

ICS 71.040.40

CCS G76



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

GB/T 13689-2007

Replacing GB/T 14418-1993

**Water for industrial circulating cooling system and boiler -
Determination of copper**

工业循环冷却水和锅炉用水中铜的测定

Issued on: August 13, 2007

Implemented on: February 1, 2008

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

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Foreword

This standard replaces GB/T 13689-1992 "Industrial circulating cooling water copper diethyl dithiocarbamate spectrophotometry Degree method "and GB/T 14418-1993" boiler water and cooling water analysis Determination of copper. " This standard GB/T 13689-1992 and GB/T 14418-1993 standard content has been adjusted and combined. The standard proposed by China Petroleum and Chemical Industry Association. This standard by the National Standardization Technical Committee of Chemical Water Treatment Chemicals Branch (SAC/TC63/SC5) centralized. This standard was drafted. Tianjin Chemical Engineering Research and Design Institute. The main drafters of this standard. Li Lin, Bai Ying, Zhu Zhuanjun, Shao Hongqian. This standard replaces the standard release case.

--- GB/T 13689-1992;

--- GB/T 14418-1993. Industrial circulating cooling water and boiler water Copper

1 Scope

GB/T 13689-2007 is the Chinese national standard on water for industrial circulating cooling system and boiler - determination of copper, in the field of chemical technology. 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 13 August 2007 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 February 2008. Classification: ICS 71.040.40, CCS G76. 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 standard specifies the natural water, industrial cooling water and boiler water Determination of copper content. This standard zinc reagent for boiler feed water, condensate, steam, internal water cooled generator cooling water and boiler water copper

content in water samples 2.5µg/L ~ 50µg Determination/L; and diethyl dithiocarbamate spectrophotometry for industrial circulating cooling water, industrial use Water and domestic water in the copper content of 0.01mg/L ~ 2.00mg/L measured; diethyl dithiocarbamate photometric method directly applicable to Industrial circulating cooling water copper content without suspended matter 0.05mg/L ~ 6.00mg/L measurement.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 602 Determination of impurities in chemical reagents prepared standard solution (GB/T 602-2002,

ISO 6353-1. 1982, NEQ) with

GB/T 603 chemical reagent test method Preparations of articles (GB/T 603-2002,

ISO 6353-1 with. 1982, NEQ)

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-1992, neq ISO 3696. 1987)

3 Zinc reagent

3.1 Principle In this method, water samples of all copper ion dissolved state, at a pH of

4.8 conditions Zincon (C₂₀H₁₆O₆N₄SNa) to form a blue complex, and then absorbance was measured at 600nm wavelength. Within a pH range of

3.5 to 4.8, nickel and zinc interference can be ignored, in addition to possible presence of water samples by hydrazine, trivalent chromium, trivalent iron, Aluminum, calcium, magnesium and silicate on the determination of non-interference, interference caused by the coexistence of divalent iron can be added tartaric acid eliminated.

3.2 Reagents and materials Reagent used in this method, unless otherwise specified, use only analytical reagent. Test preparation and products required, did not indicate in the other to When evaluated, according to the provisions of 603 GB/T was prepared. Safety Tips. The criteria used acid is corrosive, should pay attention. When contacted, rinse with plenty of water, avoid inhaling Or contact with the skin.

3.2.1 Water. GB/T 6682, level.

3.2.2 hydrochloric acid (excellent pure).

3.2.3 hydrochloric acid solution. 1 + 4.

3.2.4 nitrate solution. 1 + 2.

3.2.5 sulfuric acid solution. 1 + 2.

3.2.6 isoamyl alcohol.

3.2.7 zinc reagent solution. Weigh 0.075g zinc reagent, add 50mL of methanol (or ethanol) to warm (50 °C or less), diluted with water completely dissolved Diluted to 100mL, inject brown bottle. This solution should be stored in a refrigerator, storage for 5d.

3.2.8 ammonium acetate solution. 500g/L. Weigh 500g of ammonium acetate dissolved in water and transferred to 1L volumetric flask and dilute to the mark. In addition to copper in ammonium acetate solution as follows: 100mL Ammonium acetate solution was poured into a separatory funnel, add 20mL Zincon - isoamyl alcohol solution (2mL zinc reagent solution dissolved in 100mL isoamyl alcohol), fully