

TABLE OF CONTENTS

INTRODUCTION	1
 CHAPTER ONE	
HISTORY	4
Background	4
Early Ink Distribution Systems	4
Early Viscosity Measurement	4
Ink Distribution Changes	5
Invention of the Anilox Roll	5
From Aniline Printing to Flexography	7
Swift Growth of Flexography	7
 CHAPTER TWO	
INTRODUCING ANILOX ROLLS	9
NARROW WEB	9
SPECIALITY APPLICATIONS	10
Other Specialized Applications	10
Envelope Printing	11
Milk and Juice Cartons	11
Paper Cups	12
Corrugated Packaging	12
Preprinted Linerboard	14
WIDE WEB FLEXIBLE PACKAGING	15
Uncoated Paper	16
Glassine and Coated Paper	17
Multiwall Bags	17
Newspapers	17
COATING AND LAMINATING	18
SHEET FED OFFSET PRINTING	21
 CHAPTER THREE	
FUNCTION OF THE ANILOX ROLL	24
 CHAPTER FOUR	
ANILOX BASE CONSTRUCTION	27
Tubular Construction	28

Solid-Steel Construction	30
Thin Wall Steel Bases	30
Aluminum Anilox Rolls	31
Composite Materials	32
Roll Balancing	32
DEMOUNTABLE CONSTRUCTION	33

CHAPTER FIVE

ANILOX CELL SHAPES	35
Basic Anilox Cell Shapes	35
Flow-Through cells	36
ANILOX CELL VOLUMES	38

CHAPTER SIX

ENGRAVING METHODS	39
Mechanical Engraving	39
Making the Engraving Tool	39
Mechanical Engraving Process	40
Chrome Plating of Anilox Rolls	41
Moisture Barriers	41
CERAMIC COATING	43
Introduction to Ceramic Coating	43
The Ceramic Coating Process	44
Base Preparation	45
Engraved Ceramic Rolls	46
MicroCeramic Coated Rolls	46
LASER ENGRAVING	47
The Laser Process	48
The Laser Machine	49
Original CO2 Laser Machines	50
Fixed-Beam Laser	50
Recast Material	50
Constant Wave Laser	51
YAG Laser Engraving	51
Tubular Cell Shape	52
Laser Engraving Sealers	52
Laser Engraving Angles	52
Laser Anilox Limitations	53
Laser Roll Durability	54

CHAPTER SEVEN

EFFECT OF SURFACE TENSION ON INK TRANSFER	55
---	----

CHAPTER EIGHT

INK DISTRIBUTION SYSTEMS	57
Two-Roll Ink Distribution	57
Rubber-Fountain-Roll Compound and Hardness	57
Crowning of Rubber Rolls	58
Rubber-Roll Surface Finish	59
DOCTOR-BLADE METERING	59
Reverse-Angle Doctor Blade	60
Cleaner and Sharper Printing	60
Doctor Blade Angle	61
Doctor Blade Pressure Setting	61
CHAMBERED DOCTOR-BLADE SYSTEMS	62
Doctor-Blade Installation	63
Blade Alignment	63
Dual Systems	63
Doctor-Blade Materials	64

CHAPTER NINE

SELECTING ANILOX ROLLS	65
Inspect your printing	65
Banded Anilox Roll	66
Determining Your Quality Level	67
Optimum Volumes	67
Depth to Opening Ratio	67
Process Printing Anilox Roll Selection	68
Stochastic Screening	70
Ordering Anilox Rolls	70

CHAPTER TEN

FINGERPRINTING THE PRESS	72
Why do a Test Run?	72
Selecting the Test Team	73
Establishing a Fingerprint Test Run Plan	73
Documentation of Parameters	73
Tools Required For On-The-Spot Analysis	74
Data Analysis and Conclusion Meeting	75
Vendor Partnership	75
Importance of Banded Anilox Roll	75
Understand the Mix of Jobs that are printed	76
Selecting an Anilox-Roll cell count	76

CHAPTER ELEVEN

VOLUMETRIC MEASURING DEVICES	78
Early Volume Measurement	78
The Gravurescope	78
Video Microscope Systems	79
Liquid-Volume Measuring System	80
Computerized Interferometer	80
Fast and Accurate Measurement	81

CHAPTER TWELVE

PRINTING PRESS ROBOTICS	83
Wide Web Presses	83
Safety Features	83
Roller Preparation for Installation	83
Manual Roller changes	84
Potential For Damage	85
The Canvas Belt or Sling	85
Removal and Installation Care	86
Plate Cylinder Storage	86
Cylinder Sleeves	87
Easy storage	87
Anilox Roll Sleeves	87

CHAPTER THIRTEEN

ANILOX ROLL MAINTENANCE	89
Manual Cleaning	89
Soak Tanks	91
Pressure Washing	91
Ultrasonic Cleaning	92
Laser Cleaning Process	93
Anilox Roll Maintenance Plan	94

CHAPTER FOURTEEN

THE FUTURE	98
------------------	----

SUBJECT INDEX	100
----------------------------	------------