METHYL CELLULOSE

Prepared at the 28th JECFA (1984), published in FNP 31/2 (1984) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). A group ADI 'not specified' for modified celluloses was established at the 35th JECFA (1989)

SYNONYMS Cellulose methyl ether; INS No. 461

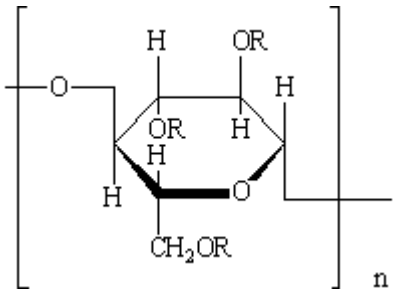
DEFINITION The methyl ether of cellulose, prepared from wood pulp or cotton by treatment with alkali and methylation of the alkali cellulose with methyl chloride. The article of commerce can be specified further by viscosity.

Chemical names: Methyl ether of cellulose; Cellulose methyl ether

C.A.S. number: 9004-67-5

Chemical formula: $[C_6H_7O_2(OH)_x(OCH_3)_y]_n$
where
x = 1.00 to 1.55
y = 2.00 to 1.45
x+y = 3.00
(y = degree of substitution)

Structural formula



where R = H or CH_3

Formula weight: Unsubstituted structural unit: 162.14
Structural unit with total degree of substitution of 1.45 : 182
Structural unit with total degree of substitution of 2.00 : 190
Macromolecules: from about 20 000 (n about 100) up to about 380 000 (n about 2,000)

Assay: Not less than 25% and not more than 33% of methoxyl groups (Some products of commerce designated "methyl cellulose" also contain components substituted with small amounts (max. 5%) of hydroxyethyl and/or hydroxypropyl groups. Development of separate specifications for these products should be considered).

DESCRIPTION Hygroscopic white or off-white, odourless fine granules, filaments or powder

FUNCTIONAL USES Thickening agent, emulsifier, stabilizer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Swelling in water, producing a clear to opalescent, viscous, colloidal solution; insoluble in ethanol, ether and chloroform; soluble in glacial acetic acid
Foam test	An 0.1% solution of the sample is shaken vigorously. A layer of foam appears. (This test permits the distinction of sodium carboxymethyl cellulose from other cellulose ethers.)
Precipitate formation	To 5 ml of an 0.5% solution of the sample, add 5 ml of a 5% solution of copper sulfate or of aluminium sulfate. No precipitate appears. (This test permits the distinction of sodium carboxymethyl cellulose from other cellulose ethers.)

PURITY

Loss on drying (Vol. 4)	Not more than 10% (105°, 3 h)
pH (Vol. 4)	5.0 - 8.0 (1 in 100 soln)
Sulfated ash (Vol. 4)	Not more than 1.5% Test 1 g of the sample (Method I)
Lead (Vol. 4)	Not more than 2 mg/kg Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, “Instrumental Methods.”
METHOD OF ASSAY	Determine the content of methoxyl groups by the method for *Ethoxyl and Methoxyl Group Determination* (see Volume 4).