

Non-destructive testing — Acoustic emission — General principles

The European Standard EN 13554:2002, with the incorporation of amendment A1:2003 has the status of a British Standard

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National foreword

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Summary of pages

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Foreword

This document EN 13554:2002 has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to amendment A1

This document EN 13554:2002/A1:2003 has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN 13554:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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1 Scope

This European Standard specifies the general principles required for the acoustic emission (AE) testing of industrial structures, components, and different materials under stress and for harsh environment, in order to provide a defined and repeatable performance. It includes guide lines for the preparation of application documents, which describe the specific requirements for the application of the AE method.

Unless otherwise specified in the referencing documents, the minimum requirements of this standard are applicable.

2 Normative references

This European Standard incorporates by dated or undated reference, provision 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).

EN 1330-1, *Non destructive testing - Terminology - Part 1: List of general terms.*

EN 1330-2, *Non destructive testing - Terminology - Part 2: Terms common to the non destructive testing methods.*

EN 1330-9, *Non destructive testing - Terminology - Part 9: Terms used in Acoustic Emission testing.*

EN 473, *Non-destructive testing – Qualification and certification of NDT personnel - General principles.*

EN 13477-2, *Non-destructive testing – Acoustic emission – Equipment characterisation – Part 2: Verification of operating characteristic.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions of EN 1330-1, EN 1330-2 and EN 1330-9 apply.

4 Personnel qualification

It is assumed that emission testing is performed by qualified and capable personnel. In order to prove this qualification, it is recommended to certify the personnel in accordance with EN 473 or equivalent.

NOTE For pressure equipment see directive 97/23/EC, annex I, 3.1.3 : " For pressure equipment in categories III and IV, the personnel must be approved by a third-party organization recognized by a Member State."

5 Principle of the acoustic emission method

5.1 The acoustic emission (AE) phenomenon

Acoustic emission is a physical phenomenon occurring within materials, and the term Acoustic Emission is used to define the spontaneous elastic energy released within a material or by a process, in the form of transient elastic waves.

The application of load or harsh environment in a material produces internal modifications such as crack growth, local plastic deformation, corrosion and phase changes which are generally accompanied by the emission of elastic waves in materials. These waves therefore contain information on the internal behaviour of the material.