(23.)

CELLULOSE INDUSTRY
THE JOURNAL OF THE CELLULOSE INSTITUTE, TOKYO, JAPAN

VOL. 4 AUGUST 1928, NO. 8

ABSTRACTS FROM THE TRANSACTIONS

RESEARCHES ON FORMYL CELLULOSE. II.
ON THE FORMATION OF THE FORMYL CELLULOSE. (Continued)

By Y. Ueda and K. Katō.

(Received July 6, 1928)

In the present work, which is the continuation of the studies on formyl cellulose, the best conditions of the formation of the formyl cellulose were determined.

As the cellulose material, hydro-cellulose, the regenerated cellulose from viscose, as well as the regenerated cellulose from alkali-cellulose, are used.

The esterification and the determination of the combined acid in ester is carried out just the same as already reported by the author in this journal (*Cellulose Industry*, 1928, 4, No. 1).

Exp. 1.

Regenerated Cellulose (from alkali-cellulose)	2.0 g
H.COOH (100%)	31.0 g
H ₂ SO ₄ (sp. gr. 1.84)	1.2 cc
Time of duration	90 hrs
Yield of ester	3.5 g
Content of H.COOH in ester	54.52%

The formyl ester thus prepared is approximately the triformate (theory requires 56.09%).

Exp. 2.

The formylation is carried out by using the regenerated cellulose from viscose and the effects of the duration on the esterification is searched.

Esterification :

Regenerated cellulose from viscose	3.2 g
H.COOH (100%)	50.0 g
H ₂ SO ₄ (sp. gr. 1.84)	4.6 g
Duration of the reaction	H.COOH (%) in ester
72 hrs.	42.20%
80 hrs.	46.57%

90 hrs.	52.61%
93 hrs.	49.30%
96 hrs.	39.76%
100 hrs.	37.32%
110 hrs.	32.89%
120 hrs.	31.97%

Exp. 3.

Regenerated cellulose from alkali-cellulose being used, 10 times of H.COOH to the cellulose and various amounts of H_2SO_4 are used for the esterification, and the following results are obtained.

Regenerated cellulose	2.0 g.
H.COOH (100%)	20.0 g.
Time of duration	90 hrs.

Exp. No.	H_2SO_4 (sp. gr. 1.84)	H.COOH in Ester
1	0.00 g	24.46%
2	0.92 g	30.13%
3	1.84 g	44.16%
4	2.80 g	51.75%
5	3.20 g	55.99%
6	3.68 g	41.63%
7	4.60 g	23.03%
8	7.32 g	24.41%
9	9.20 g	18.83%

The results show that the amounts of H_2SO_4 have the important relation to the compositions of the ester formed.

Summary.

1. Regenerated cellulose from alkali-cellulose is tried for the esterification.
2. The effects of the time of duration on the formylation of the cellulose are studied.
3. The relation between the amounts of sulphuric acid used and the contents of formic acid in esters are studied.

Dep. Appl. Chem., Kanazawa Higher Technical School.

ERRATUM

Researches on Formyl Cellulose. I. By Y. Ueda and K. Hata.

Vol. 4, No. 1, page 1, line 22, for "triacetate" read "triformate."