

ICS 11.080
CCS C50



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

GB 28232-2020

Replacing GB 28232-2011

Hygienic requirements for ozone disinfectant

臭氧消毒器卫生要求

Issued on: April 9, 2020

Implemented on: November 1, 2020

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

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1 Scope

GB 28232-2020 is the Chinese national standard on hygienic requirements for ozone disinfectors, in the field of health care technology. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 9 April 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 November 2020. Classification: ICS 11.080, CCS C50. 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 raw material requirements, technical requirements, application scope, use methods, inspection methods, transportation and storage, nameplates and instruction manual for use of ozone disinfectors. This standard applies to ozone disinfectors that generate ozone through dielectric barrier discharge, ultraviolet radiation, electrolysis.

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 5749 Standards for drinking water quality

GB/T 5750.10 Standard examination methods for drinking Water - Disinfection by-products parameters

GB/T 15436 Ambient air - Determination of nitrogen oxides - Saltzman method

GB 17988 Safety and sanitation requirements for disinfecting tableware cabinet

GB/T 18202 Hygienic standard for ozone in indoor air

GB 18466 Discharge standard of water pollutants for medical organization

GB/T 19258 UV germicidal lamp

GB 28235 Safety and sanitary standard for ultraviolet appliance of air disinfection

GB 30689 Hygienic requirements for washer-disinfectors employing chemical disinfection for thermolabile endoscopes

GB/T 38497 Evaluation method of endoscopic disinfection effect

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Ozone generation unit It is the most basic component that produces ozone.

3.2 Ozone generator A device necessary to generate ozone through dielectric barrier discharge, ultraviolet radiation or electrolysis.

3.3 Ozone disinfectant The whole devices necessary to use the ozone generated by the ozone generator with gas or water as a carrier for disinfection.

3.4 Ozone-water mixing equipment A device that mixes ozone gas and water to dissolve ozone in water.

3.5 Monitoring device A device for monitoring the concentration of ozone in water/air and manually or automatically regulating the concentration of ozone, including on-site monitoring and control equipment, on-site data collectors and data processing centers.

4.1.1 Dielectric barrier discharge type

4.1.1.1 Medium and materials The medium and electrode materials of the ozone generating unit shall use ozone-resistant materials, to ensure long-term stable operation under discharge conditions and in an ozone environment.

4.1.2 Ultraviolet radiation type

4.1.2.1 The ultraviolet lamp tube shall be made of quartz glass or raw materials with equivalent ultraviolet transmittance.

4.1.2.2 The initial ozone output rate of the ozone ultraviolet germicidal lamp shall not be less than 80% of the indicated value, in line with the requirements of GB/T 19258.

4.1.3 Electrolysis type

4.2 Ozone disinfectant components The parts contacting ozone shall use ozone-resistant materials, to ensure long- term stable operation in an ozone environment.

4.3 Ozone-water mixing device

4.3.1 Ozone-water mixing elements with low energy consumption and high dissolved gas efficiency shall be used; the dissolved gas efficiency shall be $\geq 50\%$.

4.3.2 A ozone-water separation device shall be installed to separate undissolved gaseous ozone; an ozone tail gas decomposition device shall be installed to decompose the separated ozone gas.

5.1 Dielectric barrier discharge type ozone disinfectant

5.1.1 Basic working conditions The ozone disinfectant shall be able to be used continuously under the conditions of ambient temperature $5\text{ }^{\circ}\text{C} \sim 45\text{ }^{\circ}\text{C}$, relative humidity $\leq 85\%$, cooling water inlet temperature $\leq 35^{\circ}\text{C}$.

5.1.3 By-products

5.1.4 Ozone leakage The ozone disinfectant is used under human conditions; it shall be airtight when using the ozone gas for sterilization. The ozone leakage in the surrounding environment shall be $\leq$

0.1 mg/m³.

5.1.5 Residual ozone After one working cycle of ozone disinfection under airtight conditions, the residual amount of ozone gas in the airtight room shall be $\leq$

0.16 mg/m³.

5.2 Ultraviolet radiation type ozone disinfectant

5.2.1 Basic working conditions Under the conditions of ambient temperature $5\text{ }^{\circ}\text{C} \sim 45\text{ }^{\circ}\text{C}$, relative humidity $\leq 85\%$, power supply voltage $220\text{ V} \pm 22\text{ V}$, power supply frequency

1 Hz, the ozone disinfectant shall be able to be used continuously.

5.3 Electrolysis type ozone disinfectant

5.3.1 Basic working conditions Same as 5.2.1.