

ICS 71.060.50
CCS G 12



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

GB 26754-2011

Sodium azide for industrial use

工业叠氮化钠

(English Translation)

Issued on: July 20, 2011

Implemented on: May 1, 2012

Issued by: Standardization Administration of China

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Foreword

This standard 7.1,7.2,7.3,7.5,7.6 and Chapter 8 is mandatory, the rest are recommended.

This standard was drafted in accordance with rules GB/T 1.1-2009 given.

This standard and U.S. Military Standard MIL-S-20552B. 1983 (1995) "Industrial sodium azide" (English) and structural differences in technical Difference see Appendix A and Appendix B.

The standard proposed by China Petroleum and Chemical Industry Federation.

This standard by the National Standardization Technical Committee chemical inorganic chemicals branch (SAC/TC63/SC1).

This standard was drafted. CNOOC Tianjin Chemical Research & Design Institute, Anhui Province Langxi County Branch of the Industrial Co., Ltd., Tianjin Entry-Exit Inspection Quarantine Bureau, Gong Yi City, Quality and Technical Supervision and Testing Center.

1 Scope

This standard specifies the requirements sodium azide industrial nitride, test methods, inspection rules, marking, packaging, transportation, storage, and security.

This standard applies primarily as automotive airbag gas generating agent, a primary explosive, photographic agents, foaming synthetic resin, production of pesticides and Pharmaceutical intermediates industrial raw materials such as sodium azide.

2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper Pieces. For undated references, the latest edition (including any amendments) applies to this document.

GB 190-2009 dangerous goods packaging logo GB/T 191-2008 Packaging Pictorial signs General Method GB/T 3049-2006 industrial chemical products as measured by the iron content of 1,10-Phenanthroline Spectrophotometry GB/T 6678 General Principles for Sampling Chemical Products GB/T 6679 General sampling of solid chemical products GB/T 6682-2008 specifications and test methods for water analysis laboratory GB/T 8170 rounding off means about rules and determining limiting values GB 12268-2005 of dangerous goods GB 12463-2009 transport of dangerous goods packaging technology Preparation HG/T 3696.1 Inorganic chemicals for chemical analysis of standard titration solution Preparation HG/T 3696.2 Inorganic chemicals solution used for chemical analysis of standard impurities Preparations with HG/T 3696.3 Inorganic chemicals Chemical Analysis TG/HY206-2009 Railway of Dangerous Goods Molecular formula and molecular weight 3 Molecular formula. NaN₃ Molecular weight. 65.01 (according to 2007 international relative atomic mass)

4 Requirements

4.1

Appearance. white crystalline mixture doped with microstrip or pale yellow powder, there should be no visual evidence of impurities.

Sodium azide 4.2 industrial specifications should meet the requirements of Table 1.

Table 1%

Indicators Project

Index, w

Premium grade First grade Qualified Sodium azide (NaN₃ to count) ≥ 99.0 98.5 98.0

Sodium hydroxide (NaOH) ≤ 0.15 0.3 0.5 Sodium carbonate (Na₂CO₃) ≤ 0.35 0.5

-Sodium carbonate (Na₂CO₃) ≤ 0.35 0.5 -Water insolubles ≤ 0.1 0.2 -Chloride (based on Cl) ≤ 0.01 - -Sulfate (in terms of SO₄) ≤ 0.1 - -Nitrate (NO₃ basis) ≤ 0.05 - -Iron (Fe) ≤ 0.05 - - ≤ 0.15 0.5 1.0 Water Heavy Metals (as Pb) ≤ 0.001 - -

5.1 Safety Tips

Reagents used in this test method corrosive or toxic, the operator should be careful as water splashed on the skin immediately Flushing, severe cases should seek medical care immediately.

This standard indicators measuring all projects should be carried out in a fume hood. The remaining test solution of sodium azide or at should be promptly Treatment, See Appendix C.

5.2 General Provisions

This standard reagents and water, in the absence of other requirements specified, refer to the specified three analytical reagents and GB/T 6682-2008 Grade water or equivalent water quality. Desired test standard solution, the standard solution impurities, products and preparations, in the absence of other requirements specified, are by HG/T 3696.1, HG/T 3696.2, preparing a predetermined HG/T 3696.3 is.

5.3 Visual inspection

In natural light, the appearance was visually determined.

5.4.1.1 Method summary

Sodium azide is reacted with ceric ammonium nitrate, the tetravalent cerium is reduced to trivalent cerium; standard ferrous ammonium sulfate titration solution is titrated with an excess of cerium nitrate Hydroxide solution, a solution in accordance with the consumption of ferrous ammonium sulfate was calculated back to stack the content of sodium azide.

5.4.1.2 Reagents

5.4.1.2.1

standard ferrous ammonium sulfate titration solution. $c[(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2] \sim 0.1\text{mol/L}$.

5.4.1.2.2

standard titration solution of ammonium cerium nitrate. $c[(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6] \sim 0.1\text{mol/L}$.

Cerium ammonium nitrate were dissolved in 170g containing 125mL of water and 185mL of concentrated nitric acid solution, stir well. 300mL containing added 12.5mL Concentrated aqueous nitric acid, with stirring. Under continuous stirring, this solution was diluted to 2500mL. This solution should be stored in a brown bottle.

5.4.1.2.3

phenanthroline indicator solution. 5g/L;

0.5g of ferrous sulfate dissolved in 50mL of water, add 2 drops of concentrated sulfuric acid. Weigh 0.5g phenanthroline were dissolved in this solution, diluted with water to 100mL.

5.4.1.3 Analysis of step

Weigh about 2.5g sample, accurate to 0.0002g, was placed in a 400mL beaker, dissolved in 200mL water, transferred to a 250mL volume Volumetric flask, diluted with water to the mark.

Pipette with a pipette 20mL of test solution was placed in a 400mL beaker, with a burette ceric ammonium nitrate was gradually added 40.0mL standard titration Solution, the reaction should be cooled in water. After completion of the reaction, the solution is adjusted to a volume of about 150 mL of water, 5mL of concentrated sulfuric acid was slowly added, plus 2 drops phenanthroline indicator solution, titration was titrated with standard ferrous ammonium sulfate to the solution from pale green to yellow to red. At the same time a blank test.

Except that no blank test sample addition, and other operations for the same test solution.

5.4.1.4 Calculation results

Sodium azide content by mass of sodium azide (of NaN_3) fraction w_1 meter, according to equation (1).

$c(V_1 - V_2) \times M \times 11000 \times 100\%$ (1) where.

C --- accurate value of the concentration of the solution of ferrous ammonium sulfate titration standard, in units of moles per liter (mol/L);

Numerical volume standard titration solution of ammonium ferrous sulfate VI --- blank consumption in milliliters (mL);

--- value V_2 standard titration solution of ammonium ferrous sulfate in the sample solution volume consumed in milliliters (mL);

--- numerical molar mass M sodium azide (NaN_3), in units of grams per mole (g/mol) ($M = 65.01$);

The mass values m --- sample in grams (g).

Parallel to the arithmetic average of the measurement results of the measurement result, the absolute difference determination results parallel to not more than 0.3%.

5.4.2.1 Method summary

Under acidic conditions, the reaction of the sample with a potassium permanganate solution, adding an excess of potassium iodide and potassium permanganate reaction, iodine precipitated thiosulphate Standard Solution sulfate titration, using starch indicator