

**Technology of making carboxymethylcellulose  
by using local raw materials**

**R. Sayfutdinov., M. Murodov., U. Muxitdinov, A. Sodiqov  
(+99897 317-72-77) muzaffarmm@mail.ru  
Tashkent chemical-technological institute**

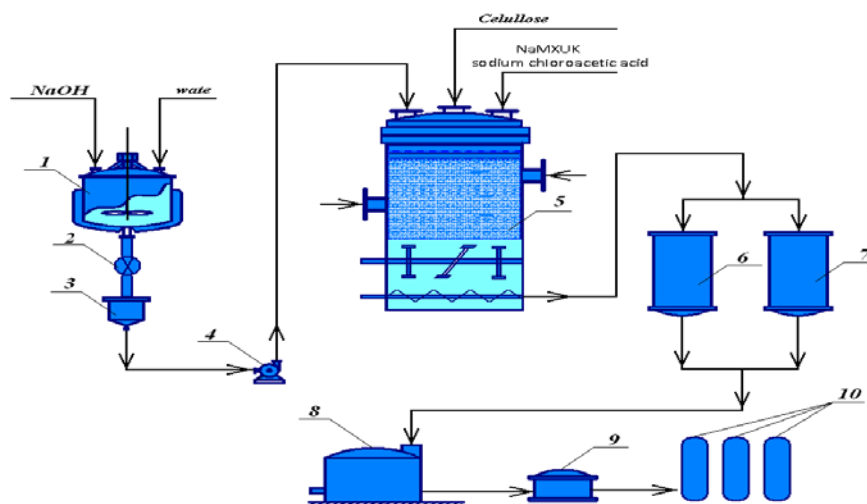
Now days in every structure of our industry the process of localization is gone successfully. According to that objective many current technologies are going to be reconstructed.

Cellulose is the most popular polymer in the nature. It composes most part of cells' plants. 40–60% of trees and plants is made up of cellulose. Cotton, jute and hems are celluloses. In industry cellulose is produced by various types of trees and is called wood cellulose. 96% of linter is cellulose. To produce cellulose by linter, 1.5% solution of NaOH should be boiled under pressure 0.3-1 M Pa for 3-6 hours. Received cellulose is made white by hypochlorite or hydrogen peroxide solutions. The degree of whiteness of cellulose which is made by this reaction is 98-99% [1]. The degree of whiteness of high quality cellulose and chemical recycle cellulose's should not be less than 94%. Cellulose's physics, chemistry, mechanic and other features are depended on cellulose's degree of polymerization, the reciprocal arrangement of macromolecules, the site of the elementary units depend on the their location to each other and they are part of macromolecule's structure. The quantity of cellulose which is produced in industry and is used in sundry fields is higher than quantity of the whole synthetic polymers which are produced and used.

Cellulose's hydroxyl groups react with all chemistry reactions. There are a lot of annual and perennial plants which include cellulose in our country. They are: wheat's adobe, topinambour's Culm, sunflower's Culm, secondary commodities (radix, calm...) of perennial plants (poplar, osier...). They are used as basal semi products. The production and use of cellulose and its ethers have been searched for many years.

In the world CMC is produced by wood cellulose. Because a most part of macromolecule of wood pulp is a morph, its degree of crystallize is low therefore wood cellulose's reactionary ability is higher than cotton cellulose's. Wood cellulose is cheaper than cotton cellulose. There are several ways of making CMC which are investigated by researches about high fractional substitutionality, high degree of polymerization. As we know the enterprise "Karbonam" which is situated in Namangan city make cellulose's ether carboxymethyl cellulose (CMC).

That technology is very long and it depresses the income. Because of these reasons the enterprise needs to be reconstructed. Result of research which took a long time, we fabricated the mono apparatus method of making CMC. Invented the new easier method of making CMC. According to the method eliminated unnecessary part of technology which used to be used. According to the new easier method cellulose is sent directly to the mono apparatus. Dose in need of alkali is added to cellulose. The processes – mercerization, cooling alkali cellulose and alkalization are gone there step by step. Appeared semi product will be kept working on and desiccated sent to mill to grange. The separated part of the principle - technological chart is easier method of making CMC. Now a day to reconstruct the department of making CMC in the enterprise "Karbonam" is one of the most important objectives in our country.



**Picture - Texnological scheme of the CMC production:**

*1-Buck Na-MChAA; 2-drive NaMChAA; 3-faucet alkaline cellulose; 4-dozrevatel-reactor Na-CMC; 5-zabrasyvatel; 6-dryer; 7-fan; 8-cyclone; 9-Crusher of the finished product; 10-packing and weighing plants-the packing machine (the scale and bag closing machine)*

According to that the main technical processes (mercerization, alkalization) are gone in mono apparatus (**Picture**). It effects on CMC's features (deliquescence – 98, 9%, main amount of matter - 67%, degree of polymerization – 1300...) and decreases price of product. First cellulose is put in mono apparatus (5) and is get mercerization by alkali fusion (1). Get alkalization by sodium acetate, and cooked (6), dry (8), crushed by mill (9) prepared for ready product (10).

The advantages of the mono apparatus method is that we can change the processes work by contract, influence of parameters, modification of various inhibitors, connection of various factors. It lets us make CMC which has high molecular weight. It makes use CMC preparation for different spheres for instance oil and gas fields [2].

Because destructive factors in drilling decreases CMC's degree of polymerization. The making modification of inhibitors makes produce CMC which is stable to thermal destruction. Using lignin as a inhibitor lets us use local semi-products. Lignin make received radicals join to it and slows down the process of destruction. Because the composition of lignin includes phenol, benzene, hydroxyl groups, carboxyl groups. Lignin surrounds the molecules of CMC and decreases the contact between air oxygen and CMC.

The mono apparatus method is universal method. We can use various plants' cellulose, requirement of textile plants as a semi-product. By changing the contract we can make various types of CMC.

## Bibliography

1. <http://chemanalytica.com>.
2. Rahmanberdiev. G. R., Murodov. M. M. "The new technology of Na-cellulose carboxymethylcellulose poplar wood" // Chemistry and chemical technology -Tashkent.: 2007. -№4. – P. 38-42.