
**Hydraulic fluid power — Fluids
— Method for coding the level of
contamination by solid particles**

*Transmissions hydrauliques — Fluides — Méthode de codification du
niveau de pollution particulaire solide*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 6, *Contamination control*.

This fourth edition cancels and replaces the third edition (ISO 4406:2017), which has been technically revised.

The main change compared to the previous edition is as follows:

- the use of Particle Contamination Monitors (PCMs) can also be utilized for the determination of the ISO 4406 contamination code (see [subclause 4.4.1](#)) and PCM is referenced throughout this document.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Solid particle contaminant is always present in the hydraulic fluid and the amount needs to be determined because the contaminant can cause serious problems.

The ISO 4406 cleanliness code has gained world-wide acceptance as a means of communicating the cleanliness of a hydraulic fluid. Most hydraulic component manufacturers require a certain ISO cleanliness level for warranty purposes, to ensure proper function and for a long, trouble-free life.

Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles

1 Scope

This document specifies the code to be used in defining the quantity of solid particles in the fluid used in a given hydraulic fluid power system.

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 edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4407, *Hydraulic fluid power — Fluid contamination — Determination of particulate contamination by the counting method using an optical microscope*

ISO 11171, *Hydraulic fluid power — Calibration of automatic particle counters for liquids*

ISO 11500, *Hydraulic fluid power — Determination of the particulate contamination level of a liquid sample by automatic particle counting using the light-extinction principle*

ISO 21018-3, *Hydraulic fluid power — Monitoring the level of particulate contamination of the fluid — Part 3: Use of the filter blockage technique*

ISO 21018-4, *Hydraulic fluid power — Monitoring the level of particulate contamination in the fluid — Part 4: Use of the light extinction technique*

3 Terms and definitions

No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Code definitions

4.1 General

The purpose of this code is to simplify the reporting of particle count data by converting the numbers of particles into broad classes or codes, where an increase in one code generally represents a doubling of the contamination level.

The original code, in accordance with the first edition of this document, stated the reporting at two sizes: $\geq 5 \mu\text{m}$ and $\geq 15 \mu\text{m}$. The sizes in this document account for the use of a different calibration standard for optical automatic particle counters (APCs). The reported sizes are $\geq 4 \mu\text{m(c)}$, $\geq 6 \mu\text{m(c)}$ and