British Standard

BRITISH STANDARD

BS EN
12814-5:2000

Testing of welded joints of thermoplastics semi-finished products —

Part 5: Macroscopic examination

The European Standard EN 12814-5:2000 has the status of a British Standard

ICS 25.160.40

National foreword

This British Standard is the official English language version of EN 12814-5:2000.

The UK participation in its preparation was entrusted to Technical Committee PRI/80, Welding thermoplastics, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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Summary of pages

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Essai des assemblages soudés sur produits semi-finis en thermoplastiques - Partie 5: Examen macroscopique

Prüfen von Schweißverbindungen aus thermoplastischen Kunststoffen - Teil 5: Makroskopische Untersuchung

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

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2001, and conflicting national standards shall be withdrawn at the latest by January 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the cutting and preparation of test specimens and the conditions for performing the macroscopic examination of the test specimens.

The test is applicable to welded assemblies made from thermoplastics materials filled or unfilled, using the following processes :

— hot gas welding : round nozzle, high speed nozzle, wedge ;

— extrusion welding ;

— heated tool welding : butt, saddle, socket, wedge ;

— electrofusion welding : socket, saddle.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 13067:1999, Plastics welding personnel — Approval testing of welders —- Thermoplastics welded assemblies.

3 Terms and definitions

For the purposes of this standard, the following definition applies :

3.1
macroscopic examination
examination of a test specimen by the naked eye, or under low magnification, with or without etching

4 Principle of the test

Macroscopic examination is used to reveal the macroscopic features of a welded joint, usually by the examination of transverse sections.

5 Purpose of the test

The purpose of macroscopic examination shall be to assess features as described in table 1.

The features to be examined shall be given in the corresponding quality level standard.

Imperfections are defined by a reference number.

Table 1 — Guidelines for assessment of features by macroscopic examination

Features	Reference number of imperfection	Macroscopic examination without etching	Macroscopic examination with etching	Notes (if any)
Cracks	1AAAA	(X)	X	
Cavities	2AAAA	X	X	
Inclusions	3AAAA	X	X	
Lack of fusion	4BAAA	-	(X)	
Incomplete penetration	4CAAA	(X)	(X)	
Imperfect shape	5AAAA	X	X	
Joint preparation	6AAAA	X	X	
Welding zone	-----	(X)	X	HAZ [a)]
Welding process	-----	X	X	
NOTE X means features revealed ; (X) means features which may or may not be revealed - means features not revealed.				
[a)] Heat affected zone.				

6 Cutting of test specimens

Testing usually applies to test specimens oriented perpendicular to the weld axis (transverse section) including the weld deposit and heat affected zones on both sides of the weld.

Test specimens may also be cut at other orientations to the weld axis.

The location, orientation and number of sections should be as specified in the relevant standards such as prEN 13067:1999 and/or specifications or by special agreements.

7 Test procedure

7.1 General

The following information shall be given before the preparation of the test specimen :

— parent and weld materials ;

— purpose of the test.

7.2 Test specimen preparation

The test specimen shall be cut and prepared for examination by producing a smooth surface. This can be achieved by planing, polishing or similar technique.

If polishing is used, the polishing material shall be of several grades up to and at least grade 1000 (e.g. 180 - 320 - 600 and 1000).

The surface to be examined shall not be adversely influenced by these processes.

7.3 Surface finish

The surface to be examined can be submitted to a treatment in order to highlight the welded zone and possibly the imperfections which may be present.

The following methods can be used :

— heat the surface (e.g. using hot air flow, radiant heat, etc...) ;

— etching the surface with a specific etchant ;

The etchants used for thermoplastics are often toxic. Therefore, etching should only be performed by a trained person, following relevant safety regulations.

8 Examination

The prepared surface shall be examined under a magnification between 1 and 10.

9 Test report

The test report shall refer to this standard and it shall include at least the following information :

a) description and identification of the test piece and test specimens ;

b) surface finish ;

c) surface treatment method if applicable (heat source, etchant, etching time, ...) ;

d) purpose of the test ;

e) type of welded joint ;

f) magnification ;

g) result(s) of examination ;

h) name and signature of the responsible person for the test report.

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