

ICS 13.110
CCS J 09



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 25749.9-2012

**Safety of machinery -- Evaluation of the emission of
airborne-hazardous substances -- Part 9: Decontamination
index**

机械安全 空气传播的有害物质排放的评估 第9部分：净化指数
(English Translation)

Issued on: May 11, 2012

Implemented on: December 1, 2012

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

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1 Scope

This part of GB/T 25749 specifies pollutant control systems (e.g. capture equipment including local exhaust ventilation, sprinkler systems, and, where appropriate, separation equipment installed on the machine) method of measurement of the purification index. This method uses actual pollutants (see GB/T 25749.1-4.2 in 2010), and can be performed in indoor or field environments.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 12100 Safety of machinery design general risk assessment and risk reduction (Safety of machinery-General principlesfordesign-Riskassessmentandriskreduction)

3 Terms and Definitions

ISO 12100 and the following terms and definitions apply to this document.

3.1 Decontamination index

At several specified locations, the concentrations of pollutants with improved ambient air quality and the The average of the ratios between the mean concentrations of pollutants.

Note 1: Taking into account the air pollution ("background concentration") caused by other operations, make corrections if necessary.

NOTE 2 The improvement in ambient air quality is determined by the difference between the actual pollutant concentrations measured when the pollutant control system is operating or not operating in that environment. Express.

Note 3: When the particle size distribution and pollutant concentration are determined at the same time, the purification index of each particle class can be determined. Examples can be found in ISO 7708.

4 Principles

The principle of this measurement method is to determine the decontamination index specified in 3.1 and the concentration measured at predetermined points around the machine under test, and the Explanation of the index value, taking into account its range of variation and influencing factors.

Measuring the purification index of a pollutant control system can be used to.

- a) evaluation of the performance of the machine's pollutant control system;
- b) evaluation of pollutant control system improvements;
- c) comparisons between machine pollutant control systems of similar design;
- d) Classification of pollutant control systems according to purification efficiency;
- e) determine the air flow of the exhaust system to the specified level;
- f) Determine the technical level of the machine pollutant control system according to the purification efficiency.

5 Determine the concentration measurement point

Measurement points should be determined by pre-testing to ensure that they are located within the measurable discharge area. The number and precise location of the measuring points should be Specified in Type C standards.

6.1 Overview

If the background concentration level is low, the measurement will be more accurate and its interpretation more reasonable. Whenever possible, concentration measurements should

be The surrounding machines and other technological processes are stopped.

Once the measurement point is selected, the measurement procedure will be carried out in three stages (see 6.2~6.4). These three phases are repeated at least twice. two test An example of a measuring point is given in Figure 1.

Measurement procedures used to determine pollutant concentrations should comply with relevant international or national standards. Air flow measurement see GB/T 2624.1, GB/T 17611, ISO 3966 and ISO 5168.

6.2 Phase 1.Measuring Cfi

When measuring the concentration level Cfi caused by pollutant discharge (background concentration) from surrounding machinery and other processes, the machine under inspection should be turned off If a pollutant control system has been installed, it should also be turned off. Record the operation of surrounding machinery and other processes.

When stable conditions are reached, the concentration is measured at the selected measurement point (see Figure 1). The sampling duration at each measurement point should be the same as the surrounding A representative portion of the duration of pollutant emissions from machinery and other processes corresponds.

At least 3 measurements should be made at each measurement point.

6.3 Phase 2.Measuring Cmi

At this stage, the inspected machine is in operation, and the pollutant control system has been installed, which is also in operation. machine should be specified and the operating conditions of the pollutant control system to which it is connected.

Concentration measurements are carried out according to the specifications in Phase 1.steady state, location of measurement points, sampling time, surrounding machines and other processes operating conditions.

Inspections should be made to confirm that conditions are as close as possible to those in Phase 1.

The sampling duration at each measurement point shall correspond to a representative portion of the pollutant discharge duration of the machine under test.

At least 3 measurements should be made at each measurement point.

6.4 Phase 3.Measuring Cai

The machine under inspection has its contamination control system turned off or removed and remains operational under the same conditions as in Phase 2.If the extraction system can If blockage can occur, the test should not be completed.

WARNING. In some cases, shutting down or changing contaminant control systems can expose operators or persons in the room to dangerously contaminated water flat down. In these cases, appropriate protective measures should be taken to minimize the risk of personal exposure.

Concentrations were measured in a similar manner to the first two stages. However, it should be noted that it may take a long time to stabilize indoors to reach the state.

At least 3 measurements should be made at each measurement point.

7 Applications for specific machine groups

Taking into account a variety of different practical situations (eg. room type, machinery, working method, product variety, operating category, pollutant characteristics), It is not easy to define a completely fixed method that is not bound by the different factors mentioned above.

If the Type C standard gives additional information on specific conditions, the location of the air sampling point, the test, and the duration of sampling should be specified and the operating conditions of the machine.

8 Influencing factors

Many factors can affect the measurement results. Attempts should be made to identify these factors and, if possible, evaluate these factors. very The following points should be recorded.

- Relevant data of the inspected machine, type of working process, type of processed product, type of operation (continuous, batch, cyclic formula), the duration of the operation;
- Relevant data of surrounding machines and other technological processes;
- data related to the pollutant control system, especially the exhaust flow of the capture device;
- Separation of system-related data, especially traffic;
- the dimensions of the room;
- data about the layout of the room (e.g. the location of the machine);
- Relevant data on the overall ventilation system, especially the characteristics of air entry and exhaust equipment, including the rate of cross-interference airflow. same It is also very useful to record air temperature and humidity.

Some methodological difficulties may limit the application of this method in the field, such as.