

ICS 71.040.40

CCS G 76



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

GB/T 15456-2019

**Determination of the chemical oxygen demand in industrial
circulating cooling water - Permanganate index method
(English Translation)**

Issued on: August 30, 2019

Implemented on: July 1, 2020

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 15456-2008 "Determination of Chemical Oxygen Demand (COD) in Industrial Circulating Cooling Water by Potassium Permanganate Method,"

Compared with GB/T 15456-2008, the main technical changes except editorial changes are as follows.

--- Revised the scope of application of the standard (see Chapter 1, Chapter 1 of the.2008 edition);

--- Revised the expression of the method summary (see 3.1, Chapter 3 of the.2008 edition);

--- Replace the silver sulfate saturated solution with silver nitrate solution and modify the test procedure (see Chapter 3.3 of the.2008 edition);

--- Increased potentiometric titration (see Chapter 4).

This standard is prepared using the redrafting method with reference to ISO 8467.1993 "Determination of water quality permanganate index", and ISO 8467.1993

The degree of consistency is non-equivalent.

This standard was proposed by the China Petroleum and Chemical Industry Federation.

This standard is under the jurisdiction of the National Chemical Standardization Technical Committee (SAC/TC63).

This standard was drafted. Jiyuan Qingyuan Water Treatment Co., Ltd., Jiangsu Special Equipment Safety Supervision and Inspection Institute Changzhou Branch, Guang

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1 Scope

This standard specifies the method for determining chemical oxygen demand (COD) using the permanganate index method in industrial circulating cooling water.

This standard applies to industrial circulating cooling water chemical oxygen demand (CODMn) content of 0.5mg/L ~ 10mg/L (in O₂)

Determination. Among them, the volumetric method is applicable to the determination of CODMn of 2mg/L~10mg/L (in O₂); potentiometric titration is applicable to CODMn

It is a measurement of 0.5 mg/L to 10 mg/L (in terms of O₂). When the concentration exceeds the upper limit of the range, it can be diluted and measured.

This standard also applies to the determination of chemical oxygen demand (CODMn) in raw water, boiler water and reclaimed water.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this document. For undated references, the latest edition (including all amendments) applies to this document.

Preparation of GB/T 601 chemical reagent standard titration solution

Preparation of preparations and products used in GB/T 603 chemical reagent test method

GB/T 6682 Analytical laboratory water specifications and test methods

3.1 Method summary

After the water sample is acidified, accurately add a known amount of potassium permanganate standard solution, heat it to fully oxidize, and add excess oxalic acid.

The sodium standard solution is used to reduce the remaining potassium permanganate, and then the potassium permanganate standard titration solution is used to drop excess sodium oxalate until the redox reaction

At the end point, the amount of potassium permanganate consumed is converted into the mass concentration of oxygen consumed.

$\text{MnO}_4^- + 8\text{H}^+ + 5\text{e}^- = \text{Mn}^{2+} + 4\text{H}_2\text{O}$

3.2 Reagents or materials

Caution - The strong acid used in this standard is corrosive and should be avoided when inhaled or in contact with the skin. Splash on the body should be used immediately

Rinse with water, seek medical attention if it is serious.

3.2.1

Reagents and water used in this standard, unless otherwise specified, should be used with analytically pure reagents and in accordance with GB/T 6682 Class III water.

3.2.2

Standard titration solutions, preparations and products used in the test shall be in accordance with GB/T 601 and GB/T 603 when no other requirements are specified.

Provision is made.

3.2.4 Silver nitrate solution..200g/L, stored in a brown bottle.

3.2.5 sodium oxalate standard solution. $c(1/2Na_2C_2O_4)$ about 0.01mol/L, the use concentration should be greater than the potassium permanganate standard titration solution.