

DKS-S

CMC

Sodium Carboxymethyl Cellulose

**Food
Printing
and dyeing**

DKS(SHANGHAI)INTERNATIONAL TRADING CO.,LTD.

DKS-S CMC Features

DKS-S CMC, our synthetic gum product series, is a water-soluble cellulose ether generally known as CMC (sodium carboxymethyl cellulose) or cellulose gum.

Compared with natural or other synthetic gums, DKS-S CMC, as a cellulose derivative, has many unique features. It is widely used for textiles, foods, pharmaceuticals, cosmetics, paper, ceramics, building materials, civil engineering, drilling and agriculture as a binder, dispersant, thickener and film-forming agent.

Features

- 1, Easily soluble in cold or hot water to make to make viscous solutions.
- 2, Very little viscosity change over time.
- 3, Excellent emulsion dispersion and solid dispersion.
- 4, Forms a strong, transparent film with an adhesive effect.
- 5, Less susceptible to decomposition than natural gums.
- 6, Immiscible in oil, grease and organic solvent.
- 7, Physiologically inert.
- 8, Constant and uniform quality with high purity.
- 9, Wide range of D.S. and viscosity.

Structural Formula and Manufacturing Process

DKS-S CMC has a chemical structure indicated in **Figure 1**.

CMC with one carboxymethyl group per anhydroglucose units defined as 1.0 of D.S. (degree of substitution) . Because each anhydroglucose unit has three OH groups, D.S. of CMC can theoretically be up to 3.0. However , in most of the commercial products, the D.S. is around 0.5to1.2. We can supply CMC's with the degrees of substitution as high as 2.0, as well as the regular ones. **Figure 1** illustrates a DKS-S CMC structure with a D.S. of 1.0.

