SODIUM ALUMINOSILICATE
(TENTATIVE)

Tentative specifications prepared at the 77th JECFA (2013) and published in FAO JECFA Monographs 14 (2013), superseding specifications prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). A PTWI of 2 mg/kg bw for total aluminium was established at the 74th JECFA (2011). The PTWI applies to all aluminium compounds in food, including food additives.

Information required:

- *Composition and methods of manufacture*
- *C.A.S. number and chemical formula*
- *Functional uses other than anticaking agent, if used*
- *Data on loss on drying, loss on ignition and pH of a slurry in water*
- *Data, on a minimum of five batches, on the content of aluminium and silicon using the proposed "Method of assay"*
- *Data on lead, arsenic and mercury content, in a minimum of five batches, carried out in the impurities soluble in 0.5 M hydrochloric acid using the proposed methods.*

SYNONYMS Sodium silicoaluminate; aluminium sodium silicate; silicic acid, aluminium sodium salt; INS No. 554

DEFINITION A series of hydrated sodium aluminium silicates.

Chemical names Aluminium sodium silicate

C.A.S. number Information required

Chemical formula Information required

Assay Information required
Not less than XX% and not more than XX% of Al, and not less than XX% and not more than XX% of Si on the dried basis.

DESCRIPTION Odourless, fine, white amorphous powder, or as beads.

FUNCTIONAL USES Anticaking agent

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Insoluble in water and ethanol, partially soluble in strong acids and alkali hydroxides

Test for sodium (Vol. 4) Passes test

Test for aluminium Passes test

	See description under TESTS
Test for silicon	Passes test See description under TESTS

PURITY

pH	Information required
Loss on drying (Vol. 4)	Information required
Loss on ignition (Vol. 4)	Information required
Impurities soluble in 0.5 M hydrochloric acid	Lead : Information required Arsenic: Information required Mercury: Information required See description under TESTS

TESTS

IDENTIFICATION TESTS

Test for aluminium and silicon	Prepare the test solution as shown under method of assay. Analyze aluminum and silica in the test solution by ICP-AES technique (Vol. 4). Set instrument parameters as specified by the instrument manufacturer, use the analytical lines for Al (396.15 nm) and Si (251.611 nm).

PURITY TESTS

Impurities soluble in 0.5 M hydrochloric acid	Extract 20 g of finely ground sample under reflux conditions (to prevent loss of mercury) with 100 ml of 0.5 M hydrochloric acid (spectroscopic grade) for 30 min. Let solution cool, then filter through a 0.1 µm membrane filter. Wash the filter twice with hot 0.5 M hydrochloric acid. Combine the filtrate and wash solution in a 200 ml volumetric flask and make up to volume with 0.5 M hydrochloric acid. Determine arsenic using an AAS (Hydride generation) technique; lead using an AAS (Electrothermal atomization) technique; and mercury using an AAS (Cold vapour generation) technique. See “Metallic impurities” in the Combined Compendium of Food Additive Specifications (Volume 4).

METHOD OF ASSAY

Weigh about 0.5 g of the sample to the nearest 0.1 mg, in a platinum or nickel crucible, add 5 g potassium hydroxide and 2 g boric acid, Mix and melt completely using a torch burner and allow to stand at room temperature. Place the reaction product along with crucible into 150 ml hot deionized water in a 250-ml PTFE beaker and dissolve residue by agitation. Wash the crucible with hot deionized water and remove it. Add 50 ml hydrochloric acid and transfer the contents into a 250-ml polypropylene volumetric flask. Wash the beaker three times with hot deionized water, transfer the washings to the volumetric flask and make up to volume. Dilute with 2% hydrochloric acid and prepare the test solution. Analyse aluminium and silica in the test solution by ICP-AES technique (Vol. 4). Set instrument parameters as specified by the instrument manufacturer. Use analytical lines for Al (396.152 nm) and Si (251.611 nm) and construct standard curve using standard solutions 0.2 – 5.0 µg/ml each. Read the concentration of Al and Si in sample solution (as µg/ml) and calculate the aluminium and

silicon content of the sample using the formula:

$$\text{Al or Si (\%)} = \frac{C \times 250 \times DF}{W \times 10^6} \times 100$$

Where:
C is concentration of Al or Si in the test solution, µg/ml
W is weight of sample, g
DF is dilution factor