

US EPA ARCHIVE DOCUMENT

OXYGEN DELIGNIFICATION PRINCIPLES AND PRACTICE

by

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and

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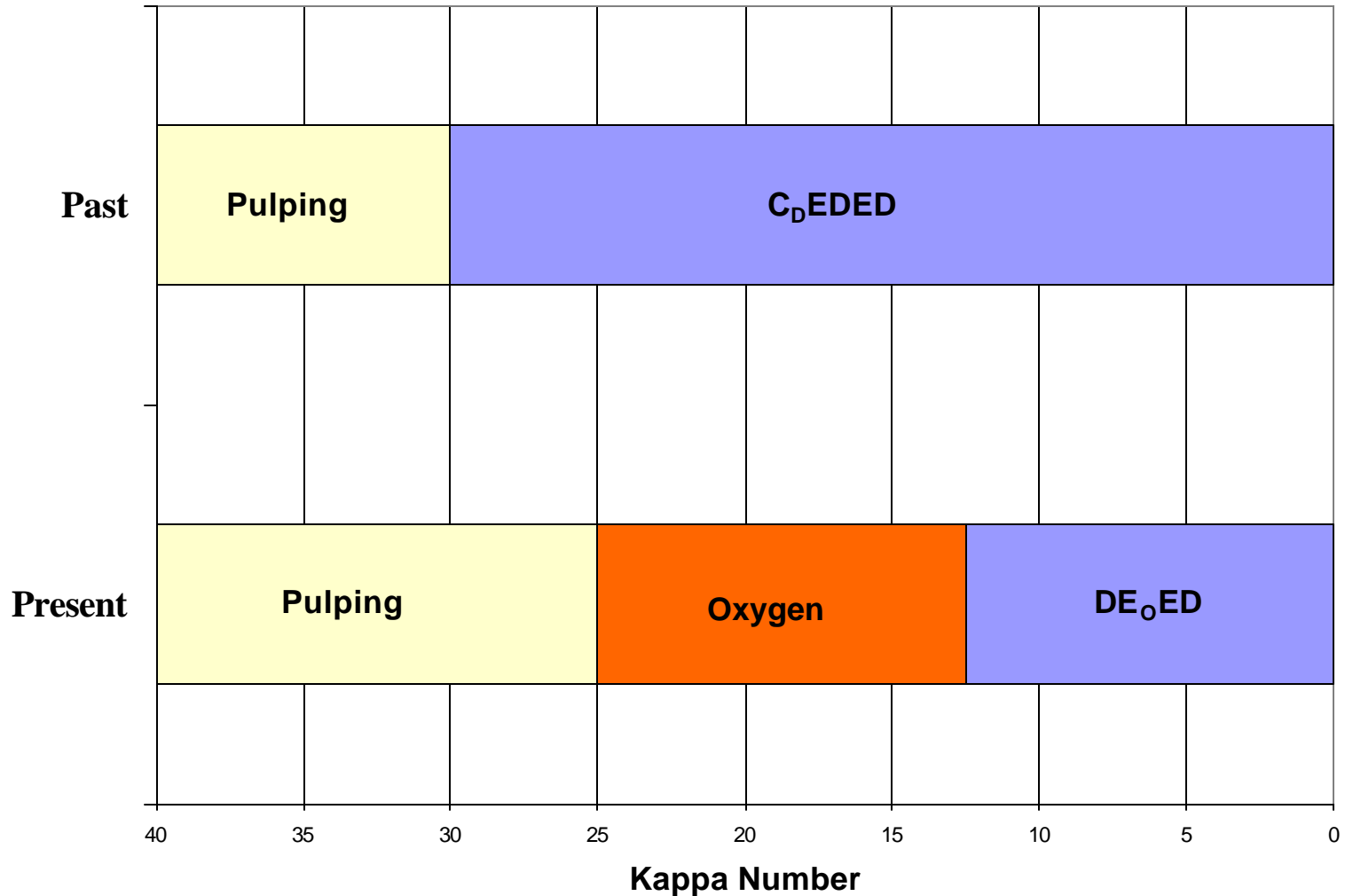
University of Maine