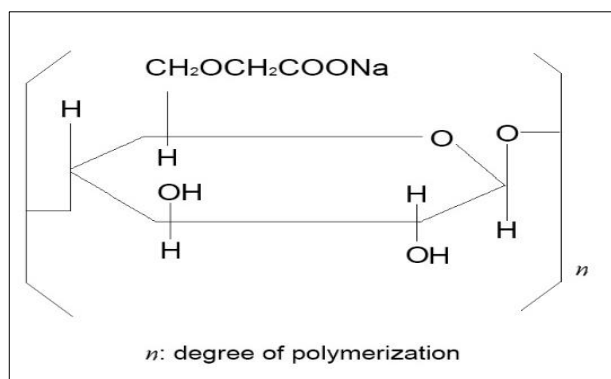
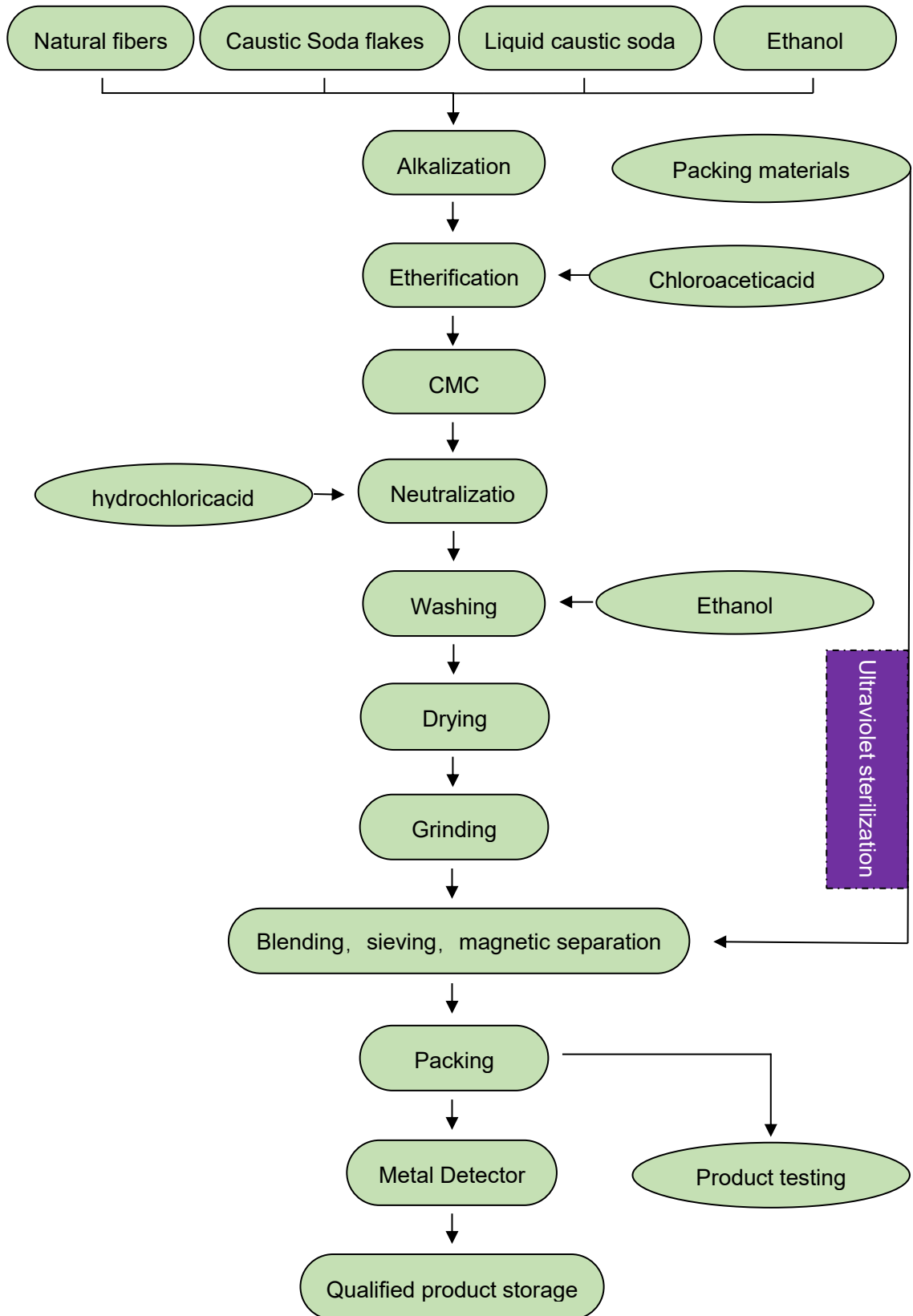


Figure 1. Structure of CMC

Production flow chart





CMC for Foods

DKS-S F series as a food additive, is recognized by many countries such as Japan and the United States.

CMC is safe and non-toxic, with excellent thickening, dispersion, adhesive effect, widely used in various fields.

