

TEXAS SPECIFICATION NO. 180-84-02C
SODIUM METASILICATE, ANHYDROUS

Effective Date: May 2011

1. **SCOPE:** This specification establishes the minimum requirements for a technical grade of anhydrous sodium metasilicate (Na_2SiO_3) suitable for use as an alkaline builder in soaps, synthetic detergents and other laundry and janitorial products.

Sodium metasilicate anhydrous will absorb moisture and carbon dioxide when exposed to the air. It is a moderately strong alkali which can be irritating to moist skin and corrosive to the eyes. Irritation from contact with the skin, and especially with the eyes and mucous membranes, should be treated by prolonged flushing with water. In case of accidental swallowing, drinking large amounts of milk or water is recommended as a first-aid measure. A physician's advice should be obtained as soon as possible.

2. **DEFINITIONS:**

Terminology used in this specification is intended to be generic in nature and consistent with meanings that have been defined through general use and/or accepted trade practices. Where variant meanings may exist, the applicable interpretation shall be determined by the Texas Procurement and Support Services, a division of the Texas Comptroller of Public Accounts (CPA).

3. **SPECIFICATION REQUIREMENTS:** Sodium metasilicate furnished under this specification shall meet or exceed the following requirements:

3.1 **GENERAL REQUIREMENTS:** The product shall be white or bluish white in color, granular, free-flowing, and free from excessive dusting. It shall be rapidly soluble in either hot or cold water.

3.2 **CHEMICAL AND PHYSICAL REQUIREMENTS:** The product shall conform to the requirements below, when tested by the procedure of Section 4.

Requirement	Minimum	Maximum	Testing Method
Total alkalinity as Na_2O , *pbw	50.0	52.0	4.1
Silica (SiO_2), *pbw	48.0	--	4.2
Carbonate as CO_2 , *pbw	--	2.0	4.2
Water insoluble matter, *pbw	--	0.3	4.4
pH in 1% aqueous solution	12.4	12.8	4.5
Bulk Density, lb/ft^3 (kg/m^3)	56 (896)	77 (1232)	4.6
Particle size, *pbw passing			
No. 10 sieve (2.00 mm)	99.00	--	--
No. 100 sieve (150 μm)	--	2.00	--

***pbw: percent by weight**

4. **TESTING:** Testing shall be performed by **American Society for Testing and Materials (ASTM)** procedures: www.astm.org

ASTM D 501 - Sampling and Chemical Analysis of Alkaline Detergents

ASTM D 502 - Particle Size of Soaps and other Detergents

ASTM D 1172 - pH of Aqueous Solutions of Soaps and Detergents

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Testing shall be done by an independent laboratory (preferred ASTM recommended, <http://www.astm.org/LABS/search.html>). Tests shall be performed on products will be provided to ordering agencies.

The product furnished under this specification shall be tested by the following methods:

- 4.1 **Total Alkalinity as Na₂O:** Determine compliance by the procedure of ASTM D 501.
 - 4.2 **Silica (SiO₂):** Determine compliance by the procedure of ASTM D 501.
 - 4.3 **Carbonate as CO₂:** Determine compliance by the procedure of ASTM D 501.
 - 4.4 **Water Insoluble Matter:** Determine compliance by the procedure of ASTM D 501.
 - 4.5 **pH in 1% Solution:** Determine compliance with Paragraph 4.2, Item 5, by the procedure of ASTM D 1172 with the exception that a 1% solution shall be used.
 - 4.6 **Bulk Density:** Determine compliance by the procedure of ASTM D 501.
 - 4.7 **Particle Size:** Determine compliance by the procedure of ASTM D 502, except for the sieve sizes used.
5. **INSPECTION:** Products furnished under this specification shall be inspected by, or at the direction of the customer at the time of delivery.
6. **PACKAGING:** The product shall be packaged in 50 pounds net (22.7 kg) moisture-resistant, multi-wall paper bags.

Packing for shipment shall be in accordance with the manufacturer's standard practice and in a manner readily accepted by common carriers engaged in interstate commerce. Within the shipping carton, units shall be packed in a manner designed to minimize damage during the shipment because of rough or improper handling.

- 6.1. **PACKAGE MARKINGS:** Each shipping container shall be clearly marked with the following:
- 6.1.1. Name of contents, including brand name, if any.
 - 6.1.2. Quantity contained in pounds and/or kilograms.
 - 6.1.3. Name and address of the manufacturer.
 - 6.1.4. Warning statements as required by governmental regulations. A label on a container of a hazardous chemical must meet the requirements of the most current OSHA standards.
 - 6.1.5. The following additional information shall either be marked on the container or appear on the shipping documents:
 - Purchase order number or contract number.
 - Name and address of customer.
 - Customer's requisition number.
- 6.2. **LABELING:** Each container shall bear a durable label containing the name of the product and instructions for use, including required precautionary statements.
7. **COMPLIANCE:** The vendor must comply with the following documents upon delivery:
- 7.1. **Certificate of Analysis (CA):** A certificate of analysis from the manufacturer shall be submitted with each shipment.

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7.2. **Material Safety Data Sheets (MSDS):** All Items must conform to the Texas Hazard Communications Act by being certified as nontoxic or providing an official MSDS sheet conforming to the requirements of the most current OSHA standards. A copy of the official MSDS sheet for each applicable chemical product must be submitted with each sample; each initial shipment; and updated MSDS must be provided with the first shipment after update.

8. **APPROVED PRODUCTS LIST (APL):**

The CPA maintains an APL of products that meet or exceed the requirements of this specification. The products being approved are listed as follows:

Manufacturer	Brand Name / Product Number
Crosfield Chemicals, Inc.	Drymet 59
Occidental Chemical Corporation	S-25
Atochem North America	Sodium Metasilicate, Anhydrous
The PQ Corporation	Metso Beads 2048

To have a new product listed on the APL, the following procedures are required:

8.1. Submit a written request to CPA, Texas Procurement and Support Services Division and include the following documentations:

- **Official Certificate of Analysis from an independent laboratory**

The official Certificate of Analysis must list the following:

- ✓ Chemical Name (CTFI/INCI name) and CAS No.
- ✓ Manufacturer Name
- ✓ Brand Name or Trade Name
- ✓ Batch or Lot Identification Number
- ✓ Each analytical result given as outlined in the RFP specifications
- ✓ Laboratory Name, Address, and Contact Information

- **Detailed technical specifications**

- **Product literature**

- **Material Safety Data Sheet (MSDS)**

8.2. The Certificate of Analysis will be reviewed and if approved, samples will be requested, in writing by CPA, for compatibility testing. The shipping instructions will be provided to the vendor at the time of the request.

8.3. A minimum of sixty (60) days will be required for compatibility testing to be conducted.

8.4. Sample sizes should be no less than 250 grams for powders and 500 ml for liquids. **Each sample must be accompanied with a current MSDS from the manufacturer.** More samples may be requested in writing by CPA. Samples will not be accepted unless accompanied with the current MSDS document for that material.

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- 8.5. CONTINUED COMPLIANCE: Listing an approved product shall not relieve the vendor of providing products meeting each requirement of this specification. The vendor shall notify the CPA, in writing, of any changes in the product, address, brand name, etc.
- 8.6. REMOVAL FROM APL: Products on the APL may be removed for non-compliance, as determined by the CPA, or for failure to provide notification of any change to APL product(s).