld	<a href="#">2.1.6.12</a>	soudure en bouchon	Lochnaht
post-weld heat treatment	<a href="#">2.4.16</a>	traitement thermique après soudage	Wärmenachbehandlung
preheat maintenance temperature	<a href="#">2.4.15</a>	température de maintien du préchauffage	Haltetemperatur
preheat temperature	<a href="#">2.4.14</a>	température de préchauffage	Vorwärmtemperatur
preheating	<a href="#">2.4.13</a>	préchauffage	Vorwärmen
preheating temperature	See: preheat temperature ( <a href="#">2.4.14</a> )		

English term	Subclause	French translation	German translation
preliminary welding procedure specification	<a href="#">2.5.6</a>	descriptif d'un mode opératoire de soudage préliminaire; DMOS-P	vorläufige Schweißanweisung; pWPS
pre-production welding test	<a href="#">2.5.8</a>	épreuve de soudage de préproduction	vorgezogene Arbeitsprüfung
previous welding experience	<a href="#">2.5.13</a>	expérience en soudage	vorliegende schweißtechnische Erfahrung
production sample testing	<a href="#">2.5.10</a>	essai sur échantillons de production	Stichprobenprüfung
production test	<a href="#">2.5.11</a>	essai de production	Fertigungsprüfung
production welding	<a href="#">2.5.15</a>	soudage de production	Schweißen in der Fertigung
projected area	<a href="#">2.1.3.4</a>	surface projetée	projizierte Fläche
purging gas	<a href="#">2.1.11.8</a>	gaz de purge	Spülgas
pWPS	See: preliminary welding procedure specification ( <a href="#">2.5.6</a> )		
<b>Q</b>			
qualified person	<a href="#">2.5.22</a>	personne qualifiée	qualifizierte Person
quality level	<a href="#">2.5.17</a>	niveau de qualité	Bewertungsgruppe
<b>R</b>			
range of qualification	<a href="#">2.5.18</a>	domaine de validité	Geltungsbereich
recording level	<a href="#">2.2.4.7</a>	niveau de notation	Registrierschwelle
residual welding stress	<a href="#">2.1.2.14</a>	contrainte résiduelle de soudage	Schweißseigenspannung
robotic welding	<a href="#">2.1.1.12</a>	soudage robotisé	Roboterschweißen
rod	See: filler rod ( <a href="#">2.1.10.5</a> )		
root	<a href="#">2.1.5.7</a>	racine	Nahtwurzel
root bend test	<a href="#">2.2.3.4</a>	essai de pliage envers	wurzelseitige Biegeprüfung
root bend test specimen	<a href="#">2.2.3.5</a>	éprouvette de pliage envers	wurzelseitige Stumpfnah-Biegeprobe
root face	<a href="#">2.1.5.10</a>	méplat	Steg; Stegflanke
root gap	<a href="#">2.1.5.8</a>	écartement à la racine	Stegabstand
root gas	See: backing gas ( <a href="#">2.1.11.6</a> )		
root of weld	See: root ( <a href="#">2.1.5.7</a> )		
root pass	See: root run ( <a href="#">2.1.8.19</a> )		
root radius	<a href="#">2.1.5.9</a>	rayon à fond de chanfrein	Fugenradius
root run	<a href="#">2.1.8.19</a>	passe de fond	Wurzellage
run	<a href="#">2.1.8.4</a>	passe; cordon de soudure	Schweißraupe
run-off plate	<a href="#">2.1.11.15</a>	appendice de fin de cordon	Auslaufstück
run-on plate	<a href="#">2.1.11.14</a>	appendice de début de cordon	Anlaufstück
<b>S</b>			
seal weld	<a href="#">2.1.6.13</a>	soudure d'étanchéité	Dichtnaht
sealing run	See: back run ( <a href="#">2.1.8.21</a> )		
semiautomatic welding	See: partly mechanized welding ( <a href="#">2.1.1.9</a> )		
shielding gas	<a href="#">2.1.10.10</a>	gaz de protection	Schutzgas
side bend test	<a href="#">2.2.3.6</a>	essai de pliage côté	Seitenbiegeprüfung
side bend test specimen	<a href="#">2.2.3.7</a>	éprouvette de pliage côté	Seitenbiegeprobe einer Stumpfnah
single-J butt weld	<a href="#">2.1.6.4</a>	soudure en J; soudure en demi U	HU-Naht; J-Naht
single-run welding	<a href="#">2.1.8.23</a>	soudage monopasse	Einlagenschweißen
single-side welding	<a href="#">2.1.8.24</a>	soudage d'un seul côté	einseitiges Schweißen

