



Analytical Quality Assurance, Standard for Sulfide

Preparation of a standard solution for Sulfide

Reagents:

- Cat. No. 109099 Iodine solution 0.05 mol I₂/l 0.1 N solution
- Cat. No. 431648 Sodium sulfide nonahydrate (Sigma-Aldrich)
- Cat. No. 109147 Sodium thiosulfate solution 0.1 mol/l 0.1 N solution
- Cat. No. 100716 Sulfuric acid 25 % for analysis
- Cat. No. 105445 Zinc iodide-starch solution for analysis
- Cat. No. 116754 Water for analysis

Preparation of a stock solution:

Dissolve 7.5 g of glass-clear, if necessary washed crystals of sodium sulfide nonahydrate with distilled water in a calibrated or conformity-checked 1000-ml volumetric flask and make up to the mark with distilled water. The stock solution prepared according to this procedure has a concentration of approx. 1000 mg/l sulfide.

Washing of the sodium sulfide nonahydrate crystals:

After a while sodium sulfide nonahydrate turns yellow to brown on the surface of the crystals.

If coloring occurs, wash it off using a small amount of distilled water and dry the crystals afterwards (a complete drying is not necessary as the assay is later determined by titration).

If the sodium sulfide nonahydrate is colorless or white, washing is not necessary.

Recommendation: When stored in the refrigerator the colour of the sodium sulfide nonahydrate changes only very slowly.

Precise assay of the standard solution (stock solution) for sulfide:

Place 100 ml of distilled water and 5 ml (full pipette) of sulfuric acid 25 % in a 500-ml ground-glass conical flask. To this solution add 25.0 ml (full pipette) of the sulfide stock solution of approx. 1000 mg/l and 25.0 ml (full pipette) of iodine solution 0.05 mol/l. Shake the contents of the flask thoroughly for about one minute, subsequently titrate with sodium thiosulfate solution 0.1 mol/l until the yellow iodine color has disappeared, add 1 ml of zinc iodide-starch solution, and continue to titrate until a milky, pure white color emerges.

Calculation of the exact content of the sulfide solution:

$$\text{mg/l sulfide} = (C2 - C1) \times 64.13$$

C1 = consumption of sodium thiosulfate 0.1 mol/l

C2 = quantity of iodine solution 0.05 mol/l (25.0 ml)

Further investigational concentrations may be prepared from the stock solution exactly determined according to the procedure described above by diluting accordingly.

Stability:

When stored in a cool place (refrigerator), the stock solution remains stable for at most one day. The diluted investigational solutions must be used immediately.



For use with test kits:		Measuring range in mg/l
114416	MColortest™ Sulfide Tests	0.02 - 0.25 S
114777	MColortest™ Sulfide Tests	0.1 - 5 S
114779	Spectroquant® Sulfide Tests	0.020 - 1.50 S

Ordering Information

Product	Catalog No.
Iodine solution $c(I_2) = 0.05 \text{ mol/l}$ (0.1 N) Titripur® Reag. Ph Eur	109099
Sodium thiosulfate solution $c(Na_2S_2O_3 \cdot 5 H_2O) = 0.1 \text{ mol/l}$ (0.1 N) Titripur® Reag. Ph Eur, Reag. USP	109147
Sulfuric acid 25% for analysis EMSURE®	100716
Zinc iodide starch solution for analysis	105445
Water for analysis EMSURE®	116754
Sulfide Test Method: colorimetric with color card and comparator block with long test tubes 0.02-0.04-0.06-0.08-0.10-0.13-0.16-0.20-0.25 mg/l S ²⁻ MQuant®	114416
Sulfide Test Method: photometric 0.020 - 1.50 mg/l S ²⁻ Spectroquant®	114779