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

GB/T 7190.3-2019

**Mechanical draft cooling towers - Part 3: Closed circuit cooling
towers**

机械通风冷却塔 第3部分：闭式冷却塔

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Foreword

GB/T 7190 "Mechanical Ventilation Cooling Tower" is divided into three parts.

--- Part 1. Small and medium-sized open cooling towers;

--- Part 2. Large open cooling towers;

--- Part 3. Closed cooling tower. This part is the third part of GB/T 7190. This part is drafted in accordance with the rules given in GB/T 1.1-2009. This part was proposed by the China Building Materials Federation. This part is under the jurisdiction of the National Fiber Reinforced Plastics Standardization Technical Committee (SAC/TC39). This section drafted by: Beijing FRP Research and Design Institute Co., Ltd., China Institute of Water Resources and Hydropower Research, Shanghai University of Technology, Huazhong University of Science and Technology, China Power Engineering Consulting Group North China Electric Power Design Institute Co., Ltd., Information Industry Electronics Eleventh Design and Research Institute Science and Technology Engineering Co., Ltd., Guangzhou Metro Group Co., Ltd., Jiangsu Seagull Cooling Tower Co., Ltd., Guangzhou Vision Technology Development Co., Ltd., Chemical Engineering Cangzhou Cooling Technology Co., Ltd., Shanghai Jinri Cooling Equipment Co., Ltd., Zhejiang Wanxiang Technology Co., Ltd., Hunan Yuanhengke Technology Co., Ltd., Dalian Sidde Environmental Equipment Co., Ltd., Yilan Hezhong Technology (Beijing) Co., Ltd., Xinling Air Conditioning (Fogang) Co., Ltd. Company, Zhejiang Jinling Refrigeration Engineering Co., Ltd., Zhejiang Dongjie Cooling Tower Co., Ltd., Shandong Tianyi Cooling Technology Co., Ltd. The main drafters of this section. Yin Zheng, Zhao Shun'an, Zhang Lixin, Chen Liangcai, Feng Wei, Wen Xiaojun, Zhang Lichen, Wu Jiang. Mechanical ventilation cooling tower Part 3. Closed cooling tower

1 Scope

Part 3 of China's national standard for mechanical draft cooling towers, covering closed circuit towers. A closed tower keeps the process fluid inside a coil and sprays water over the outside of it, so the fluid is cooled evaporatively without ever meeting the air. That costs a few degrees of approach and a heat exchanger, and it buys something an open tower cannot offer: the circuit stays clean. In an open tower the process water is exposed to

everything the air carries - dust, spores, and the oxygen that drives corrosion - and it concentrates dissolved solids as it evaporates, which is why open systems need continuous chemical treatment and still foul. A closed circuit is also what allows glycol to be used for freeze protection, and it removes the Legionella risk from the process side. This part specifies the product classification and marking, requirements, test methods, inspection rules, marking, packaging, transport and storage, and applies to closed towers of up to 500 cubic metres an hour per tower.

This part of GB/T 7190 specifies the product classification and marking, requirements, test methods, inspection rules, signs and packages of the closed cooling tower. Loading, transportation and storage and others. This section applies to a closed cooling tower with a cooling capacity of not more than 500m³/h in a single tower (hereinafter referred to as a closed tower).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document. GB/T 151 heat exchanger

GB/T 1449 fiber reinforced plastic bending performance test method

GB/T 2518 continuous hot-dip galvanized steel sheet and strip

GB/T 7190.1 Mechanical Ventilation Cooling Tower Part 1. Small and Medium Open Cooling Towers

GB/T 8924 Fibre reinforced plastics - Determination of burning performance - Oxygen index method Technical requirements and test methods for hot-dip galvanized coating of

GB/T 13912 metal-clad steel parts

GB/T 31539-2015 Structural fiber reinforced composite pultruded profiles

HJ706 Environmental Noise Monitoring Technical Specification Noise Measurement Correction Auxiliary equipment for ammonia refrigeration systems - Part 5. Evaporative condensers

3 Terms and definitions

The following terms and definitions as defined in GB/T 7190.1 apply to this document.

3.1 Closed cooling tower closedcircuitcoolingtower The circulating cooling water does not directly contact with the air, and the heat is transferred to the spray water through the partition wall heat exchanger, and the evaporation of the spray water and the air display Heat transfer, a device that reduces the temperature of the circulating cooling water.

3.2 Heat exchange module heatexchangemodule A heat exchange unit composed of a heat exchanger such as a coil or a plate-wall heat exchanger and a water-filled filler (partially contained).

3.3 Spray water spraywater Spraying water to the heat exchange module through the water distribution device and only self-circulating water in the tower.

3.4 Circulating cooling water circuitingcoolingwater The process water that is cooled in the inter-wall heat exchanger.