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

GB/T 11446.10-2013

Replacing GB/T 11446.10-1997

**Test method for total bacterial count in electronic grade water
by membrane filters**

电子级水中细菌总数的滤膜培养测试方法

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Table of Contents

1	Scope
2	Normative references
3	Terms and definitions
4	Methodology
5	Interference factors
6	Reagents
6.2	TGY medium. ADD
6.4	T.T.C solution
7	Measuring instruments and equipment
8	Operation procedures
8.1	Preparation before testing
8.2	Water sample determination TAKE
9	Measurement result calculation
10	Report

Foreword

The estimated structure of GB/T 11446 is as follows: - GB/T 11446.1 Electronic grade water; - GB/T 11446.2 (To be determined); - GB/T 11446.3 Generic rules for test methods of electronic grade water; - GB/T 11446.4 Test methods for resistivity of electronic grade water; - GB/T 11446.5 Test method for measuring trace metals in electronic grade water by atomic absorption spectrophotometry; - GB/T 11446.6 Test method for SiO₂ in electronic grade water by spectrophotometer; - GB/T 11446.7 Test method for trace anion in electronic grade water by ion chromatography; - GB/T 11446.8 Test method for total organic carbon in electronic grade water; - GB/T 11446.9 Test method for particles in electronic grade water by instrument; - GB/T 11446.10 Test method for total bacterial count in electronic grade water by membrane filters. This part is part 10 of GB/T 11446. This part was drafted in accordance with the rules given in GB/T 1.1-2009. This part replaces GB/T 11446.10-1997 "Test method for total bacterial count in electronic grade water by membrane filters". As compared with GB/T 11446.10-1997, the main changes of this part are as follows: - In clause 3 "Terms and definitions", REMOVE the definition of "sterile operation", ADD the definitions of "total bacteria" and "medium" (SEE clause 3); - ADD clause 5 "interference factors" (SEE clause 5); - DELETE clause 10 "Considerations" (SEE clause 10 of the 1997 version). This part was proposed by the Ministry of Industry and Information Technology of the People's Republic of China. This part shall be under the jurisdiction of China Electronics

Standardization Institute. Drafting organizations of this part. Ministry of Information Industry Special Materials Quality Supervision and Inspection Center, Chinese Academy of Sciences Institute of Semiconductors, China Electronics Standardization Institute, China Electronics Technology Group Corporation 46th Institute. The main drafters of this part. Wang Yi, Qi Lianqing, He Xiukun, Duan Shuguang, Ti Liuwang, Liu Jun. This standard replaces the standard previously issued as follows: - GB/T 11446.10-1989, GB/T 11446.10-1997. Test method for total bacterial count in electronic grade water by membrane filters

1 Scope

GB/T 11446.10-2013 is the Chinese national standard on test method for total bacterial count in electronic grade water by membrane filters, in the field of electronics. 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 31 December 2013 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 15 August 2014. Classification: ICS 31.030, CCS L90. 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 part of GB/T 11446 specifies the test method for total bacterial count (live bacteria) in electronic grade water by membrane filters. This part applies to the determination of the total bacterial count in EW - I ~ EW - IV electronic grade water.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 11446.1-2013 Electronic grade water

GB/T 11446.3-2013 Generic rules for test methods of electronic grade water

3 Terms and definitions

The terms and definitions defined in GB/T 11446.3-2013 and the following terms and definitions apply to this document.

3.1 Bacterium colony After a single cell or spore is cultured on a solid medium for a certain

period of time, it grows and multiplies to form a macroscopic microorganism colony, which is a colony.

3.2 Bacterium culture method A certain amount of water sample is filtered through an ultrafiltration membrane, and bacteria remaining on the surface of the ultrafiltration membrane are cultured with an appropriate medium to form colonies, which are then counted to measure the amount of live bacteria in the water.

3.3 Total bacterial count The total number of viable microorganisms present in a unit volume of sample, excluding anaerobic organisms.

4 Methodology

Bacteria in water are trapped on the filter membrane through a 0.45 μm microporous filter membrane, the membrane is attached to the substrate (filter paper that has been fully absorbed with TGY medium), the culture is performed under suitable conditions, and bacteria grow into macroscopic colonies.

5 Interference factors

5.1 The results of the analysis are affected by foreign microbial contamination, which shall be given special attention when analyzing bacteria.

6 Reagents

6.1 Blank water. The EW-I electronic grade water specified in GB/T 11446.1- 2013 is sterilized in an autoclave at a pressure of

1.4 x 10⁵ Pa for 15 minutes.

6.2 TGY medium. ADD

10.0 g of tryptone (BR),

6.0 g of beef extract (BR) and

2.0 g of glucose (AR) into 1 L of blank water, HEAT to dissolve it, COOL it to room temperature, USE 1 mol/L sodium hydroxide to adjust the pH to 7.4 ~ 7.6, 6.3 1 mol/L sodium hydroxide solution. DISSOLVE 20 g of sodium hydroxide (A.R.) in 500 mL of blank water and STORE it in a polyethylene bottle.

6.4 T.T.C solution

1.0 g/L is sterilized to prepare for use.

7 Measuring instruments and equipment

7.1 Sterile chamber (or sterile workbench). It is equipped with an ultraviolet lamp with a power greater than or equal to 2W/m² on the workbench at a distance of

1.5 m from the workbench surface.

7.7 Filter. Phi50 mm cup type stainless steel filter.

7.8 All kinds of glassware. wide mouth bottles, flasks, petri dishes, measuring cylinders, etc.

7.9 Alcohol lamp, flat tweezers, gauze, cotton, qualitative filter paper and so on.

7.10 Suction filtration system. as shown in Figure 1.

8.1 Preparation before testing

8.1.1 TURN on the sterile chamber or sterile workbench for 1 h ~ 2 h, then MAKE it into a stable working state.

8.2 Water sample determination TAKE

2.0 mL of T.T.C solution, DROP it into 100 mL of medium at the temperature of 46 °C ± 1 °C, MIX it uniformly in the Petri dish (about 3 mm ~ 4 mm thick), COOL it to prepare for use. SHAKE it uniformly, TAKE appropriate amount of water sample.

9 Measurement result calculation

The total bacterial count in water is calculated in accordance with formula (1).