



BSI Standards Publication

# Plastics welding supervisor — Task, responsibilities, knowledge, skills and competence

**National foreword**

This Published Document is the UK implementation of CEN/TR 16862:2015.

The UK participation in its preparation was entrusted to Technical Committee PRI/80, Welding thermoplastics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 89034 5

ICS 03.100.30; 25.160.10

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 July 2015.

**Amendments issued since publication**

Date	Text affected
------	---------------

---

ICS 03.100.30; 25.160.10

English Version

## Plastics welding supervisor - Task, responsibilities, knowledge, skills and competence

Superviseur en soudage de matières plastiques - Missions,  
responsabilités, connaissances, qualifications et  
compétences

Kunststoffschweißaufsicht - Aufgaben, Verantwortungen,  
Wissen, Fähigkeiten und Kompetenz

This Technical Report was approved by CEN on 6 July 2015. It has been drawn up by the Technical Committee CEN/TC 249.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword .....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Tasks and responsibilities .....	7
4.1 General .....	7
4.2 Pre-welding activities .....	7
4.2.1 General .....	7
4.2.2 Contract review .....	7
4.2.3 Technical document review .....	8
4.2.4 Materials and products .....	8
4.2.5 Welding environment .....	8
4.2.6 Equipment .....	8
4.2.7 Welding personnel .....	9
4.2.8 Testing activities .....	9
4.2.9 Materials weldability .....	9
4.3 Activities during welding .....	9
4.4 Activities after welding .....	9
4.4.1 Acceptance and release of the welded joints .....	9
4.4.2 Management non-compliance and corrective actions .....	10
5 Competence .....	10
5.1 General .....	10
5.2 Knowledge .....	10
5.3 Skills .....	10
Bibliography .....	12

## **European foreword**

This document (CEN/TR 16862:2015) has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by NBN.

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

## **Introduction**

Welding is a special process that requires the coordination of activities related to quality, including construction, testing and maintenance in order to ensure confidence in the reliability of welded structures and their behaviour in service. This Technical Report defines the tasks and responsibilities, knowledge, skills, and competence necessary to carry out the role of "plastic welding supervisor".

The use of this Technical Report helps an organization to provide evidence of sound management and may, therefore, represent a technical credential for the achievement of the welded product's performance requirements.

## 1 Scope

This Technical Report identifies the quality related responsibilities and tasks included in the supervision of activities related to the welding of products and semi-finished products made of thermoplastic materials and provides guidelines to ensure the quality of the supervision.

The fundamental aspects of this Technical Report are the following:

- definition of tasks and responsibilities;
- definition of the required knowledge, skills and competence.

The plastic welding supervisor (PWS) should be employed by the organization involved in the welding activities. This Technical Report applies to all thermoplastic welding processes.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 9000, *Quality management systems — Fundamentals and vocabulary (ISO 9000)*

EN ISO/IEC 17000, *Conformity assessment — Vocabulary and general principles (ISO/IEC 17000)*

ISO 3834-1, *Quality requirements for fusion welding of metallic materials — Part 1: Criteria for the selection of the appropriate level of quality requirements*

## 3 Terms and definitions

For the purpose of this document, the terms and definitions given in EN ISO 9000, ISO 3834-1 and ISO/IEC 17000 and the following apply.

### 3.1

#### **competence**

demonstrated ability to apply knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development

Note 1 to entry: In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

### 3.2

#### **conformity**

fulfilment of a requirement

### 3.3

#### **construction**

product, structure or any other object welded

### 3.4

#### **construction plan**

document for a specific project, product, process or contract, which specifies the procedures and associated resources that must be used, by whom and when

### 3.5

#### **contract**

binding agreement

**3.6**

**corrective action**

action to eliminate the cause of a detected non-conformity or other undesirable situation

**3.7**

**knowledge**

body of facts, principles, theories and practices that is related to a field of work or study

Note 1 to entry: In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.

