

4.1.2 *Ground aluminum sulfate.* Ground aluminum sulfate shall be of such size that not less than 90 percent shall pass a No. 10 sieve and 100 percent shall pass a No. 4 sieve.*

4.1.3 *Liquid aluminum sulfate clarity.* Liquid alum shall be of such clarity as to permit the reading of flow-measuring devices without difficulty.

Sec. 4.2 Chemical Requirements

4.2.1 *Content of aluminum.*

4.2.1.1 Purified ground or lump aluminum sulfate shall contain water-soluble aluminum of not less than 9.0 percent as Al or 17.0 percent as Al_2O_3 .

4.2.1.2 Liquid alum shall contain water-soluble aluminum of not less than 4.23 percent as Al or 8.0 percent as Al_2O_3 , except by agreement between the supplier and purchaser.

4.2.2 *Basic and acidic alum.* The range of basicity or acidity of alum is subject to agreement between the supplier and purchaser.

4.2.3 *Water-insoluble matter.*

4.2.3.1 In purified ground or lump aluminum sulfate, the water-insoluble matter shall not exceed 0.5 percent.

4.2.3.2 In liquid alum, the water-insoluble matter shall not exceed 0.2 percent.

Sec. 4.3 Impurities[†]

4.3.1 *General.* Aluminum sulfate that meets the requirements of this standard shall contain no soluble material or organic substances in quantities capable of producing deleterious or injurious effects on the health of those consuming a water that has been treated properly with the aluminum sulfate.

4.3.2 *Specific impurity limits.* The total water-soluble iron (expressed as Fe_2O_3) content of aluminum sulfate shall be no more than 0.75 percent,[‡] on a basis of 17 percent Al_2O_3 (9 percent as Al), in dry aluminum sulfate; or 0.35 percent, on a basis of 8.0 percent Al_2O_3 (4.23 percent as Al), in liquid aluminum sulfate.

4.3.3 *Product certifications.* Aluminum sulfate is a direct additive used in the treatment of potable water. This material should be certified as suitable for contact with or treatment of drinking water by an accredited certification organization in accordance with ANSI[§]/NSF^{**} Standard 60, Drinking Water Treatment Chemicals—Health Effects. Evaluation shall be accomplished in accordance with requirements that are no less restrictive than those listed in ANSI/NSF Standard 60. Certification shall be accomplished by a certification organization accredited by the American National Standards Institute.

*ASTM E11.

†See Sec. I.C of foreword.

‡There are a number of water treatment plants in which aluminum sulfate of a higher iron content can be used without increasing the iron content of the treated water. If a purchaser determines that aluminum sulfate having a higher iron content can be used satisfactorily and, therefore, specifies a higher permissible iron content, aluminum sulfate with a higher iron content may be furnished.

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