English term	Subclause	French translation	German translation
single-U butt weld	<a href="#">2.1.6.6</a>	soudure en U	U-Naht
single-V butt weld	<a href="#">2.1.6.8</a>	soudure en V	V-Naht
site weld	See: field weld ( <a href="#">2.1.8.40</a> )		
slag	<a href="#">2.1.10.9</a>	laitier	Schlacke
slot weld	<a href="#">2.1.6.14</a>	soudure sur entaille	Schlitzschweißung
solid rod	<a href="#">2.1.10.6</a>	baguette pleine	Massivstab
solidification crack	<a href="#">2.1.3.6</a>	fissure de solidification	Erstarrungsrisse
square butt weld	<a href="#">2.1.6.10</a>	soudure bout à bout sur bords droits	I-Naht
staggered intermittent weld	<a href="#">2.1.6.16</a>	soudure discontinue alternée	versetzte, unterbrochene Schweißnaht
standard welding procedure specification	<a href="#">2.5.5</a>	descriptif d'un mode opératoire de soudage standard	Schweißanweisung für Standardschweißverfahren
strength weld	<a href="#">2.1.2.15</a>	soudure résistante	Festigkeitsnaht
stringer bead	<a href="#">2.1.8.5</a>	passé étroite	Strichraupe
strip cladding	See: strip surfacing ( <a href="#">2.1.9.9</a> )		
strip surfacing	<a href="#">2.1.9.9</a>	placage avec électrode en feuillard	Bandplattieren
stud welding	<a href="#">2.1.8.39</a>	soudage de goujon	Bolzenschweißen
surfacing	<a href="#">2.1.9.1</a>	rechargement	Beschichten
systematic imperfection	<a href="#">2.1.3.3</a>	défaut systématique	systematische Unregelmäßigkeit
<b>T</b>			
tack weld	<a href="#">2.1.8.31</a>	soudure de pointage	Heftschweißnaht
tack welding	<a href="#">2.1.8.32</a>	pointage	Heftschweißen
tacking pass	See: tacking run ( <a href="#">2.1.8.33</a> )		
tacking run	<a href="#">2.1.8.33</a>	passé de pointage	Heftlage
temper bead	<a href="#">2.1.8.6</a>	passé d'autorevenu	Vergütungslage
temporary backing	<a href="#">2.1.11.13</a>	support envers temporaire	Unterlage
temporary weld	<a href="#">2.1.8.38</a>	soudure provisoire	Montagehilfsschweißnaht
test piece	<a href="#">2.2.1.5</a>	assemblage de qualification	Prüfstück
test specimen	<a href="#">2.2.1.6</a>	éprouvette	Probe
tested welding consumable	<a href="#">2.2.2.4</a>	produit consommable de soudage soumis à essai	geprüfter Schweißzusatz
testing level	<a href="#">2.2.4.5</a>	niveau d'examen	Prüfklasse
testing organization	<a href="#">2.2.1.7</a>	organisme de contrôle	Prüfstelle
throat thickness	<a href="#">2.1.7.6</a>	gorge	Kehlnahtdicke
T-joint	<a href="#">2.1.4.6</a>	assemblage en T	T-Stoß
torch	<a href="#">2.3.9</a>	torche	Brenner
trailing gas shield	<a href="#">2.1.11.3</a>	protection gazeuse arrière; traînard	mitgeführter Gasschutz
transverse bend test specimen	<a href="#">2.2.3.9</a>	éprouvette de pliage transversal	Querbiegeprobe
travel speed	<a href="#">2.4.7</a>	vitesse d'avance	Vorschubgeschwindigkeit
two side welding	See: both-side welding ( <a href="#">2.1.8.25</a> )		
<b>W</b>			
weld	<a href="#">2.1.1.3</a>	soudure	Schweißnaht
weld batch	<a href="#">2.5.21</a>	lot de soudures	Schweißlos
weld metal	<a href="#">2.1.2.1</a>	métal fondu	Schweißgut