Department of Chemical

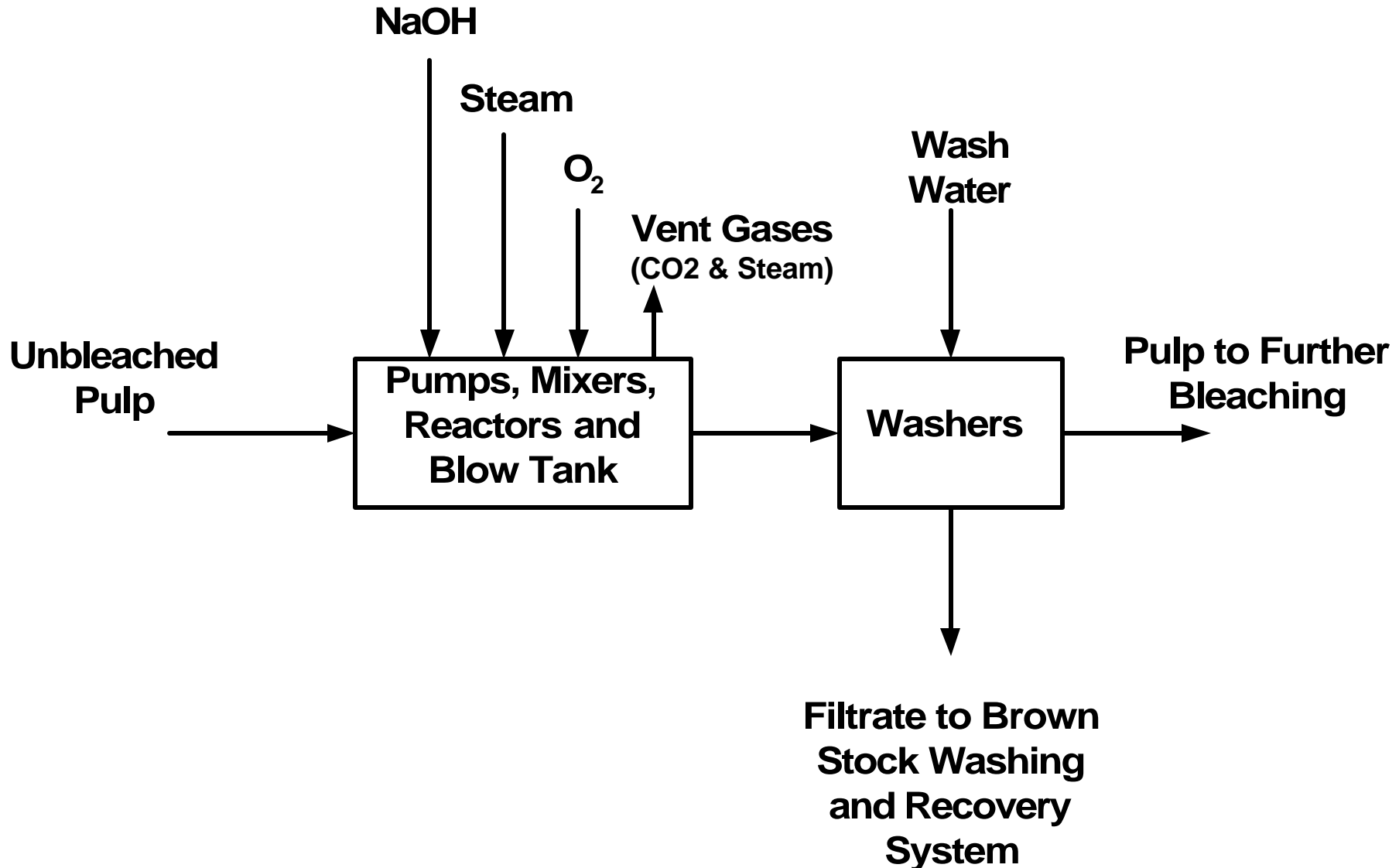
Engineering

Orono, Maine 04469

