



Results of Test

Reference Material for Gaseous Elements in Iron and Steel

(for Oxygen and Nitrogen Analysis)

JSM M401-17

1、Introduction

This reference material is intended to be used to confirming instrument performance and validate the analysis of oxygen and nitrogen in iron and steel.

This reference material is pin-shaped (0.5 grams/pin) and is supplied as 100 pins/bottle.

2、Measured values of oxygen and nitrogen

(ppm)

Sample name	JSM M401-17	
Element	Oxygen	Nitrogen
1 st	7.1	50.4
2 nd	7.4	49.9
3 rd	7.8	51.8
4 th	7.1	53.7
5 th	7.6	51.0
6 th	7.4	50.2
7 th	7.3	50.3
8 th	7.3	53.8
9 th	7.6	50.9
10 th	7.5	53.7
Average	7.4	51.6
Range	0.7	3.9
σ_{n-1}	0.22	1.58

- 1) The measured values are traceable to the Japanese Iron and Steel Certified Reference Materials (JSS).

Oxygen: JSS GS-12a(4.8ppm), JSS 383-1(11ppm), JSS 384-1(21ppm), JSS 387-1 (179ppm)

Nitrogen: JSS 366-8(7.5ppm), JSS 030-8(33ppm), JSS 604-9(174ppm), JSS 654-15(209ppm)

3, Weight of the reference material

The weight test of the reference material was carried out with an electronic force balance;
QUINTIX224-1S (made by Sartorius company, reading limit 0.1mg).

(g)

Sample name	JSM M401-17
1st	0.500 ₉
2 nd	0.501 ₁
3rd	0.500 ₉
4th	0.499 ₄
5th	0.500 ₃
6th	0.500 ₁
7th	0.500 ₈
8th	0.500 ₃
9th	0.500 ₃
10th	0.500 ₄
Average	0.500 ₄
Range	0.001 ₇
σ_{n-1}	0.000 ₅

4, Caution

1) Take care to ensure correct measurement:

- Do not leave the bottle open.
- Do not put the material into another bottle. Please do not return it to the same bottle after use.
- Do not touch the material with bare hands.

2) Store in a desiccator in a controlled clean laboratory.

5, Analysis method

Element	Analysis
Oxygen	Infrared absorption method after fusion under inert gas (JIS G 1239)
Nitrogen	Thermal conductometric method after fusion in a current of inert gas (JIS G 1228)

6, Inquiries

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