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**Analysis of water used in boiler and cooling system -  
Sampling method of water**

锅炉用水和冷却水分析方法 水样的采集方法

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# Analysis of water used in boiler and cooling system - Sampling method of water

## 1 Scope

This document describes the collection container, collection method, storage, transportation and recording of samples of water used in boiler and cooling system.

This document applies to the collection of samples of water used in boiler and cooling system.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 1576, Water quality for industrial boilers

GB/T 6682-2008, Water for analytical laboratory use - Specification and test methods

GB/T 6903, Analysis of water used in boiler and cooling system - General rule

GB/T 50050, Code for design of industrial recirculating cooling water treatment

## 3 Terms and definitions

Terms and definitions defined in GB/T 1576, GB/T 6903 and GB/T 50050 apply to this document.

## 4 Method summary

According to the determination requirements, select a suitable sampling container, collect water samples at representative locations, and obtain representative water samples that meet the requirements according to the storage and transportation conditions of the samples.

### 6.3 Collection methods of water samples in high temperature and high-pressure devices or pipelines

**6.3.1** When sampling in high temperature and high-pressure devices or pipelines, the sampling pipe shall be made of stainless steel. Sampling devices for boiler feed water, boiler water, steam and drain shall be equipped with coolers.

**6.3.2** When collecting water samples installed with a sampling cooler, the opening of the sampling valve shall be adjusted so that the flow rate of the water sample is at 300 mL/min ~ 700 mL/min, and the flow rate is kept stable. At the same time, adjust the amount of cooling water, so that the temperature of the water sample is less than 40 °C. The sampling valves for feed water, boiler water and steam shall be kept open; when collecting other water samples, the accumulated water in the pipeline shall be drained and rinsed before sampling.

### 6.4 Other special collection methods of water samples

**6.4.1** When determining unstable components in water samples, it shall be measured on site. If it is not possible to measure on site, the unstable components shall be converted into stable state and then measured.

**6.4.2** When measuring the organics in raw water, circulating cooling water and its make-up water, it shall be measured as soon as possible after sampling, otherwise, the water sample shall be adjusted to pH less than 2 by adding acid for preservation; when measuring trace organics in the water samples involved in the boiler water treatment system, the water sample is subject to no treatment after collection, and shall be measured as soon as possible.

**6.4.3** When measuring trace of iron, copper, aluminum and other components in the water sample, the sampling bottle shall be soaked in hydrochloric acid solution (1+1) of analytical grade or above for more than 12 hours, and then fully cleaned by grade-1 water that meets the requirements of GB/T 6682-2008. Before sampling, add an appropriate amount of hydrochloric acid solution (1+1) of guaranteed reagent or above, or nitric acid solution (1+1) to the sampling bottle in advance to make the pH value of the water sample about 2; shake it up immediately after sampling. If there is no acid addition condition, filter 10 L ~ 20 L of water sample by membrane method; measure the metal ions on the filter membrane and in the filtrate respectively, to obtain the content of metal ions in the water sample.

**6.4.4** When measuring the hydrazine content in water samples, a special ground glass bottle shall be used to collect water samples; 1 mL of hydrochloric acid of analytical reagent or above shall be added in advance for every 100 mL of water samples, and the collected water samples shall fill the sampling bottle.

**6.4.5** When determining the bacterial content in water, pre-sterilized sealed glass bottles or commercially available disposable sterilized sampling bottles shall be used to collect water samples, which shall be measured within 24 hours after sampling.

## **7 Other matters of water sample collection**

**7.1** Before sampling, the sampling bottle shall be cleaned in advance, and then rinsed three times with the water sample to be tested (except as otherwise specified in the test method); then, the water sample shall be collected and quickly sealed.

**7.2** The sampling volume shall meet the test and review needs. Appendix A gives the reference volume for water sample collection. If the water sample is turbid, the collected water sample shall be divided into two sampling containers.

**7.3** The collected water samples shall be labelled, indicating the name of the water sample, the sampling location, the name of the sampling person, and the sampling time.

**7.4** When collecting water samples for field control test, special sampling bottles with obvious marks shall be used.

## **8 Storage and transportation of water samples**

### **8.1 Storage and transportation conditions of water samples**

Water samples shall be stored in a cool and dry place, or refrigerated if conditions permit. If there are special requirements, save them according to the relevant test requirements. Water samples shall be protected from freezing and sunshine during transportation; when measuring the stored or transported water samples, the storage time and storage conditions shall be indicated in the water sample collection record form (see Appendix B).

### **8.2 Storage time of water samples**

The water samples shall be measured in time after collection, and the storage and transportation time shall be shortened as much as possible. See Appendix A for the reference time for storage of water samples after collection.

## **9 Water sample collection record**

See Appendix B for the format of water sample collection record.

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