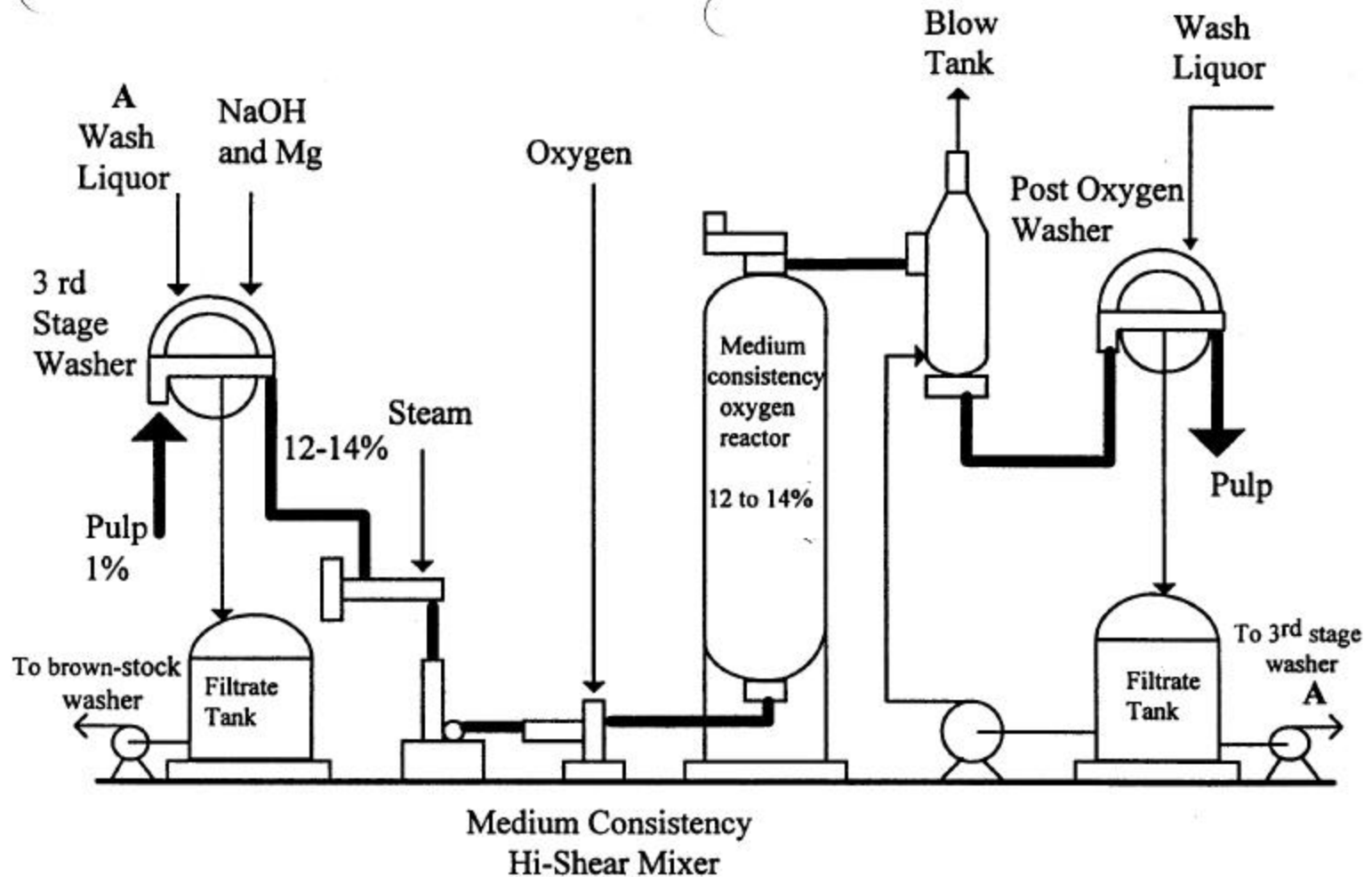
Pulping and Bleaching Evolution (Softwood)



