BS ISO 22447:2019

BSI Standards Publication

Industrial wastewater classification

Documents
Document Sharing Hub

Full document details: BS ISO 22447:2019

National foreword

This British Standard is the UK implementation of ISO 22447:2019.

The UK participation in its preparation was entrusted to Technical Committee B/505/50, Water reuse.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2019
Published by BSI Standards Limited 2019

ISBN 978 0 580 98591 1

ICS 13.030.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2019.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO 22447:2019

INTERNATIONAL STANDARD

ISO 22447

First edition
2019-11

Industrial wastewater classification

Reference number
ISO 22447:2019(E)

Documents
Document Sharing Hub

© ISO 2019

Full document details: BS ISO 22447:2019

COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2019 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 22447:2019

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms, definitions and abbreviated terms ... **1**
3.1 Terms and definitions ... 1
3.2 Abbreviated terms ... 3

4 Classification of industrial wastewater ... **3**
4.1 Classification principle and code structure for industrial wastewater classification ... 3
4.1.1 Classification principle ... 3
4.1.2 Code structure ... 4
4.2 Classification of industrial wastewater based on industrial types (Level 1) ... 5
4.3 Classification of industrial wastewater based on water quality parameters (Level 2) ... 10

Annex A (informative) **Classification and reuse by case study** ... **14**

Bibliography ... **18**

© ISO 2019 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 22447:2019

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 282, *Water reuse*, Subcommittee SC 4, *Industrial water reuse*.

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.

© ISO 2019 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS ISO 22447:2019

Introduction

Industrial wastewater is produced by many kinds of industries. In some parts of the world, climate change is putting water resources under stress. Treatment of industrial wastewater provides an opportunity for resource recovery, which can help to drought-proof ongoing operations. Reclaiming and reusing industrial wastewater reduces demands on limited freshwater resources, as well as the amount of wastewater and the associated contaminants that are released to the environment. How to process and reuse industrial wastewater efficiently is a great challenge as wastewater characteristics are as complex and varied as the industries that produce these waste-streams. Industrial wastewater contains a wide range of inorganic and complex organic contaminants, with various concentrations and almost as wide a range of potential physical, chemical and biological treatment processes and has specific treated water quality required for reuse. A clear ISO industrial wastewater classification and coding system is needed to assist both industry and government to record the information of wastewater (including industrial type and water quality parameter) and provide some information on identifying best available control technologies and treatment performance capabilities in order to establish reasonable expectations and facilitate the development of universal wastewater treatment technologies in industrial reuse, and promote the information communication during commercial trade, for example, bidding, consultation, and so on.

The industrial wastewater classification system described in this document covers the basic and most important information required to properly characterize industrial process waste-streams to quickly determine the requirement of the appropriate treatment or reuse technology options for specific industries, reduce operating costs for enterprises, and ultimately promote the systematic development of process water treatment and reuse technologies for industrial application. For the government and large corporations, a more important usage of the classification and coding system is to help them with establishment and improvement of standards concerning discharge and reuse of industrial wastewater.

This document provides a wastewater classification framework and coding system, along with a water quality parameter list. The usages of the classification and coding system facing different users, namely the entrepreneur or the government, are provided in Annex A. It is intended that this classification system will help to promote understanding between different business parties, governments, to collaboratively develop wastewater treatment and reuse technologies among different countries, improve the efficiency of industrial wastewater reuse, and save and protect environment. Due to the similar nature, it may also apply for the wastewater treatment concerning discharge.

© ISO 2019 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 22447:2019

Documents
Document Sharing Hub

Full document details: BS ISO 22447:2019

Industrial wastewater classification

1 Scope

This document specifies the principles, categories, and codes for the classification of industrial wastewater and is applicable to all types and sources of industrial wastewater. It provides a broad framework classifying industrial wastewater into different categories based on industry type and the associated water quality constituents, namely physical, chemical and biological characteristics with a specific code assigned based on both industry type and waste-stream classification.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

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

— ISO Online browsing platform: available at http:// www.iso.org/obp

— IEC Electropedia: available at http:// www.electropedia.org/

3.1 Terms and definitions

3.1.1
biochemical oxygen demand
BOD
mass concentration of dissolved oxygen consumed under specified conditions by the aerobic biological oxidation of a chemical compound or organic matter in water

Note 1 to entry: BOD_5: Degradation time = 5 days; Temperature = 20 °C.

[SOURCE: ISO 9408:1999]

3.1.2
chemical oxygen demand
COD
mass concentration of oxygen equivalent to the amount of dichromate consumed by dissolved and suspended matter when a water sample is treated with that oxidant under defined conditions

[SOURCE: ISO 6107-2:2006]

3.1.3
EC_{50}
concentration estimated to cause an effect on a test end-point in 50 % of an exposed population over a defined exposed period

[SOURCE: ISO 16387:2014]

© ISO 2019 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 22447:2019