



International
Standard

ISO 16313-1

**Laboratory test of dust collection
systems utilizing filter media with
automatic online cleaning —**

**Part 1:
System utilizing integrated fans**

*Essais en laboratoire des systèmes de collecte de poussières
utilisant des médias filtrants avec nettoyage automatique en
ligne —*

Partie 1: Systèmes utilisant des ventilateurs intégrés

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	2
5 Compact type dust collector	3
6 Arrangement of test facility and test procedure	4
6.1 General	4
6.2 Flow system	5
6.3 Test dust	7
6.3.1 General	7
6.3.2 Criteria for a test dust in this performance test	7
6.3.3 Storage of test dust	7
6.4 Dust feeder/dispersion system	7
6.4.1 Dust feeder	7
6.4.2 Dust dispersion	8
6.4.3 Dust concentration during performance measurement and determination of dust feed rate	8
6.4.4 Mixing of airborne dust with air	9
6.5 Measurement	9
6.5.1 Air flow rate	9
6.5.2 Air flow characteristics with and without attachments at inlet and outlet ducts	9
6.5.3 Pressure and pressure drop	9
6.5.4 Dust concentration	10
6.5.5 Energy consumption for fan and cleaning process	10
7 Test procedures	11
7.1 General	11
7.2 Stage 1: Preparation	11
7.3 Stage 2: Break-in operation	11
7.4 Stage 3: Ageing operation	12
7.5 Stage 4: Stabilization	12
7.6 Stage 5: Performance measurement	12
8 Test report	13
Annex A (informative) Usage of dust collector	15
Annex B (informative) Examples of test dust	18
Annex C (informative) Example of measurement method of dust concentration in filtered gas	21
Annex D (informative) Example of a test report	23
Annex E (informative) Example of test results	25
Bibliography	31

Foreword

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Introduction

An industrial dust collector is a system used to remove or recover particles from the gas emitted by industrial processes. Dust control filtration systems using pulse cleaning are one type of dust collectors and are widely used to remove particulate matters suspended in gases such as, combustion flue gases, local dust emissions from various dust generation activities (machining, tapping of molten pig iron, bulk handling, surface treatment work such as sand or shot blasting), to clean workshop environment, and so on^[1-3].

This type of dust collection systems, or dust collectors, is most popularly used because of easiness in handling. However, the design concept of the collector is different strongly dependent on the size and type of dust generation source, amount of air flow rate, dust concentration and also on the usage as shown in [Table A.1](#) and [Figure A.1](#) in [Annex A](#).

The performance of a dust collector changes with time. It changes significantly at the beginning of its use and becomes stable after certain period of usage.

Dust collectors are roughly classified into two groups; customized or general-purpose systems. Customized systems are designed and manufactured based on the user's requirements for temperature, pressure, physical and chemical properties of particles and gases, etc. Hence, performance test of this type for dust collector must be carried out to evaluate whether the collector satisfies these requirements.

The general-purpose system (compact type dust collector) is designed and assembled by the manufacturer based on the manufacturer's own concept. Most manufactures line up several different types of dust collectors to meet different applications such as industrial dust, fumes, and fume and mist mixture.

Most of these collectors are compact type dust collectors with cartridge filter elements.^[4] The performance of collectors from different manufacturers is likely different with each other, even if they are tested under the same dust and operation condition. It is also likely that differences arise from the different test method adopted by each manufacturer.

This group of compact type dust collectors is mostly used by unspecified individual users, who do not have sufficiently enough knowledge of dust collection technology, so that they are used as a plug-in type device like a household electronics. Hence users select a dust collector based only on the information disclosed by the manufacturer. It is not always easy to compare performance of collectors from different manufacturers because of the different test methods^[5,6] used for evaluating them.

This means that it would be better to provide a standard test method to predict the performance under simulated used conditions of the dust collector before the product is delivered to users. Important information for users includes dust collection performance of dust, pressure drop, energy consumption for fan and pulse cleaning equipment and air flow rate for without-air-flow-rate-control system. Emission of fine particles like PM₁₀, PM_{2,5} and PM₁ is especially important for the protection of air pollution and working environmental control point of view.

Performance changes with time; with large changes at the beginning of usage, and more stable operation after certain time period. This means that the performance shown just after production is different from what the user experiences, i.e. performance after being used for long time. Therefore, performance test is conducted under simulated conditions of use.