Flow Sheet for Oxygen Delignification



One Stage Medium Consistency O₂ Delignification Process



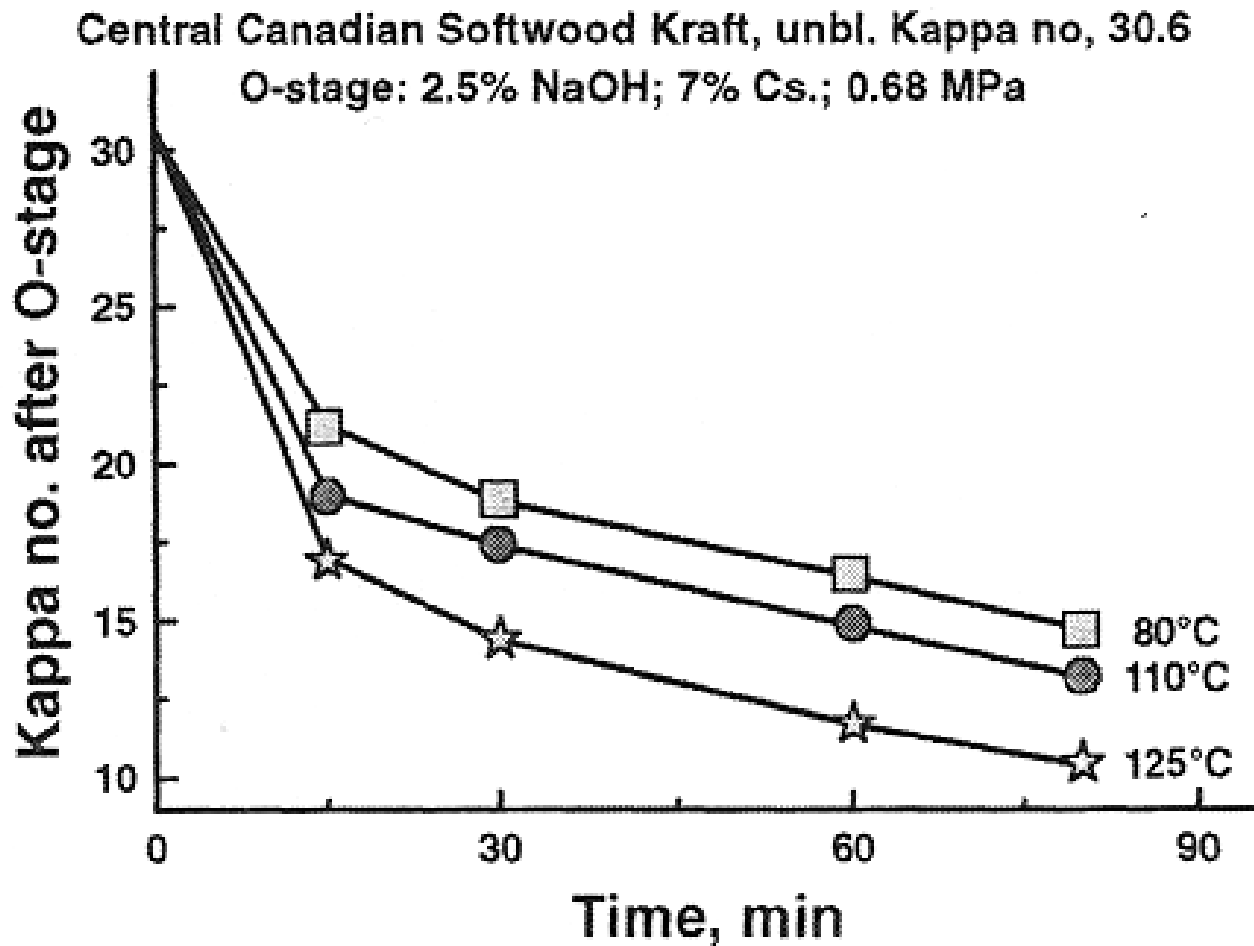
Environmental Treatment

- **Reduces Effluent.** Effluent from O_2 Stage is recycled to recovery boiler.
- **Oxygen Delignification**
 - **Lowers BOD & COD**
 - **Lowers Color**
 - **Lowers AOX**
 - **Lowers Dioxin**
 - **Reduces Landfill Solids**
- **Reductions.** In proportion to reduction in Kappa number.

