Non-destructive testing - Acoustic emission testing (AT) - Leak detection by means of acoustic emission (ISO 18081:2024)

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NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 18081:2024 sisaldab Euroopa standardi EN ISO 18081:2024 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 18081:2024 consists of the English text of the European standard EN ISO 18081:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 17.07.2024.	Date of Availability of the European standard is 17.07.2024.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 19.100

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 18081

July 2024

ICS 19.100

Supersedes EN ISO 18081:2016

English Version

Non-destructive testing - Acoustic emission testing (AT) - Leak detection by means of acoustic emission (ISO 18081:2024)

Essais non destructifs - Essais d'émission acoustique - Détection de fuites par émission acoustique (ISO 18081:2024)

Zerstörungsfreie Prüfung - Schallemissionsprüfung - Dichtheitsprüfung mittels Schallemission (ISO 18081:2024)

This European Standard was approved by CEN on 28 June 2024.

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Ref. No. EN ISO 18081:2024 E

European foreword

This document (EN ISO 18081:2024) has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" in collaboration with 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of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

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Endorsement notice

The text of ISO 18081:2024 has been approved by CEN as EN ISO 18081:2024 without any modification.

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 9, *Acoustic emission testing,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 138, *Non-destructive testing,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 18081:2016), which has been technically revised.

The main changes are as follows:

— Figure 1 has been improved;

— term “AT equipment” has been replaced by “AE instrument” in the whole document;

— term “system” has been replaced by “instrument” in the whole document;

— Figure 2 showing an adjustable air jet has been added;

— Formula (1) has been corrected;

— Table 2 “Leakage grading and the influence of leak flow dynamic on AE activity“ has been added;

— editorial corrections throughout the document.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Non-destructive testing — Acoustic emission testing (AT) — Leak detection by means of acoustic emission

1 Scope

This document specifies the general principles required for leak detection by acoustic emission testing (AT). It is addressed to the application of the methodology on structures and components, where a leak flow as a result of pressure differences appears and generates acoustic emission (AE).

It describes phenomena of the AE generation and influence of the nature of fluids, shape of the gap, wave propagation and environment.

The different application techniques, instrumentation and presentation of AE results are discussed. Also included are guidelines for the preparation of application documents which describe specific requirements for the application of the acoustic emission testing.

Annex A gives procedures for some leak-testing applications.

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.

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 12716, *Non-destructive testing — Acoustic emission inspection — Vocabulary*

ISO/TS 18173, *Non-destructive testing — General terms and definitions*

EN 1330-1, *Non-destructive testing — Terminology — Part 1: 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 13477-1, *Non-destructive testing — Acoustic emission — Equipment characterisation — Part 1: Equipment description*

EN 13477-2, *Non-destructive testing — Acoustic emission — Equipment characterisation — Part 2: Verification of operating characteristics*

EN 13554, *Non-destructive testing — Acoustic emission testing — General principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12716, ISO/TS 18173, EN 1330-1, EN 1330-2 and EN 1330-9 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/