**3.8**

**organization**

group of people and facilities, with an arrangement of responsibilities, authorities and relationships

**3.9**

**plastics welding supervisor**

**PWS**

person responsible and competent to perform the welding supervision activities

**3.10**

**process**

set of interrelated or interacting activities which transform inputs into outputs

**3.11**

**project**

unique process, consisting of a set of coordinated and monitored activities, with start and finish dates, undertaken to an objective conforming to specific requirements, including time, costs and resource

**3.12**

**qualification process**

process to demonstrate the ability to fulfil specified requirements

**3.13**

**release**

permission to proceed to the next stage of a process

**3.14**

**requirement**

need or expectation that can be stated, generally implied or obligatory

**3.15**

**review**

activity undertaken to determine the suitability, adequacy and effectiveness of subject matter to achieve established objectives

**3.16**

**sub-contractor**

supplier of products, services and/or activities to the manufacturer in a contractual situation

**3.17**

**skill**

ability to apply knowledge and use know-how to complete tasks and solve problems

Note 1 to entry: In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).



**3.18**

**test**

determination of one or more characteristics according to a procedure

**3.19**

**weldability**

property of material(s) to achieve a welded joint that meets the design requirements

**3.20**

**welding procedure**

specified course of action to be followed in making a weld, including the welding process(es), reference to materials, welding consumables, preparation, preheating (if necessary), method and control of welding and necessary equipment to be used

**3.21**

**welding report**

document automatically generated by the welding equipment

**3.22**

**welding plan**

order in which the welds are made

**3.23**

**work instruction**

all the stages of work and verification derived from the welding procedure

## **4 Tasks and responsibilities**

### **4.1 General**

The PWS should record objective evidence of results of all activities covered in 4.2 to 4.4.

Compliance to this Technical Report is the responsibility of the organization involved in the welding activities. Where supervision is performed by more than one person, the tasks and responsibilities should be allocated such that responsibility is clearly defined and the persons are competent in each specific welding supervision task.

### **4.2 Pre-welding activities**

#### **4.2.1 General**

The PWS should be able to conduct and/or verify the activities described in 4.2.2 to 4.2.8.

#### **4.2.2 Contract review**

The PWS should verify the ability of all organizations, including sub-contractors, involved in the project to carry out activities related to welding covered by this Technical Report, e.g. availability of

- welding and ancillary equipment,
- qualified welding personnel,
- provision for testing.

### **4.2.3 Technical document review**

The PWS should verify the existence and applicability of all required technical documents relating to welding and check their compliance with national regulations, application standards and technical specifications, e.g.

- welding procedures;
- welding report and/or welding data sheet templates;
- procedure for assessing the weld quality. Procedure for assessing the weld quality shall include destructive and non-destructive testing and acceptance criteria;
- welding plan if required.

### **4.2.4 Materials and products**

The PWS should check:

- that all products and/or semi-finished products that are going to be used in the project have the required documentation to verify their compliance to the contract specification or the application standard;

EXAMPLE Certificate 3.1 of EN 10204:2004 [1].

- visually that the marking/labelling of all incoming products and/or semi-finished products are in agreement with the documentation supplied;
- for proper storage and handling of system components as specified in technical documents and / or application standards;
- that the dimensional characteristics of the materials to be welded meet the project requirements.

### **4.2.5 Welding environment**

The PWS should:

- verify that the environmental conditions are within the limits established for the welding operation(s) and given in the welding procedure(s);
- verify that the work area is suitable for the welding operation and safely maintained and operated (clean, free from obstructions, etc.);
- if requested, provide guidance to the Safety Officer in relation to welding conditions.

### **4.2.6 Equipment**

The PWS should:

- verify that the welding and ancillary equipment are those defined in the project and meet the minimum requirements specified in the appropriate equipment standards;
- verify that destructive and non-destructive testing equipment are those defined in the project and meet the minimum requirements specified in the appropriate standards;
- verify the existence of documented plans for monitoring and periodic maintenance of the equipment. These plans should ensure the inspection and maintenance of all equipment as defined in the project and / or in the relevant standards. Additional requirements may be specified in the contract;

- if requested, provide guidance to the Safety Officer in relation to welding, ancillary or testing equipment.

#### **4.2.7 Welding personnel**

The PWS should:

- verify the appropriateness and validity of the qualification of the welders relating to the project;
- verify the proper distribution of specific work instructions to personnel who will carry out the welding operation and related activities.

#### **4.2.8 Testing activities**

The PWS should ensure that the procedure for assessing the weld quality is sent to the organization(s) responsible for these activities.

#### **4.2.9 Materials weldability**

When appropriate the PWS should verify the weldability of the materials being used (e.g. extrusion welding, hot gas welding).

