

ICS 77.100
CCS H11



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

GB/T 43899-2024

**Pig iron - Determination of multi-element contents - Spark
discharge atomic emission spectrometric method (routine
method)**

生铁 多元素含量的测定 火花放电原子发射光谱法（常规法）

Issued on: April 25, 2024

Implemented on: November 1, 2024

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

Table of Contents

Foreword

1 Scope

2 Normative references

3 Terms and definitions

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: 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 for Standardization of Pig Iron and Ferroalloys (SAC/TC318): This document was drafted by: Shijiazhuang Chuangpu Technology Co., Ltd., Hebei University of Science and Technology Engineering, Fujian Sangang Minguang Co., Ltd: Company, Qingdao Dehong Jinxin Technology Co., Ltd., Tianjin Special Equipment Supervision and Inspection Technology Research Institute, Hebei Hegang Material Technology Research Institute Co., Ltd., Hebei Chuangpu Metal Materials Testing and Development Co., Ltd., Gangyan Nake Testing Technology Co., Ltd., Tianjin Jinyi Instrument Co., Ltd: Co., Ltd., Metallurgical Industry Information Standards Research Institute: The main drafters of this document are: Zhang Zengkun, Liu Peng, Qi Zengsheng, Li Lei, Huang Yunhua, Niu Weifei, Su Zhengfei, Wu Yugen, Jiang Bin, Sun Xiaofei, Qi Bing, Liu Jie, Li Zhijie, Huang Xiaoyu, Liu Jinfeng, Lu Chunsheng, and Liu Yanting: Determination of multi-element content in pig iron Spark discharge atomic emission spectrometry (conventional method) Warning

---People who use this document should have practical experience in formal laboratory work: This document does not address all possible safety issues: The user is responsible for taking appropriate safety and health measures and ensuring compliance with the conditions stipulated in relevant national laws and regulations:

1 Scope

GB/T 43899-2024 gives the spark optical emission method for determining multiple elements in pig iron. It is the analysis on which a blast furnace and a foundry are run: the silicon, manganese, phosphorus, sulfur, carbon, chromium, titanium and the trace elements in a tapped iron are measured within minutes on a spark spectrometer, and the result

changes what is charged and what is added to the ladle. Pig iron is a harder matrix for the technique than steel, because the high carbon and silicon produce graphite segregation that makes the sparked surface unrepresentative unless the sample is prepared correctly. The standard sets the principle, the sampling and the casting and preparation of the specimen, the instrument and its excitation conditions, the analytical lines and the internal standard, the calibration with certified reference materials and the standardisation drift correction, the measurement, the calculation, the interferences and their handling, the precision and the test report. It takes effect on 1 November 2024.

This document specifies the determination of carbon, silicon, manganese, phosphorus, sulfur, chromium, nickel, molybdenum, vanadium, copper, Method for measuring the content of 23 elements, including titanium, aluminum, boron, arsenic, niobium, tungsten, cobalt, lead, tin, antimony, bismuth, zinc and zirconium: This document is applicable to the routine analysis of the chemical composition of pig iron: The determination range of each element is shown in Table 1: Table

1 Determination range of each element Element determination range (mass fraction)/% Si Mn Cr Ni Mo Cu Ti Al As Nb Co Pb Sn Sb Bi Zn Zr 0:2~4:5 0:05~2:5 0:015~1:3 0:005~0:25 0:01~2:8 0:01~4:5 0:01~1:0 0:01~1:5 0:01~2:0 0:005~0:5 0:01~1:0 0:001~0:4 0:005~0:1 0:005~0:1 0:01~0:9 0:01~0:3 0:003~0:04 0:006~0:4 0:005~0:35 0:002~0:03 0:001~0:05 0:005~0:045

2 Normative references

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