English term	Subclause	French translation	German translation
weld metal thickness	See: penetration depth ( <a href="#">2.1.7.4</a> )		
weld pool	<a href="#">2.1.2.8</a>	bain de fusion	Schweißbad
weld preparation	See: joint preparation ( <a href="#">2.1.5.2</a> )		
weld run sequence	<a href="#">2.1.8.37</a>	séquence des passes de soudage	Schweißraupenfolge
weld sequence	<a href="#">2.1.8.36</a>	séquence de soudage	Schweißnahtfolge
weld setter	<a href="#">2.5.26</a>	régleur en soudage	Einrichter
weld thickness	<a href="#">2.1.7.2</a>	épaisseur de la soudure	Nahthöhe
weld toe	<a href="#">2.1.8.18</a>	piéd de cordon	Nahtübergang
weld width	<a href="#">2.1.7.1</a>	largeur de la soudure	Nahtbreite
weld zone	<a href="#">2.1.2.3</a>	zone fondue	Schweißzone
welded joint	<a href="#">2.1.4.2</a>	assemblage soudé	geschweißte Verbindung
welder	<a href="#">2.5.24</a>	soudeur	Schweißer
welding	<a href="#">2.1.1.1</a>	soudage	Schweißen
welding accessories	<a href="#">2.3.5</a>	accessoires de soudage	Schweißzubehör
welding conditions	<a href="#">2.5.14</a>	conditions de soudage	Schweißbedingungen
welding consumable	<a href="#">2.1.10.1</a>	produit consommable de soudage	Schweißzusatzmittel
welding coordination	<a href="#">2.5.1</a>	coordination en soudage	Schweißtechnische Koordinierungsaufgaben
welding coordinator	<a href="#">2.5.23</a>	coordinateur en soudage	Schweißaufsicht
welding cycle	<a href="#">2.1.8.34</a>	cycle de soudage	Schweißzyklus
welding data	<a href="#">2.4.3</a>	données de soudage	Schweißwerte; Schweißdaten
welding equipment	<a href="#">2.3.1</a>	matériel de soudage	Schweißausrüstung
welding flux	See: flux ( <a href="#">2.1.10.8</a> )		
welding inspection	<a href="#">2.5.2</a>	inspection en soudage	Schweißgüteprüfung
welding inspector	<a href="#">2.5.28</a>	inspecteur en soudage	Schweißgüteprüfer
welding installation	<a href="#">2.3.3</a>	installation de soudage	Schweißanlage
welding operator	<a href="#">2.5.25</a>	opérateur soudeur	Bediener von Schweißeinrichtungen
welding parameters	<a href="#">2.4.1</a>	paramètres de soudage	Schweißparameter
welding plant	See: welding installation ( <a href="#">2.3.3</a> )		
welding procedure	<a href="#">2.5.3</a>	mode opératoire de soudage	Schweißverfahren
welding procedure qualification record	<a href="#">2.5.12</a>	procès-verbal de qualification d'un mode opératoire de soudage; PV-QMOS	Bericht über die Qualifizierung des Schweißverfahrens; WPQR
welding procedure specification	<a href="#">2.5.4</a>	descriptif de mode opératoire de soudage; DMOS	Schweißanweisung; WPS
welding procedure test	<a href="#">2.5.7</a>	épreuve de qualification d'un mode opératoire de soudage	Schweißverfahrensprüfung
welding process	<a href="#">2.1.8.1</a>	procédé de soudage	Schweißprozess
welding rod	See: filler rod ( <a href="#">2.1.10.5</a> )		
welding speed	<a href="#">2.4.6</a>	vitesse de soudage	Schweißgeschwindigkeit
welding technique	<a href="#">2.1.8.2</a>	technique de soudage	Arbeitstechnik beim Schweißen
welding time	<a href="#">2.4.8</a>	temps de soudage	Schweißzeit
welding unit	<a href="#">2.3.2</a>	unité de soudage	Schweißeinrichtung
welding variable	<a href="#">2.4.2</a>	variable de soudage	schweißtechnische Einflussgröße
weldment	<a href="#">2.1.1.4</a>	construction soudée	Schweißteil
work instruction	<a href="#">2.5.16</a>	instructions de travail	Arbeitsanweisung