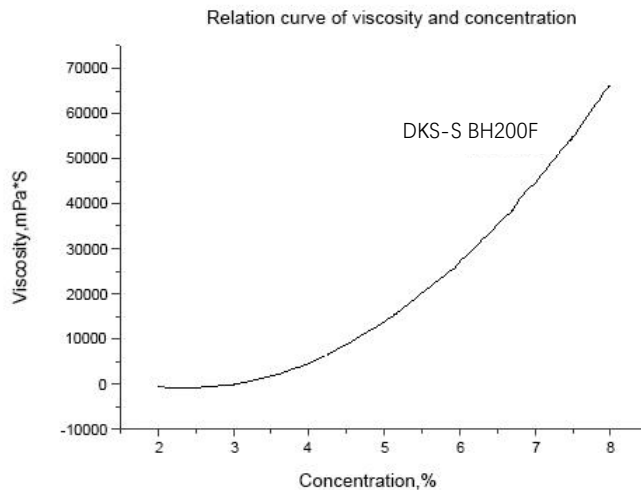
【General Properties】

Appearance : white powder

Purity, on a dry basis (min.) (%) 99.5

pH(1% solution): 6.0-8.5

	Viscosity (25°C, mPa · s)	D.S.
DKS-S AL350F	(1%) 150 ~ 500	0.60-0.70
DKS-S AL450F	(1%) 350 ~ 500	0.60-0.70
DKS-S AL650F	(1%) 500 ~ 800	0.70-0.80
DKS-S AL1200F	(1%) 1000 ~ 1400	0.55-0.65
DKS-S AL1600F	(1%) 1400 ~ 1800	0.55-0.65
DKS-S AL1700FS	(1%) 1400 ~ 2000	0.55-0.65
DKS-S AL2000F	(1%) 1500 ~ 2500	0.75-0.95
DKS-S AL2750F	(1%) 2500 ~ 3000	0.70-0.85
DKS-S AL3000FS	(1%) 2500 ~ 3500	0.65-0.75
DKS-S AL3500F	(1%) 3000 ~ 4000	0.65-0.75
DKS-S AL3500FS	(1%) 3000 ~ 4000	0.60-0.90
DKS-S AL4500FS	(1%) 4000 ~ 5000	0.60-0.90
DKS-S AL11000F	(1%) 9000 ~ 13000	0.65-0.75
DKS-S AH2250F	(1%) 1900 ~ 2600	0.80-0.90
DKS-S AH3250F	(1%) 3000 ~ 3500	0.85-0.95
DKS-S AH3500F	(1%) 3000 ~ 4000	0.80-0.90
DKS-S BL40FS	(2%) 30 ~ 50	0.70-0.80
DKS-S BL750F	(2%) 600 ~ 900	0.70-0.80
DKS-S BH200F	(2%) 150 ~ 250	0.85-0.95
DKS-S BH200FS	(2%) 150 ~ 250	0.85-0.91
DKS-S BH250F	(2%) 200 ~ 300	0.85-0.95
DKS-S BH1200F	(2%) 900 ~ 1500	0.85-0.95



【Applications】

1、Dairy Products

① Ice cream

- * Giving fine and smooth texture.
- * Preventing the growth of ice crystals in storage, stable for longer storage.

② Fermented milk · acidic milk beverages

- * Preventing coagulation of proteins.
- * Thickening drinks moderately.

2、Chocolate drinks and cocoa drinks

- * Giving excellent dispersibility, preventing the increasing of viscosity.
- * Keeping milk protein stable.

3、Flour products

(uncooked noodles, boiled noodles, frozen noodles, instant noodles etc.)

- * Promoting water-holding capacity of noodles, stable for longer storage.
- * Smoothing, giving luster, preventing the adhesion.
- * Increase the strength of noodles, protecting against breakage in transit.

4、Confectionery (jams、jellies、cakes etc.)

- * Giving adequate thixotropy, preventing water separation, stable for longer storage.
- * Giving the confectionery moderate viscosity, improving the dispersibility of sweetened bean pastes, making smooth texture.

5、Seasonings and others (thick sauces, ketchup, salad-dressing etc.)

- * Even if it is highly-saline, it can also make thick liquid with high transparency and stability.
- * Keeping thick liquid stable with high salinity at low pH

6、hams and sausages

- * Improving texture.

7、Others

① flour paste which is used to make Tempura

- * Keeping the coating be crisp, helping to reduce the loss of bubbles in the paste.

② Instant foods

- * thickening the soup, preventing deformation of food material

③ Frozen food

- * Preventing the coating of fried food from falling off, preventing water separation of food material.

④ Healthy food

- * It is widely used in forming, dispersing and thickening.

CMC for Printing and dyeing

This product is designed for cotton printing, used for hand printing and flat bed screen printing. It is high degree of ethers CMC (Carboxy Metyl Cellulose) available in reactive dyes.

