

# Contents

## Introduction xi

<b>1</b>	<b>Materials management concepts</b>	<b>1</b>
	Introduction to materials management	1
	Materials management organizational structures	3
	Materials management paradigms	6
	Computers, bar coding, and other automatic identification techniques	8
	Current trends	10
	Summary	11
<b>2</b>	<b>Marketing, forecasting, and management science</b>	<b>13</b>
	An overview of marketing and forecasting	13
	The implications of marketing decisions	14
	The tools of management science	14
	The origins of operations research	14
	Criteria for operations research	15
	The classification of OR models	15
	Decision theory	17
<b>3</b>	<b>Finance and accounting relative to materials management</b>	<b>25</b>
	Economic considerations	25
	The ebb and flow of corporate dollars	26
	Analyzing assets	26
	Adding value in materials management	30
	The impact of purchasing	31

How marketing is related to materials management	32
Materials management and manufacturing	32

## **4 Purchasing practices in materials management 35**

Introduction	35
The evolution of purchasing and inventory control	36
The basic elements of purchasing	39
Purchasing organization	40
Purchasing contracts and other legal matters	48
Legal considerations concerning purchase orders	48
Other purchasing factors affecting materials management	66
The negative side of purchasing that affects materials management	68
Purchasing and the materials manager	74

## **5 Engineering and design as it affects materials management 77**

Introduction	77
Designing the product	77
Styling	79
Standard parts	81
Materials and processes	81
Make-or-buy decisions	82
Simulation	84

## **6 Requirements planning methodologies 85**

Introduction	85
Material requirements planning (MRPI)	86
Using MRP to control production and inventory	88
Phases in the MRP process	90
Gross requirements	94
Application of MRP	103
Installing an MRP system	109
Material resource planning (MRPII)	112
Distribution resource planning (DRP)	114
Capacity requirements planning (CRP)	115
Notes	117

## **7 Flexible manufacturing systems and the materials management link 119**

Introduction	119
Automation as applied to machine tools	120
The fully automated factory	121



<b>8</b>	<b>Flexible assembly and materials management</b>	<b>123</b>
	Introduction	123
	Costs of automation	124
	The flexible assembly interface	126
	Inverted powered and free conveyors	126
	Towlines	127
	Car-on-track conveyors	128
	Transporters	129
<b>9</b>	<b>Materials handling as an element of materials management</b>	<b>131</b>
	Introduction	131
	Materials handling methods	132
	Container requirements	132
	Receiving and shipping	133
	Linear vs. U-form materials handling and JIT manufacturing	134
<b>10</b>	<b>Making materials management work</b>	<b>139</b>
	The necessity for standardization	139
	A packaging manual	140
	Internal and external communications	140
	The working environment	141
	Kinds of packaging	144
	Container accountability	149
	Identifying receivables	151
	Bills of lading and packing lists	152
	The transportation element	153
	Hazardous materials	154
	Packaging deficiency reporting	155
<b>11</b>	<b>Master schedules and the materials management function</b>	<b>157</b>
	The master schedule	157
	Factory scheduling	158
	Preparing scheduling data	159
	The machining cycle	162
	Processing time	163
<b>12</b>	<b>Production control</b>	<b>165</b>
	Introduction	165
	The new product	165
	Determining costs	165

Design of the product	166
The planning section	166
Schedules	170
Material control	171
Materials handling	172
Equipment and maintenance	195
Records and record-keeping	200
Equipment replacement, justification, and R.O.I.	202
Notes	217

### **13 Traffic and transportation 219**

Introduction	219
Receiving	220
Receivables and truck/rail registers	221
Weigh counting and other methods	221
Shipping	222

### **14 Internal and external distribution networks 225**

Internal networks	225
External networks	227
Quality objectives	228

### **15 The use of facilities 231**

Manufacturing processing	231
Engineering and testing	236
Quality control	237
Maintenance	237

### **16 Information processing and data entry 239**

Decision-support systems	239
Database management systems	240
Operating statistics	243
Production status reporting	244
Time, attendance, and labor data collection	244
Notes	246

### **17 Using materials management to increase productivity 247**

Productivity	247
Materials flow	248
Indirect to direct labor ratios	248
Reducing handling damage	248
Maximizing space utilization	249
Reducing the accident rate and the severity of injury	250
Profit centers	250

<b>18</b>	<b>The effects of product mix on materials management</b>	<b>253</b>
	Product mix and profitability	253
	Diversification philosophies	254
<b>19</b>	<b>Applying the systems approach in materials management</b>	<b>257</b>
	Labor	257
	Capital investment	258
	Value added by manufacturing	258
	Value added by distribution	259
	The employment of capital	259
	Use of facilities and equipment	259
	Facilities	260
	Equipment	260
<b>20</b>	<b>Implementing the materials management concept</b>	<b>261</b>
	Preparing the climate	261
	Organizing for change	262
	Implementation	263
<b>Appendix A</b>	<b>Automatic identification, hardware, and software suppliers, and other peripherals</b>	<b>265</b>
<b>Appendix B</b>	<b>Occupational Safety and Health Administration (OSHA)</b>	<b>269</b>
<b>Index</b>		<b>277</b>