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Plastics — Joining of thermoplastic moulded components — Specification for quality levels for imperfections

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Contents

Summary of pages
This document comprises a front cover, and inside front cover, pages i to ii, pages 1 to 29, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 28 February 2019. It was prepared by Technical Committee WEE/3, *Welding of Thermoplastic Moulded Components*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

This British Standard has been developed to help organizations better understand quality levels for imperfections in the following thermal joining processes:

- ultrasonic welding;
- ultrasonic spot welding;
- infrared welding;
- hot gas convection welding;
- linear vibration welding;
- orbital vibration welding;
- spin welding;
- laser welding;
- hot plate welding; and
- heat staking: hot air, electrical, infrared and ultrasonic.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

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

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

0 Introduction

This British Standard is intended to be used as a reference in the drafting of application specifications. It contains a simplified selection of thermal joining process imperfections in thermoplastics based on the designations given in BS EN 14728.

The purpose of this British Standard is to define dimensions of typical imperfections which might be expected in normal fabrication. It may be used within a quality system for the production of joints. It provides three sets of dimensional values from which a selection can be made for a particular application. The quality level necessary in each case is intended to be defined by the application specification or the responsible designer, in conjunction with the manufacturer, user and/or other parties concerned.

The quality levels are expected to be prescribed before the start of production, preferably at the enquiry or order stage. They provide basic reference data and are not specifically related to any particular application. They refer to types of joint in fabrication and not to the complete product or component itself. It is possible, therefore, for different quality levels to be applied to individual joints in the same product or component.

It would normally be expected that for a particular joint the dimensional limits for imperfections could all be covered by specifying one quality level. In some cases, it might be necessary to specify different quality levels for different imperfections in the same joint.

The choice of quality level for any application is expected to take account of design considerations, subsequent processing, mode of stressing (e.g. static, dynamic), service conditions (e.g. temperature, environment) and consequences of failure. Economic factors are also important and include not only the cost of joining process but also of inspection, testing and repair.

Imperfections are quoted in terms of their actual dimensions, and their detection and evaluation might require the use of one or more methods of destructive and/or non-destructive testing. The detection and sizing of imperfections are dependent on the inspection methods and the extent of testing specified.

This British Standard is directly applicable to visual testing of thermal joints and does not include details of recommended methods of detection or sizing by non-destructive means. These limits are not necessarily applicable to non-destructive testing methods and might need to be supplemented by requirements for inspection, examination and testing.

The values given for imperfections are for thermal joints produced using normal joining process practice.

1 Scope

This British Standard specifies quality levels for imperfections in joints in thermoplastic moulded components due to the joining process.

This British Standard does not describe imperfections that can be generated either during service or present before joining, such as poor fit up. The correct preparation before joining is described in the relevant thermal joining process specification (TJPS), as defined in BS 89100. It is not applicable to onsite joining processes.

Three quality levels are specified in order to permit application for a wide range of joining processes set out in a) to j) below. They are designated by symbols B, C and D, where B is the most stringent.