English term	Subclause	French translation	German translation
workplace	<a href="#">2.1.8.35</a>	poste de travail	Arbeitsplatz
WPQR	See: welding procedure qualification record ( <a href="#">2.5.12</a> )		
WPS	See: welding procedure specification ( <a href="#">2.5.4</a> )		

## Annex B (informative)

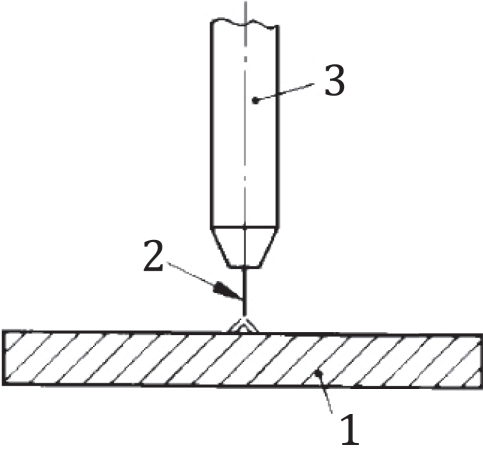
### Alphabetical index of general terms defined in ISO 857-1:1998 or ISO/TR 25901:2007 that were not included in this part of ISO/ TR 25901

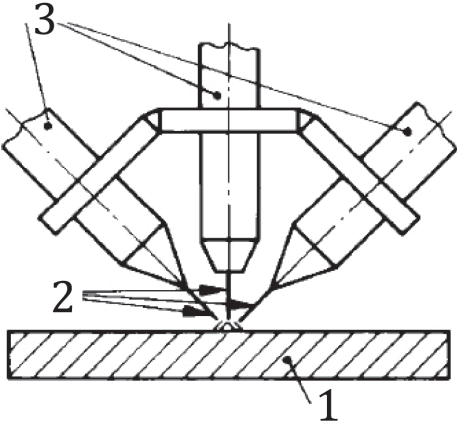
The terms from ISO/TR 25901:2007 and ISO 857-1:1998 that are not included in the body of this first edition of this part of ISO/TR 25901 are either listed below when they have become obsolete or redundant, or are covered in another part of this Technical Report.

