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**Sodium thiosulfate pentahydrate
(Reagent)**

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Reagent Association (JRA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS K 8637**:1996 is replaced with this Standard.

This Standard has been made based on **ISO 6353-2**:1983 *Reagents for chemical analysis—Part 2: Specifications—First series* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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In the event of any doubts arising as to the contents,
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Sodium thiosulfate pentahydrate (Reagent)



Introduction This Japanese Industrial Standard has been prepared based on the first edition of **ISO 6353-2** *Reagents for chemical analysis—Part 2: Specifications—First series* published in 1983 with some modifications of the technical contents.

The portions given continuous sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex (informative).

1 Scope This Standard specifies the sodium thiosulfate pentahydrate to be used as a reagent.

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 6353-2:1983 *Reagents for chemical analysis—Part 2: Specifications—First series* (MOD)

2 Normative references The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS K 8001 General rule for test methods of reagents

JIS K 8230 Hydrogen peroxide (Reagent)

3 General matters The general matters of test method shall be in accordance with **JIS K 8001**.

4 Classification The classification shall be the guaranteed reagent.

5 Properties

5.1 Characteristics Sodium thiosulfate pentahydrate in colourless crystal. It easily dissolves in water, however hardly dissolves in ethanol.

5.2 Qualitative test method The qualitative test method shall be as follows.

- Add 20 ml of water to 1 g of the sample to dissolve (Solution A). When 10 ml of silver nitrate solution (20 g/L) is added to 5 ml of Solution A, white precipitate is generated and when it is left as it is, it turns to black.
- When Solution A is used to the test in accordance with **5.29 (1)** of **JIS K 8001**, yellow colour appears.

6 Quality The quality, when tested in accordance with clause 7, shall conform to table 1.

Table 1 Quality

Item	Specified value
Purity ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$)	mass fraction % 99.0 min.
Solubility with water	To pass test
pH (50 g/L, 25 °C)	6.0 to 8.4
Chloride (Cl)	mass fraction % 0.001 max.
Sulfate and sulfite (expressed as SO_4)	mass fraction % 0.05 max.
Sulfide (S)	mass fraction ppm 2.5 max.
Nitrogen compound (expressed as N)	mass fraction % 0.002 max.
Potassium (K)	mass fraction % 0.01 max.
Copper (Cu)	mass fraction ppm 5 max.
Magnesium (Mg)	mass fraction % 0.001 max.
Calcium (Ca)	mass fraction % 0.002 max.
Lead (Pb)	mass fraction ppm 5 max.
Iron (Fe)	mass fraction ppm 5 max.

7 Test method

7.1 Test conditions and test results The test conditions and test results shall be in accordance with 3.7 (1) of **JIS K 8001**. Humidity control shall be carried out as occasion demands. The tests for each quality item specified in table 1 shall be carried out in accordance with the following each test method and the calculation values and operation results obtained shall be in accordance with 3.5 of **JIS K 8001**.

7.2 Purity ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) The operation and calculation shall be as follows.

a) **Operation** Weigh out 6.5 g of the sample to the nearest 0.1 mg and put it in a 250 ml volumetric flask. Add 20 ml of water to dissolve and furthermore add water up to the marked line (Solution B). In addition, take 25 ml of 0.05 mol/L iodine solution accurately to a 200 ml beaker for titration and titrate it with Solution B. When the colour of solution has become light yellow in the vicinity of end point, add about 0.5 ml of starch solution as an indicator and successively titrate it with Solution B. Take the point where the colour of solution turns to colourless as the end point.

b) **Calculation**

$$A = \frac{0.024\,819 \times 25 \times f}{m \times \frac{V}{250}} \times 100$$

where, A : purity ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) (mass fraction %)
m : mass of sample weighed out (g)
V : titre of Solution B (ml)

f : factor of 0.05 mol/L iodine solution

0.024 819 : $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ equivalent mass of 1 ml of
0.05 mol/L iodine solution (g)

7.3 Solubility with water The solubility with water shall be in accordance with 5.2 of JIS K 8001. In this case, the sample shall be 2 g and (a) shall be used for the adaptability limit standard for turbidity.

7.4 pH (50 g/L, 25 °C) The preparation of solution and operation shall be as follows.

- a) **Sample solution** Dissolve 5.0 g of the sample in carbon dioxide-free water and dilute to 100 ml.
- b) **Operation** The operation shall be in accordance with 5.5 (2) of JIS K 8001.

7.5 Chloride (Cl) The preparation of solution and operation shall be as follows.

- a) **Sample side solution** Add 10 ml of water, 5 ml of sodium hydroxide solution (100 g/L) and 5 ml of hydrogen peroxide specified in JIS K 8230 to 1.0 g of the sample, evaporate it to dryness on a water bath⁽¹⁾, dissolve it in water and dilute with water to 20 ml.
- b) **Standard side solution** Add 10 ml of water, 5 ml of sodium hydroxide solution (100 g/L) and 5 ml of hydrogen peroxide specified in JIS K 8230, evaporate it to dryness on a water bath⁽¹⁾ and then add 1.0 ml of chloride standard solution (Cl: 0.01 mg/ml) and dilute with water to 20 ml.
- c) **Operation** The operation shall be in accordance with 5.7 (1) of JIS K 8001.

Note ⁽¹⁾ Ion-exchanged water or distilled water shall be used for the water of water bath.

7.6 Sulfate and sulfite (expressed as SO_4) The preparation of solution and operation shall be as follows.

- a) **Sample side solution** Dissolve 1.0 g of the sample in water and dilute to 50 ml. Take 5 ml (0.1 g of the quantity of sample) of it and drop 0.05 mol/L iodine solution to it until it becomes light yellow. Next, add 0.3 ml of hydrochloric acid (2+1) and dilute with water to 25 ml.
- b) **Standard side solution** Add the same amount of 0.05 mol/L iodine solution as used in the sample side to 5 ml of water and evaporate it on a water bath until it becomes light yellow. Next add 0.3 ml of hydrochloric acid (2+1), 5.0 ml of sulfate standard solution (SO_4 : 0.01 mg/ml) and dilute with water to 25 ml.
- c) **Operation** The operation shall be in accordance with 5.15 (1) of JIS K 8001.

7.7 Sulfide (S) The preparation of solution and operation shall be as follows.

- a) **Sample side solution** Dissolve 2.0 g of the sample in water and dilute to 10 ml.