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## **Safety of machinery — Evaluation of the emission of airborne hazardous substances —**

### **Part 1: Selection of test methods**

*Sécurité des machines — Évaluation de l'émission de substances  
dangereuses véhiculées par l'air —*

*Partie 1: Choix des méthodes d'essai*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29042-1 was prepared by Technical Committee ISO/TC 199, *Safety of machinery*.

ISO 29042 consists of the following parts, under the general title *Safety of machinery — Evaluation of the emission of airborne hazardous substances*:

- *Part 1: Selection of test methods*
- *Part 2: Tracer gas method for the measurement of the emission rate of a given pollutant*
- *Part 3: Test bench method for the measurement of the emission rate of a given pollutant*
- *Part 4: Tracer method for the measurement of the capture efficiency of an exhaust system*

The following parts are under preparation:

- *Part 5: Test bench method for the measurement of the separation efficiency by mass of air cleaning systems with unducted outlet*
- *Part 6: Test bench method for the measurement of the separation efficiency by mass of air cleaning systems with ducted outlet*
- *Part 7: Test bench method for the measurement of the pollutant concentration parameter*

Room method for the measurement of the pollutant concentration parameter and decontamination index are to form the subjects of future parts 8 and 9.

## Introduction

The structure of safety standards in the field of machinery is as follows:

- a) Type-A standards (basic safety standards) giving basic concepts, principles for design, and general aspects that can be applied to all machinery;
- b) Type-B standards (generic safety standards) dealing with one safety aspect or one type of safeguard that can be used across a wide range of machinery:
  - type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);
  - type-B2 standards on safeguards (e.g. two-hand control devices, interlocking devices, pressure-sensitive devices, guards);
- c) Type-C standards (machine safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

This document is a type-B standard as stated in ISO 12100.

The requirements of this document can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

ISO/TC 199 has a mandate in this area to produce type-A and type-B standards, which will allow verification of conformity with the essential safety requirements.

ISO 29042-1 is based on EN 1093-1, published by the European Committee for Standardization (CEN) which is at the same time subject to revision.

The concentration level of substances resulting from emission of airborne hazardous substances from machines depends upon factors including:

- the emission rate of airborne hazardous substances ("pollutants") from the machine under examination, depending of the type of process and the production rate of the machine;
- the performance of the pollutant control system associated with the machine and, in the case of air recirculation, the performance of the separation system;
- the surrounding conditions, especially the air flow pattern, which can reduce the pollution (efficient general ventilation) or increase it (disturbing air, crossdraughts);
- the worker's location in relation to the machine and its pollutant control system, and taking into account the workers movements;
- the quality of maintenance; poor quality has generally an adverse effect on the performance of the pollutant control and the separation systems.

This International Standard concerns the first two points in this list and forms only one part of a comprehensive risk assessment. It is not for a risk assessment of the workplace. Evaluation of the parameters defined in this International Standard leads to an evaluation of the performance of the machine and its associated pollutant control system.

This International Standard can be used as a part of verification described in ISO 14123-2.