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Non-destructive testing — Leak testing — Vocabulary

Essais non-destructifs — Contrôle d'étanchéité — Vocabulaire

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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ISO 20484 was prepared by the European Committee Standardization (CEN) Technical Committee CEN/TC 138, *Leak testing*, in collaboration with ISO Technical Committee TC 135, *Non-destructive testing*, Subcommittee SC 6, *Leak testing*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This document is based on and replaces the European standard EN 1330-8:1998, *Non-destructive testing — Terminology — Part 8: Terms used in leak tightness testing*.

Introduction

The series of European standards, EN 1330, comprises 10 parts prepared separately by groups of experts, each group consisting of experts in a given NDT (non-destructive testing) method (for EN 1330-3 to EN 1330-10).

A comparative examination of these parts has shown the existence of common terms that are often defined differently. These terms have been taken from EN 1330-3 to EN 1330-10 and then split into two categories:

— general terms corresponding to other fields such as physics, electricity, metrology, etc. and already defined in international documents; these terms are the subject of EN 1330-1;

— common terms specific to NDT; these terms, the definitions of which have been harmonized in an Ad Hoc group, are the subject of EN 1330-2.

In view of the nature of the approach taken, the list of terms in EN 1330-1 and EN 1330-2 are in no way exhaustive.

EN 1330 consists of the following parts:

— *Part 1: General terms*

— *Part 2: Terms common to the non-destructive testing methods*

— *Part 3: Terms used in industrial radiographic testing*

— *Part 4: Terms used in ultrasonic testing*

— *Part 7: Terms used in magnetic particle testing*

— *Part 9: Terms used in acoustic emission*

— *Part 10: Terms used in visual examination*

NOTE 1 ISO 12718 replaced EN 1330–5.

NOTE 2 ISO 12706 was published formerly as the draft European standard prEN 1330–6.

Non-destructive testing — Leak testing — Vocabulary

1 Scope

This document defines the terms used in leak testing.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1 Atomic/molecular structure

3.1.1
concentration
c
ratio of the number of atoms or molecules of a given constituent in a gas mixture to the total number of atoms or molecules in the mixture

Note 1 to entry: For ideal gases, this is equivalent to the ratio of the partial pressure to the total pressure.

Note 2 to entry: In other cases, the concentration is considered as mole fraction and the symbol used is n_B.

3.1.2
ionization potential
minimum energy, expressed in electronvolts, required to remove an electron from an atom or molecule or ion to form a positive ion

3.2 Pressure and vacuum

3.2.1
atmospheric pressure
pressure of the atmosphere at a specified place and time

3.2.2
partial pressure
p_A, p_B
pressure that would be exerted by a gas or vapour if it alone was present in an enclosure

3.3 Gas-solid interaction

3.3.1
gettering
removal of a gas by permanent binding in or on a solid, usually involving chemical reaction

3.3.2
occlusion of gas
trapping of undissolved gas in a solid during solidification

3.3.3
permeation
mechanism of adsorption/solution/diffusion/desorption in a solid material that allows a substance to pass through under a partial pressure difference

3.3.4
permeability coefficient
P_{perm}
coefficient, dependent on temperature, characterizing the *conductance* (4.2.1) of a material for the *permeation* (3.3.3) of a given substance

4 Terms relating to gas

4.1 Properties of gases

4.1.1
ideal gas
perfect gas
gas obeying the relationship $pV = nRT$, where $n = m/M$

where

p is the pressure;

V is the volume;

m is the mass of the gas;

M is the molecular mass;

R is the ideal gas constant;

T is the absolute temperature.

4.2 Flow of gas

4.2.1
conductance
C
throughput divided by the difference in mean pressures prevailing at two specified cross-sections or at either sides of the duct or orifice, assuming isothermal conditions

Note 1 to entry: Applies to fluid flow in a duct, or part of a duct, or a constriction.

4.2.2
flow rate
q_M, q_N, q_V
rate at which an amount of mass, a number of particles or moles pass through a given cross section of the system

Note 1 to entry: Mass: q_M, Particles: q_N, Molar: q_V.

Note 2 to entry: For gases, the volume flow rate (Volume: symbol q_V) is a measure of quantity only at specified conditions.

4.2.3
pV-throughput
q_G
rate at which a volume of gas at specified pressure passes a given cross section of the system

Note 1 to entry: In leak detection, pV-throughput is used to express the flow rate of gas. The temperature and molar weight or density are given additionally so that the flow rate can be calculated using the gas equation.

4.2.4
resistance to flow
w
reciprocal of conductance (flow)

4.2.5
dynamic viscosity coefficient
η
coefficient, dependent on temperature, that defines the resistance of a specified fluid to the motion, due to the molecular interactions

4.3 Gas leakage

4.3.1
leak
<non-destructive testing (NDT)> hole, porosity, permeable element or other structure in the wall of an object allowing gas to pass from one side of the wall to the other by the effect of pressure- or concentration-difference across the wall

4.3.2
conductance leak
leak which consists of one or more discrete passages, including porous areas, through which a fluid may flow

4.3.3
orifice leak
conductance leak (4.3.2) having a diameter much greater than the leakage path length

Note 1 to entry: It may also be considered as an opening in a very thin wall.

4.3.4
capillary leak
conductance leak (4.3.2) in which the diameter is small compared to the length

4.3.5
leakage rate
pV-throughput of a specific fluid which passes through a leak under specific conditions

4.3.6
leaktight object
object with a leakage rate lower than that stated in a specification

4.3.7
molecular leak
leak of such geometric configuration and under such pressure conditions that gas flowing through it obeys the laws of molecular flow