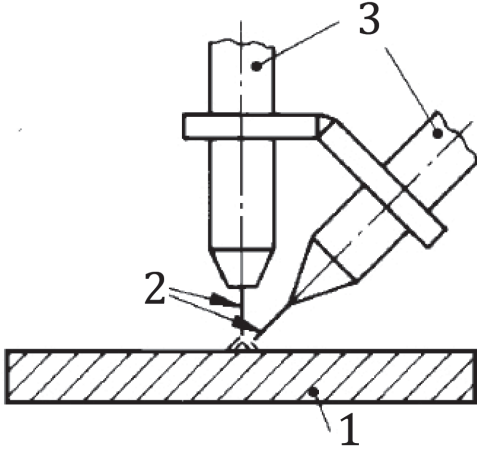
Term	Definition	Origin	Subclause
<b>B</b>			
<b>back or front support</b>	piece of metal or other auxiliary material placed against the workpiece on either the back or front face of the joint in order to retain the molten weld metal	ISO/TR 25901:2007	2.24
<b>batch sample</b>	one or more units of product, selected at random from the batch and considered to be representative of the batch	ISO/TR 25901:2007	2.34
<b>buffer layer</b>	layer on a parent material to provide a suitable metallurgical transition with the final overlay	ISO/TR 25901:2007	2.50
<b>C</b>			
<b>cooling time</b>	time of cooling between two given temperatures, generally specified for a weld run and its heat affected zone  EXAMPLE $t_{8/5}$ denotes the cooling time from 800 °C to 500 °C.	ISO 857-1:1998	5.2.12
<b>D</b>			
<b>deposition ratio</b>	ratio of length of bead to length of filler rod consumed	ISO 857-1:1998	5.2.31
<b>direction of welding</b>	direction in which welding is carried out  NOTE Welding direction is defined by the direction in which the bead is developed.	ISO 857-1:1998	5.2.8
<b>double-side single-run welding</b>	welding in which the weld is made from both sides of the workpiece in one run, each run consisting of one bead only	ISO 857-1:1998	5.1.6
<b>E</b>			
<b>end of weld</b>	point on the workpiece where welding is or was discontinued	ISO 857-1:1998	5.3.8
<b>F</b>			
<b>face bend test specimen of cladding with a butt weld</b>	test specimen used in a face bend test for cladding with a butt weld	ISO/TR 25901:2007	2.123
<b>face bend test specimen of cladding without a butt weld</b>	test specimen used in a bend test for cladding without a butt weld	ISO/TR 25901:2007	2.124
<b>faying surface</b>	surface of one component that is intended to be in contact with, or in close proximity to, a surface of another component to form a joint	ISO/TR 25901:2007	2.125

Term	Definition	Origin	Subclause
<b>filler metal feed</b>	rate at which the filler metal is fed NOTE Feed rate is expressed as filler metal length per unit time.	ISO 857-1:1998	5.2.10
<b>H</b>			
<b>heating time</b>	time of heating between two given temperatures, generally specified for the weld metal or heat affected zone Example: $t_{5/8}$ denotes the heating time from 500 °C to 800 °C.	ISO 857-1:1998	5.2.14
<b>holding oven</b>	heated receptacle in which welding consumables are held to prevent reabsorption of moisture, e.g. at 100 °C to 200 °C	ISO/TR 25901:2007	2.185
<b>J</b>			
<b>joining (by welding)</b>	producing a permanent connection between two or more workpieces by welding NOTE Term intended to distinguish the purpose of welding from surfacing.	ISO 857-1:1998	3.1.4
<b>joint welding</b>	production welding used to join components together	ISO/TR 25901:2007	2.203
<b>K</b>			
<b>kerf</b>	gap left after metal has been removed in thermal cutting	ISO/TR 25901:2007	2.204
<b>L</b>			
<b>lift</b>	<stud welding> distance between the stud tip and the workpiece surface with the stud-lifting mechanism in position and activated	ISO/TR 25901:2007	2.212
<b>M</b>			
<b>maximum throat thickness</b>	dimension measured from the deepest point of the penetration in fillet welds, or the extremity of the root run in butt welds, to the highest point of the excess weld metal (usually measured from a cross-section)	ISO/TR 25901:2007	2.224
<b>melting time</b>	time during which the filler metal melts	ISO 857-1:1998	5.2.13
<b>multiple-head welding</b>	See: ISO 857-1:1998, Table 2 (Number of welding heads: more than three)	ISO 857-1:1998	7.4
<b>O</b>			
<b>object-to-film distance</b>	<radiography> distance between the radiation side of the test object and the film surface, measured along the central axis of the radiation beam	ISO/TR 25901:2007	2.246
<b>oxygen arc cutting</b>	thermal cutting process that uses the heat of an arc and cutting oxygen	ISO/TR 25901:2007	2.255
<b>P</b>			
<b>penetrated thickness</b>	<radiography> thickness of material penetrated by the radiation beam	ISO/TR 25901:2007	2.266
<b>plasma cutting</b>	arc cutting process that uses a constricted arc and removes the molten metal with a high-velocity jet of ionized gas issuing from the constricting orifice	ISO/TR 25901:2007	2.272
<b>productive welding time</b>	time during which the welding operation takes place	ISO 857-1:1998	5.2.16