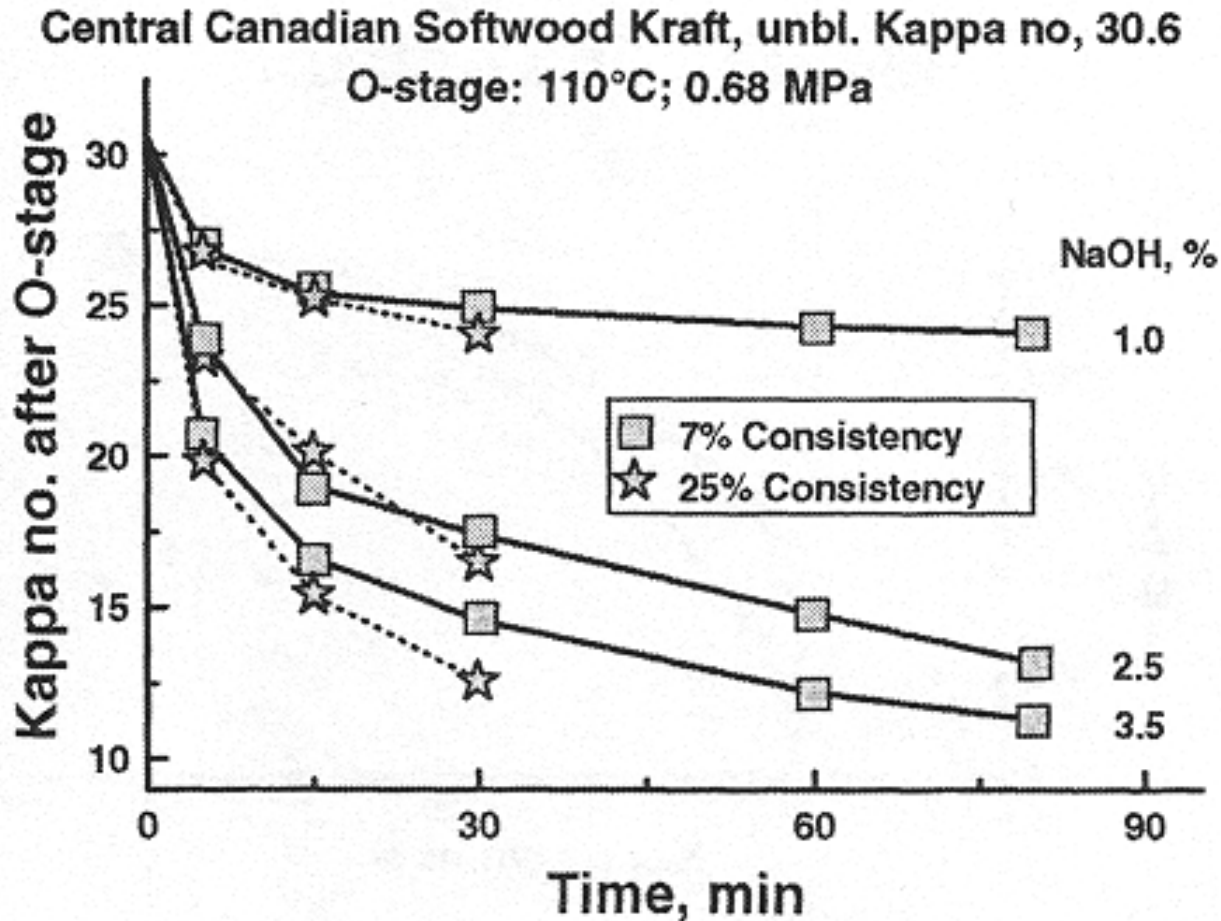
Effect of Process Variables on Oxygen Delignification

- Time and temperature
- Alkali charge and consistency
- Oxygen charge
- Viscosity protectors

