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

GB/T 10894-2023

Replacing GB/T 10894-2004

Determination method of separation machinery noise

分离机械噪声测试方法

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Table of Contents

1	Scope
2	Normative references
3	Terms and definitions...
4	Test environment...
4.1	General...
4.2	Background noise requirements...
4.3	Wind speed...
5	Test instruments
5.1	General...
5.2	Calibration
6	Installation and operation of separation machinery
6.1	Installation
6.2	Operation
7	Determination of microphone position
7.1	Determination of reference box
7.2	Selection of measurement surface
7.2.2	Hemispherical measurement surface
7.3	Microphone position
8	Sound pressure level measurement...
8.1	Quantity to be measured...
8.2	Uncertainty of measurement...
8.3	Operation of sound level meter...
8.4	Correction of background noise...
8.5	Correction of measurement environment...
9	Determination of sound power level...
9.1	Calculation of the time-average sound pressure level of the measurement surface...
9.2	Calculation of sound power level...
10	Record content...
10.1	General...
10.2	Separation machinery under test...
10.3	Test environment...
10.4	Test instruments...

10.5 Test data...

10.6 Others...

Appendix A

1 Scope

GB/T 10894-2023 is the Chinese national standard on determination method of separation machinery noise, in the field of mining and minerals. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 27 November 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 June 2024. Classification: ICS 73.120, CCS J 77. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes the engineering method for determining the noise source sound power level of separation machinery using the sound pressure method under free sound field conditions on a reflecting plane, as well as the measurement method for the sound pressure level of noise emitted by separation machinery. This document applies to the measurement of noise from various types of industrial centrifuges, separators, filters and filter assemblies.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 3102.7, Quantities and units of acoustics

GB/T 3241-2010, Electroacoustics - Octave-band and fractional-octave-band filters

GB/T 3767-2016, Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane

GB/T 3768, Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane

GB/T 3785.1-2010, Electroacoustics - Sound level meters - Part 1. Specifications

GB/T 3947, Acoustical terminology

GB/T 4774, Terminology of filtration and separation

GB/T 15173-2010, Electroacoustics - Sound calibrators

GB/T 17248.2, Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other

4.1.2 The adverse effects of environmental conditions (such as strong electric or magnetic fields, wind, airflow shock caused by the air emission of the noise source being measured, high or low temperatures) on the microphone to be measured should be eliminated, and the requirements provided by the test instrument manufacturer regarding the effects of adverse environments on the measuring instrument should be followed.

4.1.3 In outdoor areas, the effects of adverse meteorological conditions (such as temperature, humidity, wind, precipitation, etc.) on sound propagation and sound generation within the measurement frequency range, as well as the effects of background noise during the measurement process should be reduced.

4.1.4 For outdoor areas, there shall be no reflective objects within 10 m from the reference box.

Note. If the width of an object (such as the diameter of a pole or support column) near the sound source being measured exceeds one tenth of its distance to the reference box, the reflective object is considered to have sound reflection.

5 Test instruments

5.1 General The instrument system, including microphone, sound level meter, cable and wind shield, shall meet the requirements of Level 1 in GB/T 3785.1-2010. The filter shall comply with the requirements of Level 1 in GB/T 3241-2010.

5.2 Calibration

5.2.1 Before and after each measurement, the entire test instrument system shall be calibrated at one or more frequencies using a sound calibrator that meets the Level 1 accuracy requirements of GB/T 15173-2010. If the difference between the calibration values before and after the measurement exceeds

0.5 dB, the measurement is invalid.

5.2.2 Sound calibrators shall be calibrated regularly in accordance with JJG 176, and sound level meters and other test instruments shall be calibrated regularly in accordance with JJG 188 to ensure the accuracy of the test instruments.

6.1 Installation

6.1.1 The installation of separation machinery shall comply with the relevant product standards and technical requirements. All accessories shall be installed completely, but no additional sound insulation and sound absorption components shall be added.

6.1.2 Generally, the separation machinery shall be placed directly on the ground or on a test platform for noise measurement. It can also be measured according to the actual installation position, which shall be stated in the test report.

6.2 Operation

6.2.1 The separation machinery shall be started and operated under the operating conditions specified in the relevant product standards or technical documents, and the noise measurement shall be carried out after the operation is stable.

6.2.2 Under no-load operation, for fully enclosed separation machinery, the inlet and outlet can be closed to prevent the noise generated by the airflow at the inlet and outlet from affecting the test; when measuring open-type separation machinery (such as filter centrifuge), if necessary, it is allowed to attach hard paper or filter media to the inner wall of the drum to prevent the additional noise caused by the rotation of the holes.

7.1 Determination of reference box

7.1.1 In order to facilitate the selection of the shape and size of the measurement surface and determine the position of the microphone, a minimum parallelepiped that just surrounds the separation machinery to be measured shall be taken as the reference box. When determining the reference box, small protruding parts on the separation machinery that do not radiate obvious sound (such as handles, connecting pipes, etc.) can be ignored.

7.1.2 If necessary, in order to measure the emission sound pressure level next to the noise source in accordance with GB/T 17248.2, a test bench as small as possible should be used.

7.1.3 This document only specifies the determination of the reference box on one reflecting plane. This document is not applicable to the measurement environment with two or three reflecting planes.

7.2 Selection of measurement surface

7.2.1 General The schematic diagrams of the hemispherical measurement surface and the parallelepiped measurement surface shall comply with the provisions of Appendix B. When measuring, the appropriate measurement surface shall be selected according to the overall dimensions of the separation machinery in accordance with Appendix B. Hemispherical measurement surface is preferred.