

NUMBER 4922

Aqualon™ ethylcellulose

For Industrial Applications

Description

Aqualon ethylcellulose (EC) is a cellulose ether made by the reaction of ethyl chloride with alkali cellulose. During the reaction, the substitution of ethoxyl groups is controlled to a commercially useful range of 48% to 52% ethoxyl (or 2.3 to 2.6 ethoxyl groups of a theoretical maximum of 3.0) per anhydroglucose unit. Over this ethoxyl range, Aqualon ethylcellulose is classified into three ethoxyl types (N (Low substitution), T (Mid substitution), X (High substitution)) and into a range of polymer viscosities for ease of use.

Key Attributes

- Solubility – Soluble in a wide variety of solvents, thus making it easy to formulate this versatile material for any purpose where solvent application is desirable.
- Color – Practically colorless, and retains this condition under a wide range of uses.
- Compatibility – Compatible with an unusually wide range of resins and plasticizers, including oils and waxes.
- Density – The low density of ethylcellulose makes it possible to get greater coverage and greater volume per unit weight than with other cellulose derivatives.
- Stability to Chemicals – Resistant to alkalis, both dilute and concentrated, and to salt solutions.
- Flexibility – The great flexibility over a wide range of temperatures is one of its most marked characteristics.
- Electrical Properties – Excellent electrical properties are combined with its good thermal stability and outstanding flexibility and toughness.

Applications and Usage Notes

- **Multi-layer Ceramic Capacitors** – They are a thixotrope for ceramic and metallic sintered pastes
- **PV Interconnect** – Thixotropes for metallic sintered pastes
- **Conductive Pastes** – Viscosity modifier, acts as a binder and stabilizer, burns out clean
- **Inks** – Soluble in organic solvents, high dielectric constant, scuff resistance, pigment dispersant, viscosity control, thixotrope for solvent borne inks, magnetic inks
- **Adhesives** – In adhesives, ethylcellulose contributes Low-temperature flexibility, a broadening of the critical melting range with a resultant decrease in plastic flow, strength, an increase in melting point of the mixture, a decrease in sweating of plasticizers, and better control of tackiness in adhesive film
- **Lacquers and Coatings** – Ethylcellulose has been found to yield lacquers of excellent toughness and flexibility. These properties are retained over a temperature range extending from low to high



Typical Product Properties

Viscosity ^(a) Types		Ethoxyl-Grade ^(b) and Percent Contents		
Designation	Limits, cps (mPa-s)	N-Grade 48.0-49.5	T-Grade 49.6-51.5	X-Grade 50.5 Minimum
4	3 - 5.5	X	-	-
7	5.6 - 8	X**	-	-
10	8 - 11	X	X	-
14	12 - 16	X	-	-
22	18 - 24	X	-	X ^{(c)**}
50	40 - 52	X	X**	-
100	80 - 105	X	X**	-
200	150 - 250	X	X**	X**
300	250 - 350	X	X**	-

^(a) 5% solution at 25°C. Viscosity is determined in 80:20 toluene:ethanol by weight on sample dried 30 min at 100°C. (See ASTM D914.) **Note:** "Ethanol" refers to specially denatured (S.D.) ethyl alcohol, 2B, 190 proof.

^(b) Types produced are designated by X.

^(c) Viscosity is 18-35 cps.

- Moisture Content = 3% Max for all grades

** Indicates "Made to Order"

Packaging Information

Product	Physical Form	Pkg Type (Bag) lbs	Pkg Type (Pallet) lbs	Pkg Type (Bag) kgs	Pkg Type (Pallet) kgs
Aqualon™ EC- N4	Powder	40 lbs	1600 lbs	18.1 kgs	725.7 kgs
N7	Powder				
N10	Powder				
T10	Powder				
N14	Powder				
N22	Powder				
X22	Powder				
N50	Powder				
T50	Powder				
Aqualon EC- N100	Powder	35 lbs	1050 lbs	15.8 kgs	476.2 kgs
T100	Powder				
N200	Powder				
T200	Powder				
X200	Powder				
N300	Powder				
T300	Powder				

Product Safety

Read and understand the Safety Data Sheet (SDS) before using this product.

CASRN: 9004-57-3
CAS Name: Cellulose, ethyl ether

FDA Clearance

Aqualon™ ethylcellulose has many clearances for use in food and in articles that contact food under the Federal Food, Drug, and Cosmetic Act, Title 21, Sections 73.1(b), 73.1001 and 172.868, of the U.S. Code of Federal Regulations.

The United States Department of Agriculture has declared Aqualon ethylcellulose to be acceptable for packaging meat and poultry products in federally inspected establishments.

To learn more, visit ashland.com

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