### **4.3 Activities during welding**

The PWS should:

- verify, immediately before the start, the proper functioning of the welding and ancillary equipment within the limits given in the welding procedure;
- check that the specific work instructions and welding procedure are being followed;
- check that the welds are made in accordance with the welding plan;
- carry out intermediate visual inspections during the welding operations;
- propose, to all organizations involved in welding activities, any variations to the welding procedure during construction that may be necessary for operational reasons;
- if requested, provide guidance to the Safety Officer in relation to welding operations.

### **4.4 Activities after welding**

#### **4.4.1 Acceptance and release of the welded joints**

The PWS should:

- check that destructive and/or non-destructive tests are carried out and documented in accordance with the quality plan;
- check that the destructive and/or non-destructive test results are in accordance with the acceptance criteria specified in the contract;
- check that the welding reports and/or welding record sheets are in accordance with the welding procedure; If the above three points are fulfilled the PWS can release the welded joints.

#### **4.4.2 Management non-compliance and corrective actions**

The PWS should:

- notify the relevant person within the organization of any non-compliance found in the activities for which the PWS has responsibility;
- participate in the resolution of the non-compliance, within the boundaries of their competence and as defined in the quality plan.

### **5 Competence**

#### **5.1 General**

The PWS should have the knowledge and skills as defined in 5.2 and 5.3.

The competence may be achieved in a non-formal and/or informal way, where non-formal means the participation in a training course and informal means "on the job".

#### **5.2 Knowledge**

The PWS should have knowledge about the following:

- technical and practical features of the equipment to be used. Risks and prevention;
- qualification of welding personnel;
- welding procedure specification;
- acceptable environmental conditions;
- materials to be welded (weldability);
- products and semi-finished products to be used including marking, labelling, storage and handling;
- welding operations. Risks, methods of prevention and control of activities;
- destructive and non-destructive (e.g. visual) tests including acceptance criteria;
- quality system;
- relevant laws, regulations, standards and/or technical documents related to all of the above points.

#### **5.3 Skills**

The PWS should have the skills to the following:

- perform the contract review and highlight the need for any additional requirements, if necessary;
- assess whether the welding and ancillary equipment are those appropriate for the project;
- assess the effectiveness of the plans for the inspection and maintenance of equipment;
- assess the appropriateness of the specific work instructions;
- assess the compliance of the products and/or semi-finished products (certificate of conformity, e.g. type 3.1 of EN 10204) in relation to the weld design requirements;

- ensure that the working area and the environmental conditions are appropriate for carrying out the work;
- assess the suitability and validity of welders' qualifications;
- determine whether the welding procedure is appropriate and is carried out correctly;
- assess the compliance with the welding plan and propose any variations during construction;
- organize and plan the destructive and non-destructive testing of the welds, in compliance with the quality plan;
- assess weldability of the material(s) used;
- detect any non-compliance;
- ensure the traceability of all products and materials used during the various stages of construction;
- ensure that the system components are stored and handled correctly;
- evaluate the test results, welding report and/or welding data sheet in order to release the weld(s).

## Bibliography

- [1] EN 10204:2004, *Metallic products — Types of inspection documents*



# British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

## About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

## Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at [bsigroup.com/standards](http://bsigroup.com/standards) or contacting our Customer Services team or Knowledge Centre.

## Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at [bsigroup.com/shop](http://bsigroup.com/shop), where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

## Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to [bsigroup.com/subscriptions](http://bsigroup.com/subscriptions).

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

**PLUS** is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit [bsigroup.com/shop](http://bsigroup.com/shop).

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email [bsmusales@bsigroup.com](mailto:bsmusales@bsigroup.com).

## BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

## Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

## Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. Details and advice can be obtained from the Copyright & Licensing Department.

## Useful Contacts:

### Customer Services

**Tel:** +44 845 086 9001

**Email (orders):** [orders@bsigroup.com](mailto:orders@bsigroup.com)

**Email (enquiries):** [cservices@bsigroup.com](mailto:cservices@bsigroup.com)

### Subscriptions

**Tel:** +44 845 086 9001

**Email:** [subscriptions@bsigroup.com](mailto:subscriptions@bsigroup.com)

### Knowledge Centre

**Tel:** +44 20 8996 7004

**Email:** [knowledgecentre@bsigroup.com](mailto:knowledgecentre@bsigroup.com)

### Copyright & Licensing

**Tel:** +44 20 8996 7070

**Email:** [copyright@bsigroup.com](mailto:copyright@bsigroup.com)



...making excellence a habit.™