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

GB/T 32974-2024

Replacing GB/T 32974-2016

**Methods of determination and calculation of heat balance in
regenerative furnace of iron and steel industry**

钢铁行业蓄热式工业炉窑热平衡测试与计算方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 32974-2016 "Test and calculation method for heat balance of regenerative industrial furnaces in the steel industry" and GB/T 32971-2016 "Test and calculation method for heat balance of regenerative ladle baking system in the steel industry", which is similar to GB/T 32974-2016 The main technical changes are as follows.

- a) Added the test scope of heat balance of regenerative ladle baking system (see 4.3);
- b) Increased the thermal balance test time of the ladle baking system (see 4.4);
- c) The heat balance calculation units have been changed (see 4.5, Chapter 9, 4.5, Chapter 9 of the 2016 edition);
- d) The frequency of flue gas sampling and analysis has been changed (see 8.2.4.1, 8.2.4.1 of the 2016 edition);
- e) The smoke volume test method has been changed (see 8.2.4.2, 8.2.4.2 of the 2016 edition);
- f) Added the test content and methods for ladle (see 8.2.10);
- g) The wind speed range of heat dissipation on the furnace surface has been changed (see 9.2.6, 9.2.6 of the 2016 edition);
- h) Added the calculation method of heat loss through the ladle lining, outer shell and ladle

cover (see 9.2.12);

i) The oxidation burn test method has been changed (see 8.2.3.3, Appendix D of the 2016 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed by the China Iron and Steel Association.

This document is under the jurisdiction of the National Technical Committee on Steel Standardization (SAC/TC183).

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The previous versions of the documents replaced by this document are as follows.

- GB/T 32974, first issued in 2016, this is the first revision;
- GB/T 32971, first issued in 2016.

Regenerative Industrial Furnaces in the Steel Industry Thermal balance test and calculation method

1 Scope

This document specifies the heat balance test and calculation benchmarks, test object overview, recent Periodic production situation, test preparation, test steps, test content and methods, and calculation methods.

This document is applicable to the heat balance test and calculate.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

YB/T 4209 Technical Specification for Regenerative Combustion in the Iron and Steel

Industry YB/T 4773 Determination and calculation method of oxidation loss of steel billets

3 Terms and definitions

The terms and definitions defined in YB/T 4209 and YB/T 4773 apply to this document.

4.1 Reference temperature

The average ambient temperature is used, that is, the ambient temperature of the regenerative industrial furnace in the workshop 1m away from the furnace wall or 1m away from the ladle or ladle roaster. Average ambient temperature.

4.2 Fuel calorific value

The received low calorific value of wet coal gas is adopted.

4.3 Thermal balance test range

According to the test requirements, the whole furnace (including heat storage recovery device) or (and) the furnace heat balance of the industrial furnace is tested and calculated.

The thermal balance test of the ladle baking system includes the baking machine, air pipeline, gas pipeline, exhaust pipe and the baked ladle.

4.4 Thermal balance test time

For industrial furnaces, continuous measurement is performed when the type and specification of the materials entering the furnace remain unchanged and the furnace operating conditions are stable.

The measurement should be completed within 8 hours, and the number of measurements should not be less than 2 times, each time for 1 hour. The measurement of temperature, pressure, flow rate and other parameters should be not less than 1 hour per hour.

4 times and then take the average.