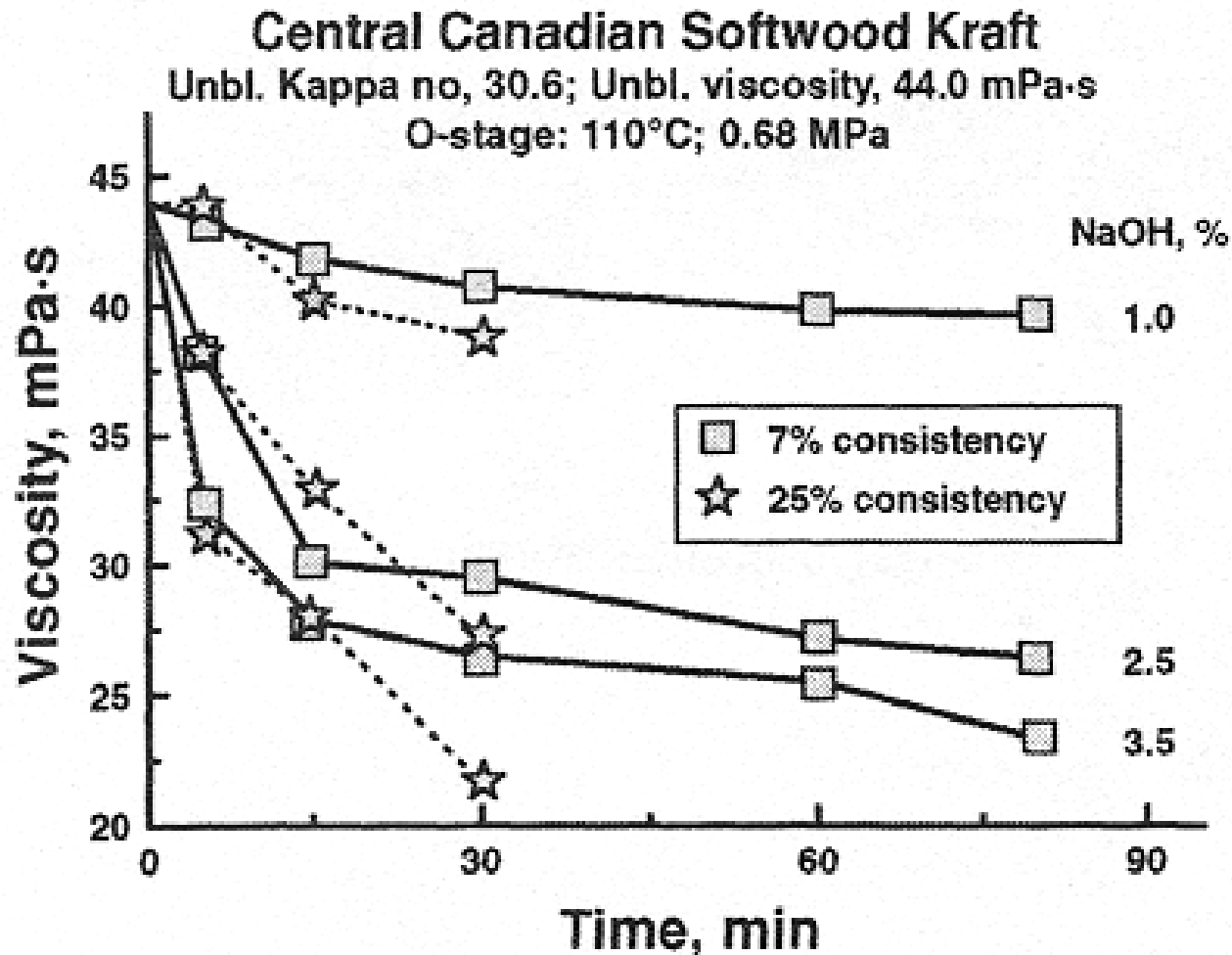
Effect of Time and Temperature



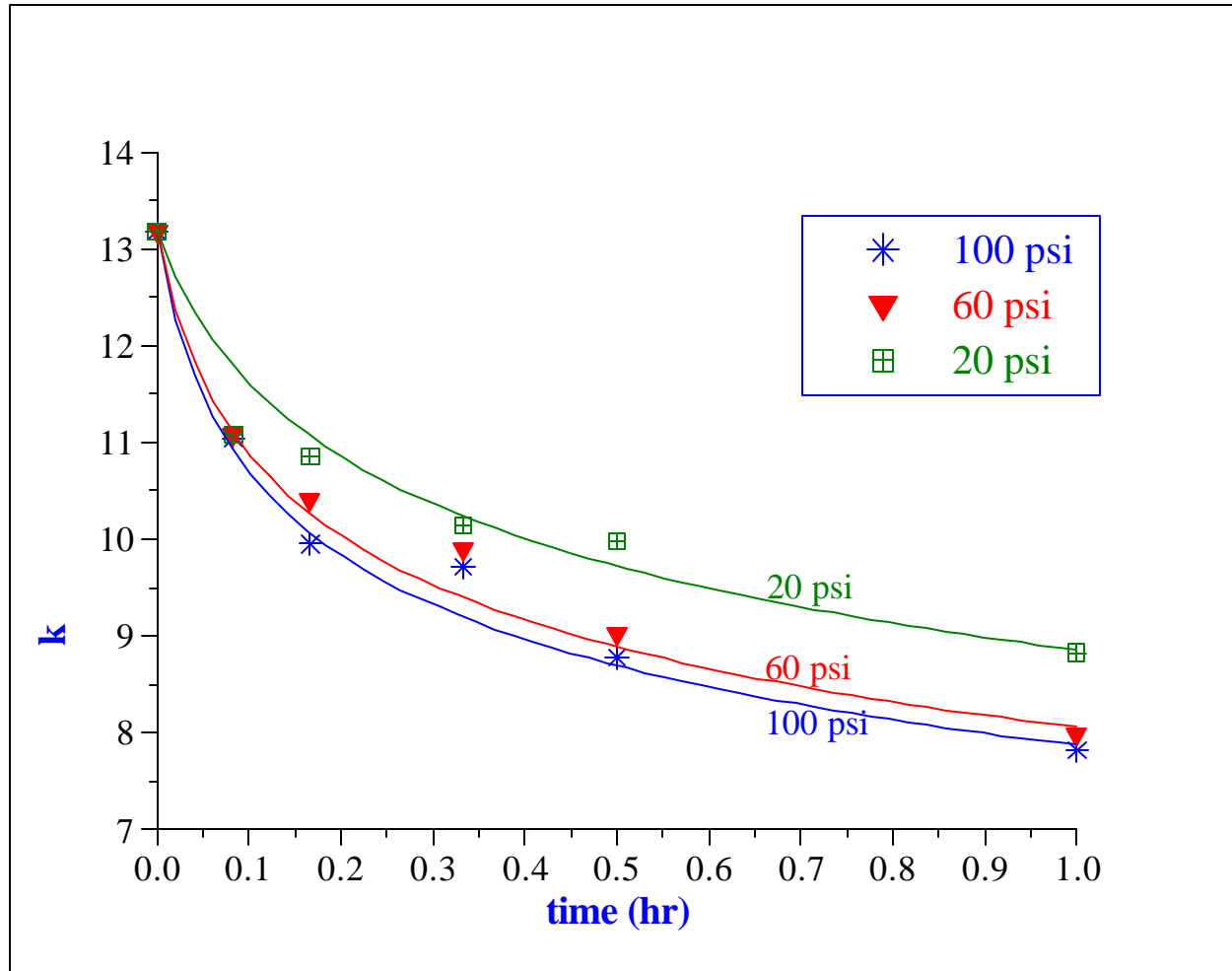
Effect of Alkali Charge and Consistency on Delignification



Effect of Alkali Charge and Consistency on Cellulose Degradation



Effect of O₂ Pressure (Southern hardwood at 100 C and 2.5% NaOH)



Effect of Mixing

Iijima and Taneda (1997)