Term	Definition	Origin	Subclause
<b>R</b>			
<b>relative efficiency</b>	$\eta'$ ratio of the efficiency of any welding process, $\eta_X$ , to that of submerged arc welding, $\eta_{UP}$ , is expressed by $\eta' = \eta_X / \eta_{UP}$	ISO 857-1:1998	5.2.24
<b>re-start of weld</b>	point on the run where welding is or was re-started	ISO 857-1:1998	5.3.7
<b>root bend test specimen of butt weld</b>	test specimen used in a root bend test for a butt weld	ISO/TR 25901:2007	2.305
<b>rotation</b>	<welding geometry> angle between the centreline of a weld and the positive y-axis or a line parallel to the y-axis, measured in the counter-clockwise direction in the plane of the transverse cross-section of the weld	ISO/TR 25901:2007	2.311
<b>S</b>			
<b>servicing time</b>	time for carrying out tasks associated with welding (e.g. change of electrodes, slag removal)	ISO 857-1:1998	5.2.17
<b>side bend test specimen of butt weld</b>	test specimen used in a side bend test for a butt weld	ISO/TR 25901:2007	2.325
<b>side bend test specimen of cladding with a butt weld</b>	test specimen used in a side bend test for cladding with a butt weld	ISO/TR 25901:2007	2.326
<b>side bend test specimen of cladding without a butt weld</b>	test specimen used in a side bend test for cladding without a butt weld	ISO/TR 25901:2007	2.327
<b>simultaneous double-side welding</b>	welding in which the weld is produced by welding simultaneously from both sides of the workpiece	ISO 857-1:1998	5.1.7
<b>single-head welding</b>	<p>See: ISO 857-1:1998, Table 2 (Number of welding heads: one)</p>  <p>The diagram illustrates single-head welding. It shows a cross-section of a workpiece (1) being welded. A welding head (3) is positioned above the workpiece, and filler metal (2) is being applied to the joint. The workpiece is shown as a hatched rectangular block, and the welding head is a vertical cylindrical component with a pointed tip.</p> <p><b>Key</b>  1 workpiece  2 filler metal  3 welding head</p>	ISO 857-1:1998	7.1

Term	Definition	Origin	Subclause
<b>slope</b>	<welding geometry> angle between the root line and the positive x-axis of the horizontal reference plane in straight welds NOTE The slope is measured in the counter-clockwise direction.	ISO/TR 25901:2007	2.335
<b>source size</b>	<radiography> size of the radiation source	ISO/TR 25901:2007	2.346
<b>source-to-film distance</b>	<radiography> distance between the radiation source and the film, measured in the direction of the beam	ISO/TR 25901:2007	2.347
<b>source-to-object distance</b>	<radiography> distance between the radiation source and the source side of the test object, measured along the central axis of the beam	ISO/TR 25901:2007	2.348
<b>stack cutting</b>	thermal cutting of a stack of plates usually clamped together	ISO/TR 25901:2007	2.352
<b>standard material</b>	material produced and delivered in accordance with a standard or specification	ISO/TR 25901:2007	2.353
<b>start of weld</b>	point on the workpiece where welding is or was started	ISO 857-1:1998	5.3.1
<b>T</b>			
<b>tack weld location</b>	point on the workpiece where tack welding is or was carried out	ISO 857-1:1998	5.3.3
<b>tack welding schedule</b>	schedule specifying location and size of tack welds, and the tacking sequence	ISO 857-1:1998	5.4.1
<b>tack welding sequence</b>	order in which tack welds are placed	ISO 857-1:1998	5.4.2
<b>three-dimensional heat flow</b>	the heat flow during welding occurring parallel and vertical to the plate surface	ISO 857-1:1998	5.2.25
<b>three-head welding</b>	See: ISO 857-1:1998, Table 2 (Number of welding heads: three)  <b>Key</b> 1 workpiece 2 filler metal 3 welding head	ISO 857-1:1998	7.3

