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

GB/T 18362-2008

Replacing GB/T 18362-2001

Direct-fired lithium bromide absorption water chiller (heater)

直燃型溴化锂吸收式冷(温)水机组

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Foreword

This standard is a revision of GB/T 18362-2001 "Direct-fired lithium bromide absorption water chiller (heater)". As compared with GB/T 18362-2001, the main changes are as follows: - In clause 4.1, CANCEL the original methods of classification by refrigeration cycle and by the installation site. - In clause

4.2.1 Nominal conditions, ADD the selectable reference values of the cold-water inlet-temperature of 14 °C. - CHANGE the fouling factor of nominal condition in clause

0.086 m²·°C/kW to

0.018 m²·°C/kW at the water-side of the evaporator and

0.044 m²·°C/kW at the water-side of the condenser and absorber. MAKE reference to the methods of GB/T 18430.1-2007 to carry out test and calculation. - INCLUDE the calculation method of the coefficient of performance in

6.3.5 into Appendix A. - MODIFY the withstanding pressure at water-side in

6.3.8 to a hydraulic pressure test of

1.25 times the design pressure. - In the inspection rules, ADD the sampling inspection requirements and testing content. - In Table 6, ADJUST the electromagnetic compatibility test from the exit- factory inspection to the type inspection. - In Appendix A.11, MODIFY the calculation of exhaust heat loss to adopt the formula of GB 10180. This standard replaces GB/T 18362-2001 as of the date of implementation. Appendix A, Appendix B, Appendix C of this standard are normative appendices. Appendix D is an informative appendix. This standard was proposed by the China Machinery Industry Federation. This standard shall be under the jurisdiction of the National Refrigeration and Air Conditioning Equipment Standardization Technical Committee. Drafting organizations of this standard: Yuanda Air Conditioning Co., Ltd., Hefei General Machinery Research Institute. The main drafters of this standard: Zhang Yue, Chen Bokun, Wang Jindong, Direct-fired lithium bromide absorption water chiller (heater)

1 Scope

GB/T 18362-2008 is the Chinese national standard on direct-fired lithium bromide absorption water chiller (heater), in the field of energy and heat transfer engineering. 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 12 November 2008 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 May 2009. Classification: ICS 27.200, CCS J73. 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 terms and definitions, types and basic parameters, technical requirements, test methods, inspection rules, marking, packaging, transportation and storage of direct-fired lithium bromide absorption water chiller (heater) (shortly referred to as direct-fired units). This standard is applicable to units that use direct combustion of fuel and gas as heat-source, water as refrigerant, lithium bromide aqueous solution as absorption liquid, alternately or simultaneously produce air conditioning, process cold-water, warm-water and domestic warm-water. Other units of the same type may make reference to this standard.

2 Normative references

The provisions in following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this standard; however, parties who

reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 252-2000 Light diesel fuels

GB 9969.1-1998 General principles for preparation of instructions for use of industrial products

GB/T 10180-2003 Thermal performance test code for industrial boilers

GB 11174-1997 Liquefied petroleum gases GB/T 13306-1991 Plates

GB 13612-1992 Manufactured gas

GB 17820-1999 Natural gas

GB 18361-2001 Safety requirements of lithium bromide absorption water chiller (beater)

3.6 Nominal flowrate The flowrate of water, fuel, etc. when the unit is subject to cooling capacity and heating capacity test. Unit: m³/h, L/h or kg/h.

3.7 Maximum application pressure The maximum pressure for the safe use of gas, fuel, water, etc., to be guaranteed by the structural strength of the unit. Unit: MPa.

3.8 Rated pressure drop The pressure loss value as generated by the rated flowrate of cold-water, warm-water, chilling water, etc. when passing through the unit. Unit: MPa.

3.9 Supporting facilities A fuel system, a water pump, a cooling tower, a flue, a water piping attached to the outside of the direct-fired unit.

4.1.1 Classification by usage performance

a) Cooling-only type: The direct-fired unit which only supplies cold-water.

b) Cooling & heating type: The direct-fired unit which alternatively or simultaneously supplies cold-water and warm-water.

4.1.2 Classification by fuel

a) Gas type: A unit that uses artificial gas, liquefied petroleum gas, natural gas, other gaseous fuels.

b) Fuel type: A unit that uses liquid fuel such as light diesel oil or heavy diesel oil.

4.2 Basic parameters power consumption.

5.3.5 The measured coefficient of performance of the unit shall not be less than 95% of the nominal coefficient of performance.

5.3.6 The pressure drop of cold (hot) water and cooling-water of the unit shall not exceed

110% of the rated pressure drop.

5.3.7 The leakage rate of the unit shall not exceed

5.3.8 The pipeline at water-side of the unit shall be free from abnormal deformation or water leakage.

5.3.9 The noise of the unit shall comply with environmental protection regulations and design requirements.

5.3.10 The safety performance of the unit: the pressure resistance, airtightness, insulation resistance, withstanding voltage strength, electromagnetic compatibility, performance of the combustion equipment, the action of the safety protection device of the fuel piping system shall comply with the requirements of GB 18361-2001.

5.3.11 The cooling (heating) capacity control device of the unit shall be sensitive and reliable. Partial load characteristics are in accordance with Table 4. Table 4 -- Partial load characteristics of direct-fired unit

	Cold water	Hot water
Outlet temperature	7 °C	30 °C at 100% load, 22 °C at 0% load, intermediate temperature changes linearly with load.
Flowrate	same as rated flowrate	same as rated flowrate
Heating conditions		Outlet temperature 60 °C
Flowrate		same as rated flowrate

Note: Partial load performance data (cooling capacity, heating capacity, heat-source consumption) are expressed as a percentage of the load performance data under nominal conditions.

6 Test methods

6.1 Test conditions The conditions and error ranges that shall be met during the test are as follows:

6.1.1 Power supply: The rated frequency $\pm$

1 Hz. The rated voltage $\pm$ 10%.

6.1.2 Cold-water: The outlet temperature is 7 °C $\pm$ 0.3 °C. The flowrate is $\pm$ 5% of the nominal value.

6.3.6 Pressure loss at water-side When the value of the cooling capacity is stable in the test of

6.3.1 and the value of the heating capacity is stable in the test of 6.3.2, use the method and formula as shown in Appendix C to calculate the pressure loss at the cold-water side, the cooling-water side, or the warm-water side.

6.3.7 Airtightness of chiller After passing the leak testing by the use of dry clean air or nitrogen foaming as well as the pressure holding test, use the helium mass spectrometer