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

GB/T 27698.5-2011

**Test method for the performance of heat exchangers and heat
exchange element -- Part 5: Heat transfer tube for tubular heat
exchangers**

热交换器及传热元件性能测试方法 第5部分：管壳式热交换器用换热管
(English Translation)

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Foreword

GB/T 27698 "heat exchangers and heat transfer device performance test methods" is divided into eight sections.

- Part 1. General requirements;
- Part 2. shell and tube heat exchanger;
- Part 3. plate heat exchanger;
- Part 4. spiral plate heat exchanger;
- Part 5. shell and tube heat exchanger heat transfer tubes;
- Part 6. Used for air cooling fin tube;
- Part 7. Air Cooler noise measurement;
- Part 8. Calibration of industrial heat exchangers.

This section GB/T 27698 Part 5.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This part of the National boiler pressure vessel Standardization Technical Committee (SAC/TC262) and focal points.

This section is responsible for drafting units. High-tech Gansu Lanke Petrochemical Equipment Co., Ltd. (Lanzhou Petroleum Machinery Research Institute).

It participated in the drafting of this section. Country refining oil drilling equipment for Quality Supervision and Inspection Center, industrial machinery energy-saving projects Heat Transfer Technology Center, Xi'an Jiaotong University.

1 Scope

This section GB/T 27698 specifies the shell and tube heat exchanger heat transfer tubes liquid - without phase change, vapor - liquid phase change condensation, flow boiling Evaporation phase change and pool boiling evaporation phase change heat transfer test conditions and fluid resistance performance test methods.

This section applies to the test fluid is a single component or as a single component only consider liquid -, vapor - liquid.

This section only consider material thermal resistance of heat transfer tubes, the heat transfer tubes are not considered within the outer fouling resistance.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB 151 shell and tube heat exchangers GB/T 27698.1 heat exchangers and heat transfer device performance test methods - Part 1. General requirements

3 Requirements

3.1

should control the heat transfer tubes made of single tube heat exchanger prototype.

3.2

prototype design data and test parameters.

- a) type of heat transfer tubes;
- b) heat exchange material;
- c) heat transfer tubes geometry;
- d) test length;
- e) equivalent diameter;
- f) flow channel cross-sectional area;
- g) heat transfer area.

Above design data and test parameters which determine the method of calculation should be based according to GB 151 and GB/T 27698.1 requirements get on.

3.3.1 No phase change liquid - heat exchanger

3.3.1.1

no phase change liquid - heat exchanger testing system shown in Figure 1.

3.3.1.2

before the test, you should check the prototype, measuring instruments as well as the reliability of the pipeline.

3.3.1.3

After the running, should be within the exhaust gas net prototype, so the prototype under test completely filled with fluid and operating conditions are adjusted to Standard test conditions.

3.3.1.4

After the standard test conditions and stable operation of 30min, should be tested according to the following test requirements.

The flow rate of a) from both sides of the fluid flow rate variation 0.5m/s ~ 1.5m/s, etc., change interval should be not less than 0.2m/s;

b) a fixed flow rate side (hot side or cold side) of the fluid at 1.0m/s, the other side of the flow rate of the fluid should be 0.5m/s ~ 1.5m/s variable of change interval should be not less than 0.2m/s;