

<b>Document Name:</b>	0101r194
<b>Section:</b>	TAPPI PRESS
<b>Title:</b>	Functional Analysis of Lignins and Their Derivatives

## TAPPI PRESS

Functional Analysis of Lignins and Their Derivatives  
By G. F. Zakis. Translation Edited by T. Joyce and R. Brezny

1994. 102 pp., 8-1/2" x 11" soft cover  
Item Number: 0101R194

ISBN: 0898522587

In this English translation of the 1987 Russian text by G. F. Zakis of the Latvian Academy of Sciences in Riga, Latvia, Zakis addresses the problems concerning the chemical analysis of lignin, which are of ever-increasing interest to the research community. Thirty of the most thoroughly tested and accepted methods for the chemical analysis of lignin functional groups are described in detail. Chapters include: some physico-chemical properties of lignins and their importance in sample preparation, methoxy groups, hydroxyl groups, carbonyl groups, determination of acidic groups in liginosulfonic acids, and analysis of nitrogen-containing lignin derivatives.

### Table of Contents

Preface	3.2.2 Phthalation
List of Abbreviations	3.2.3 Specific Character of Analysis by Acylation Methods of Preparations Containing Carboxyl Groups
Introduction	3.2.4 Acetylation with Subsequent Aminolysis
Chapter 1 Some Physico-Chemical Properties of Lignins And Their Importance Sample Preparation	3.3 Determination of Hydroxyl Groups by Tserewitinov's Method
Chapter 2 Methoxy Groups	3.4 Determination of Acidic Hydroxyl Groups by Chemisorption Method
2.1 Method of Zeisel-Viebock-Schwappach	3.4.1 Total Acidic Groups
2.2 Modification of Zeisel's Method Using GLC	3.4.2 Highly Acidic (Carboxyl) Groups
2.3 Method of Kirpal and Buhn	3.5 Acid Base Titration
2.4 Methods Based on Methanol Elimination	3.5.1 Potentiometric Titration
Chapter 3 Hydroxyl Groups	3.5.2 Conductometric Titration
3.1 Determination of Hydroxyl Groups by Methylation	3.6 Sepctrophotometric Determination of Phenol Hydroxyl Groups
3.1.1 Methylation by Dizamethane and Alkaline Hydrolysis of Methyl Esters	3.7 Determination of Guaiacyl Phenol Groups By Oxidation with Periodate
3.1.2 Methylation by Dimethyl Sulfate	3.8 Determination of Catechol Structure
3.1.3 Methylation by Methanol	3.9 Determination of P-Hydroxy And p-alkoxybenzyl Alcohol Structures
3.1.4 Calculation of Hydroxyl Group Content from Methylation Results	3.10 Determination of Carboxyl Groups by Decarboxylation
3.2 Determination of Hydroxyl Groups by Acylation	3.11 Other Methods of Determination
3.2.1 Acetylation	Chapter 4 Carbonyl Groups
	4.1 Determination by Oximation
	4.2 Gasometric Borhydride Method

4.3 Spectrophotometric Method and  
Differentiation Of Carbonyl Groups  
4.4 Determination of Quinone Carbonyl Group  
4.5 Reduction of Lignin Preparations by  
Complex Hydrides

Chapter 5 Determination of Acidic Groups in  
Lignosulfonic Acids

Chapter 6 Analysis of Nitrogen-Containing  
Lignin Derivatives

Appendices

Appendix a: Units of Measurement for Lignin  
Functional Groups

Appendix B: Design of Expanded Empirical  
Formulae for the Lignin Phenylpropane  
Structural Unit

Literature Cited