

# ALIEN PROPERTY CUSTODIAN

## GREASING AGENT

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Allen Property Custodian

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For greasing the fibers before spinning mostly oleic acid or fatty oils have been used, either as such or emulsified by soap or other emulsifying agents. Besides, greasing agents containing mineral oils have also been used, these greasing agents being however less advantageous, because the washing out of the mineral oils from the yarns and tissues often proves to be difficult. It has also been proposed to use glycerol or diethylene glycol instead of the usual greasing agents based on fatty acid, fatty oils or mineral oils. Glycerol and diethylene glycol give a certain slip to the fibers to be spun, however these agents are not able to retain moisture sufficiently and to produce sufficient adhesion between the singular fibers of the spun thread. These drawbacks are important especially when cellulose staple fiber or regenerated wool or waste, which contains many short fibers, are admixed to the spinning material. Compared with oleic acid, glycerol and diethylene glycol have the drawback, that they have themselves no washing and fulling power.

It has now been found, that mixtures of water-soluble, bivalent or polyvalent aliphatic alcohols or ether alcohols or of water-soluble high-boiling hydroaromatic or heterocyclic alcohols on the one side and of water-soluble salts of cellulose ether carbonic acids, which can also be called cellulose hydroxyparaffin monocarboxylic acids, especially alkali salts of these acids, on the other side are very advantageously applicable as greasing agents of fibers of all kinds before spinning. High boiling alcohols are such with a boiling point above 150° C. Especially suitable are alcohols or ether alcohols of high viscosity, as for example glycol, glycerol, propane diol, diethylene glycol, mono-n-butyl-glycerol ether and its homologues. However, also alcohols of lower viscosity, for example cyclohexanol or tetrahydrofurfuryl alcohol, are suitable. Instead of pure alcohols there may be used technical mixtures containing such alcohols for example the mixtures received by catalytic hydrogenation of sugars. These mixtures contain, mostly or in a high percentage, propane diol besides of other bivalent or polyvalent aliphatic alcohols. As to the cellulose ether carboxylic acids, especially the cellulose glycollic acids in the form of their water-soluble alkali salts are suitable, but also water-soluble salts of cellulose hydroxypropionic acids and of other cellulose hydroxyparaffin monocarboxylic acids can be used.

In some cases the effect of the greasing agents

can be improved by an addition of alkali salts of lignin-sulfonic acid.

The new greasing agents show the following advantages:

- (1) Far better retaining of moisture during the spinning process.
- (2) They produce good adhesion between the singular fibers in the spun thread; this is particularly important when waste containing short fibers is spun.
- (3) Easier processing as compared with fatty emulsions, as all auxiliary agents and devices are unnecessary.
- (4) Only approximately one half of the greasing agents according to the invention is necessary as compared with the greasing agents containing fat.
- (5) The greasing agents according to the invention can be washed out after spinning much more easily, than the greasing agents containing fat.

The proportion between the alcohol or ether alcohol and the cellulose ether carboxylic acid can be in the range between 3:1 and 1:3, that is to say, that one may use for example 75 parts by weight of alcohol or ether alcohol and 25 parts by weight of a salt of a cellulose ether carboxylic acid, or vice versa. If also ligninsulfonic acid is used, the sum of the weights of alcohol or ether (a) and cellulose ether carboxylic acid salt (b) can be between 75 percent to 25 percent of the total weight, the weight of the ligninsulfonic acid being 25 to 75 percent of the total weight.

The proportion between alcohol or ether alcohol and the salt of cellulose ether carboxylic acid in the greasing agents containing also ligninsulfonic acid may likewise be in the range between 3:1 and 1:3.

The following proportions have proved in many cases to be very advantageous (the parts are by weight):

	Parts
(1) Technical propandiol -----	867
Sodium salt of cellulose glycollic acid---	133
(2) Technical propandiol -----	517
Sodium salt of technical ligninsulfonic acid -----	345
Sodium salt of cellulose glycollic acid---	138
(3) A technical mixture of glycols made by catalytic hydrogenation of glucose at high pressure -----	517
Sodium salt of technical ligninsulfonic acid -----	345
Sodium salt of cellulose glycollic acid---	138

The use of the greasing agents in spinning is as follows:

According to the spinning method and to the character of the fibers to be spun, 0,5% to 5% of the water-free greasing agent, calculated on the weight of the fibers, are dissolved in the necessary quantity of cold or warm water, that is approximately 4 to 10 times the amount of the water-free greasing agent. The solution is distributed finely and uniformly on the fibers either by hand or by a suitable sprinkling device. The greased batch of fibers is then mixed in a mixing-willow. In the worsted-spinning process, the solution of the greasing agent is drizzled or sprinkled on the sliver in the usual manner. 15

The greasing agents can be used for greasing fibers of any kind before spinning. For example, they can be used in the manufacture of army-cloth, of blankets made of wool or its substitutes, in the spinning of hair yarn, carpet yarn, in the spinning of vicugna or waste fibers using the carding process and in the worsted-spinning process for making yarns for weaving, knitting and special yarns. The application of the greasing agents is in no wise restricted, as they have no deleterious influence whatever on any fibrous materials.

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