This product is designed with high degree of etherification. It has excellent antibacterial properties and can effectively inhibit the viscosity down caused by corrosion. It has excellent paste storage stability.

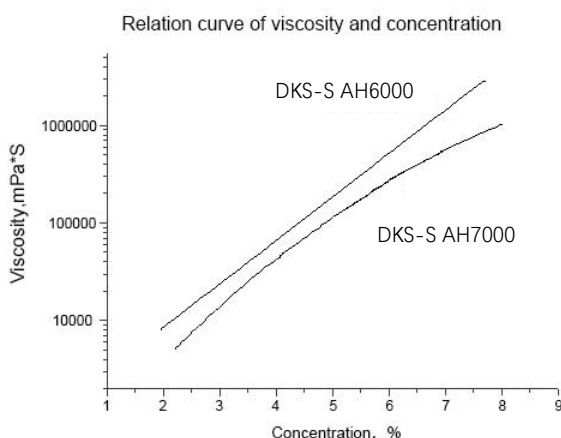
【General Properties】

Appearance: white powder

pH(1% solution) :

Viscosity (2% solution) : 6,000 mPaS

【Recommended Concentration】



4% solution

【Specialty】

- 1 . Constant quality.
- 2 . Appropriate liquidity, excellent levelness.
- 3 . Increasing sharpness of the pattern.
- 4 . Improving coloring.
- 5 . No paste crack, no contamination caused by the scratches .
- 6 . Can be used with a variety of pastes.
- 7 . Physiologically inert.
- 8 . Long-term stability .

【Standard Recipe / Reactive Dyes】

	(%)
dye	X
urea	5 ~ 10
anti-reducing agent	0.5 ~ 1
sodium bicarbonate	1 ~ 2
paste *	60
warm water	Y
total	100

Mixed paste or semi emulsion paste with sodium alginate.

< recipe of mixed paste >

	(%)
DKS-S AH6000	60 ~ 50
sodium alginate (4 ~ 6%solution)	40 ~ 50
total	100

< recipe of semi emulsion paste >

DKS-S AH6000	30 ~ 40
sodium alginate (4%solution)	20 ~ 30
emulsion * *	50 ~ 30
total	100

emulsion **: REPITOL S

5.5%

water	X
solvent	65 ~ 70%
total	100

【Standard Fixation Conditions】

thermal evaporation:

printing and dyeing⇒drying⇒110 ~ 103°C ×2 ~ 15minutes thermal evaporation



thermal evaporation at high temperature:

printing and dyeing⇒drying⇒150 ~ 180°C ×30 ~ 60seconds thermal evaporation

drying methods:

printing⇒drying⇒150 ~ 180°C × 30 seconds ~ 5minutes

【Washing】

TRIPOL SRN 1 ~ 3 g/L 90°C×over 10 minutes. Getting good fastness.

Solubility Of CMC

CMC is a natural hydrophilic material. Cellulose gum is probably the fastest gum to hydrate in cold water. Consequently, it is the gum most like to form lumps when dispersed into water, due to its rapid swelling in water. To overcome the problems described above, Four methods are recommended.

Method 1, Direct addition:

Slowly add the CMC into the water while stirring.

Method 2, Heating

The dissolution rate of the CMC molecule is independent of temperature. When heating is possible, a suitable (and recommended) temperature to prepare a CMC solution is at about 50-60° C.

Method 3, Dry blending

When it is used with other raw materials. It is better to mix the solid together prior to the addition to aqueous systems.

Method 4, Dispersion in a water miscible organic solvents

Packing and storage

CMC may be dispersed in glycerin, ethanol, or propylene glycol at first and the slurry is then added to water.

1, Woven sacks with PE liner. Paper-plastic compound bag with PE liners. Net weight 25KG.

2, Bulk bag is available.

3, CMC could easily absorb water. During storage, care should be taken to ensure that packing sacks are not damaged and to avoid contact with water. Product should be stored in a dry and ventilated area;

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