Term	Definition	Origin	Subclause
<b>total allowance</b>	<pressure, resistance butt, flash or friction welding> length allowed, in preparation for welding, for the total shortening of both components due to all the operations that are actually used in the making of a weld	ISO/TR 25901:2007	2.388
<b>transition thickness</b>	$d_t$ plate thickness at which the transition from three-dimensional to two-dimensional heat flow takes place NOTE $d_t$ depends on heat input.	ISO 857-1:1998	5.2.27
<b>two-dimensional heat flow</b>	the heat flow during welding only occurring parallel to the plate surface	ISO 857-1:1998	5.2.26
<b>two-head welding</b>	See: ISO 857-1:1998, Table 2 (Number of welding heads: two)  <b>Key</b> 1 workpiece 2 filler metal 3 welding head	ISO 857-1:1998	7.2
<b>two-run welding</b>	welding in which the weld is made or layer is deposited in two runs	ISO 857-1:1998	5.1.2
<b>W</b>			
<b>weld area</b>	area of workpiece or workpieces where welding is or was carried out	ISO 857-1:1998	5.3.9
<b>weld interface</b>	contact area after the welding force is applied	ISO/TR 25901:2007	2.414
<b>weld metal deposition rate</b>	mass of weld metal deposited in the groove per unit of productive weld time	ISO 857-1:1998	5.2.32
<b>weld rotation</b>	angle between the centreline of the weld (i.e. the line joining the centres of the weld root and the capping layer) and the positive y-axis or a line parallel to the y-axis, measured in the mathematically positive (i.e. counterclockwise) direction in the plane of the transverse cross-section of the weld in question	ISO/TR 25901:2007	2.419

Term	Definition	Origin	Subclause
<b>weld slope</b>	<p>angle between the root line (or the tangent to the root line in the case of curved welds) and the positive x-axis of the horizontal reference plane, measured in the mathematically positive (i.e. counterclockwise) direction</p> <p>NOTE The coordinate system is arranged so that the root line lies in the vertical reference plane, i.e. x/z-plane, and the working direction radiates outward from the coordinate origin.</p>	ISO/TR 25901:2007	2.422
<b>welding coordination personnel</b>	<p>personnel who have responsibilities in the manufacturing operation for welding and welding-related activities, and whose competence and knowledge have been demonstrated by, for example, training, education and/or relevant manufacturing experience</p>	ISO/TR 25901:2007	2.438
<b>welding operation</b>	<p>operation in which workpieces are joined by welding</p> <p>Note: In arc welding, for example, the welding operation is coincident with the arc burning time.</p>	ISO 857-1:1998	5.2.1
<b>welding schedule</b>	<p>schedule specifying the complete welding procedure (e.g. welding sequence, welding conditions, welding parameters)</p>	ISO 857-1:1998	5.4.6
<b>welding sequence schedule</b>	<p>schedule specifying the order and direction in which welds are to be made on a workpiece</p>	ISO 857-1:1998	5.4.3

## Bibliography

- [1] ISO 6520-1, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding*
- [2] ISO 6520-2, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 2: Welding with pressure*
- [3] ISO 14917, *Thermal spraying — Terminology, classification*
- [4] ISO 15296, *Gas welding equipment — Vocabulary — Terms used for gas welding equipment*
- [5] ISO 17658, *Welding — Imperfections in oxyfuel flame cuts, laser beam cuts and plasma cuts — Terminology*
- [6] ISO 17677-1, *Resistance welding — Vocabulary — Part 1: Spot, projection and seam welding*
- [7] ISO 25239-1, *Friction stir welding — Aluminium — Part 1: Vocabulary*
- [8] IEC 60050-851, *International electrotechnical vocabulary — Part 851: Electric welding*





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