Synthetic Coating Additives
Edited by Alan Macnair

1988, 60 pages, soft cover.
Item Number: 0101R276
ISBN: 0898523494

This comprehensive book discusses the four polymer groups most widely used in paper coating:
- Styrene/Butadiene Latices
- Acrylic Copolymers
- Polyvinyl Alcohol
- Polyvinyl Acetate

Specific topics include physics, chemistry, and kinetics of synthetic binders, critical functional properties of various binder components, and practical applications of synthetic binders in coating formulations.

A project of the Coating Binders Committee of the Coating and Graphic Arts Division, this book is a revision of TAPPI Monograph 37, Synthetic Binders in Paper Coatings, last published in 1975. Synthetic Coating Adhesives will be a valuable textbook for newcomers to the paper coating field, and a useful reference for everyone involved in paper coating.

TABLE OF CONTENTS

Chapter One: Styrene-butadiene Latices
Introduction...........................................1
Polymers and Polymerization...............1
Emulsion Polymerization.....................2
Polymer Composition and Properties......4
Styrene-butadiene Latices: Colloidal
And Stability Characteristics...........5
Coating Consolidation and Structure.....6
Styrene-butadiene Latex: Properties,
Performance, and Rannability.........9
Sheet Gloss and Porosity..................10
Print Gloss and Printability.............10
Binding Power and Blister
Resistance.......................................12

Coated Compositions Containing Styrene-butadiene Latex................13
Sheet Offset..................................13
Web Offset....................................14
Rotogravure..................................14
Size Press Coating.........................15
Fourdrinier and Cylinder Board.........15
Concluding Remarks........................16
Acknowledgements..........................16
References....................................16
Chapter Two: Acrylic-copolymer Paper Coating Binders

Introduction..........................................19
Polymer Chemistry...............................19
Raw Materials and Process.............19
Polymer Properties.........................22
Coating Application.............................24
Methods of Coating Paper and Paperboard...............24
Properties Necessary for the Coating Process.............24
End-use Properties of the Paper Coating.................26
Coating Strength....................................26
Optical Properties...............................27
Printability........................................27
Specialty Acrylic Binders...............28
  Alkali-reactive Binders..................28
  Clay-reactive binders.................29
  High Gloss Binders.....................29
Acrylic/ Vinyl-acetate Copolymers.......30
Acrylic/ Styrene Copolymers...............30
Summary.............................................31
Appendix A. Use of Acrylic Emulsions........31
References..........................................32

Chapter Three: Poly(vinyl alcohol) A Versatile Polymer for Paper and Paperboard Applications

Introduction........................................33
Polymer Attributes...............................33
  Physical Properties........................33
  Molecular Properties.....................33
Poly(vinyl alcohol) is unique in Many Respects........33
Raw Materials and Process.............35
Hydrolysis and Molecular Weight Effects...............35
Paper Applications.............................35
  General........................................35
Strength Properties............................36
Oil and Grease Resistance Properties.............37
As a Flourochemical Enhancer...........39
Silicone Release Liners.....................40
Water Resistance/ use of Crosslinkers.........40
Size Press and Calender Stack Considerations........40

In Coating Formulations..................42
Benefits of Lower Molecular Weight Grades.........42
Water Retention Characteristics.........42

As an Optical Brightener Enhancer In Coatings.........43
As a Cobinder with Latex....................43
In Inkjet Coating Formulations...........44
  Preparing Solutions........................45
Summary of Poly(vinyl alcohol) Attributes........46
Acknowledge.....................................47
References......................................47

Chapter Four: Polyvinyl Acetate Paper Coating Latices

Polymerization of Vinyl Acetone Homopolymers and Copolymers.......49
Storage and Handling......................50
Coating Preparation and Application........52
Coated Paper Properties.....................52
Polyvinyl Acetate Homopolymers And Copolymers in Specific Paper and Paperboard Market Areas.......54
Bleached Board.........................54
Folding Boxboard..........................54
Paper..........................................55
Summary......................................57
Acknowledgements.........................57
References......................................57