

Contents

Preface *xi*

Prior Publications *xiii*

- 1 General and Legal Aspects of Cosmetics** *1*
 - 1.1 Short Look at the History of Cosmetics *1*
 - 1.2 Definition of Cosmetics *2*
 - 1.3 Typical Cosmetic Products *3*
 - 1.4 Legal Regulations of Cosmetics in Europe *4*
 - 1.5 Label Lettering and Trademark *7*
 - 1.6 Mandatory Registration of Cosmetic Products *11*
 - 1.7 Databases for Ingredients *11*
 - 1.8 Regulations in the United States *15*
 - 1.9 Regulations of the Cosmetics Markets in Asia *16*
 - 1.10 Delimitation of Cosmetic Products *18*
 - 1.11 Learnings *23*
 - References *23*

- 2 Economic Importance of Cosmetics** *27*
 - 2.1 Cosmetics Market and Distribution Channels in Germany *27*
 - 2.2 Shopping on the Internet in Germany *30*
 - 2.3 European Cosmetics Markets *31*
 - 2.4 Cosmetics Market in USA *35*
 - 2.5 Cosmetics Market and Distribution Channels in Japan *35*
 - 2.6 Chinese Cosmetics Market *37*
 - 2.7 World Division in Market Regions *38*
 - 2.8 Global Cosmetics Market Size *39*
 - 2.9 Trends for Future Development *45*
 - 2.10 Largest Cosmetics Manufacturers Worldwide *45*
 - 2.11 Top Five Manufacturers *48*
 - 2.12 Learnings *56*
 - References *56*

3	Cost Structure of the Cosmetic Products and Their Manufacturers	59
3.1	Rough Calculation of the Costs	59
3.1.1	Overview	59
3.1.2	Development Products	61
3.1.3	Determination of the Market Price	61
3.2	Detailed Calculation of the Manufacturing Costs	62
3.2.1	Costs in the Production	62
3.2.2	Production Costs Related to Installation and Building	65
3.2.3	Labor Costs	65
3.2.4	Energy Costs	71
3.2.5	Production Cost Dependencies of Capacity, Operation, and Personnel	73
3.2.6	Raw Material Costs	76
3.3	Costs in the Companies	79
3.3.1	Internal Cost Accounting	80
3.3.2	Direct Costs	81
3.3.3	Overheads in the Company's Cost and Performance Accounting	82
3.4	Figures from the Published Annual Reports	84
3.4.1	Industry-Dependent Cost Structures of the Companies	84
3.4.2	Profit and Loss Accounts of Global Cosmetics Companies	86
3.5	Methods for Pricing	91
3.5.1	Pricing Depending on the Customer	91
3.5.2	Cost-Oriented Pricing	92
3.5.3	Demand-Oriented Pricing	93
3.5.4	Competition-Oriented Pricing	95
3.5.5	Influence of the Brand	97
3.5.6	Summary of Pricing	98
3.6	Learnings	98
	References	99
4	Scientific Descriptions of the Skin	103
4.1	Tasks of the Skin	103
4.2	Structure of the Skin	103
4.3	Concepts for Penetration of the Stratum Corneum	108
4.4	Some Experiments on the Penetration of Lipophilic Substances	114
4.5	Penetration of Agents into the Skin	120
4.6	Gender Differences in the Structure of the Skin	126
4.7	Learnings	127
	References	127
5	Composition of Creams for Skin Care	131
5.1	General Structure of a Skin Care Cream	131
5.2	Modules of a Cream	132
5.3	Excipients	140
5.3.1	Emulsifier for Macroemulsions	140
5.3.2	Emulsifier for Mini (Nano) Emulsions	149

- 5.3.3 Stability of Emulsions 149
- 5.3.4 Adjusting the Cream Consistency 155
- 5.3.5 Preservations 158
- 5.3.6 Antioxidants, Complexing Agents, and Buffer Substances 163
- 5.4 Additives for Color and Fragrance 167
- 5.5 Aids Such as Liposomes for the Introduction of Substances into the Skin 167
- 5.6 Learnings 170
- References 171

- 6 Proven Active Ingredients for Various Categories of Skin Creams 175**
 - 6.1 Skin Care 175
 - 6.2 Cream Categories for Skin Care 176
 - 6.2.1 Cosmetic Creams (Mainstream) 176
 - 6.2.2 Natural Cosmetics 176
 - 6.2.3 Cosmeceuticals 182
 - 6.2.4 Medicines for the Skin 184
 - 6.3 Moisture in the Skin 188
 - 6.3.1 Natural Moisturizing Factor 188
 - 6.3.2 Moisturizing Substances 191
 - 6.4 Vitalizing Substances, in Particular Vitamins 196
 - 6.5 Nourishing Vegetable Oils for Smoothing the Skin 201
 - 6.5.1 Natural Fatty Acids from Vegetable Oils 203
 - 6.5.2 Vegetable Oils and Fats in Cosmetic Creams 205
 - 6.6 Active Ingredients for Antiaging Creams 212
 - 6.7 Essential Oils 216
 - 6.8 Extracts from Plant Parts 219
 - 6.9 Active Ingredients from the Sea 223
 - 6.10 Origin of the Active Ingredients 225
 - 6.11 Learnings 225
 - References 227

- 7 Active Ingredients for Special Products 231**
 - 7.1 Definition of Special Creams 231
 - 7.2 Antiacne Creams for Blemished Skin 231
 - 7.3 After-Sun Creams and Lotions for Reddened Skin 236
 - 7.4 Creams for Baby Skin 237
 - 7.5 Prophylaxis at Risk of Pressure Ulcers (Bedsore) 239
 - 7.6 Improving the Appearance of the Skin in the Case of Cellulite 239
 - 7.7 Chemical Removal of Unwanted Hair (Depilatory Cream) 241
 - 7.8 Treatment of Eczema 242
 - 7.9 Cream for the Feet and Against Athlete's Foot 243
 - 7.10 Cream for Hands 244
 - 7.11 Antiherpes Cream 245
 - 7.12 Cream for Removing Thick Horny Layers (Callus) 246
 - 7.13 Lotions for Body Care 247

- 7.14 Cream for Itchy Shins 248
- 7.15 Self-tanning Cream 248
- 7.16 Sunscreens (UV Protection) 249
 - 7.16.1 Solar Radiation 249
 - 7.16.2 Character of UV Rays 250
 - 7.16.3 Radiation-Induced Damage in the Skin 252
 - 7.16.4 Sunscreen Substances According to the Cosmetics Regulations Worldwide 254
 - 7.16.5 Application and Warning Notices 261
 - 7.16.6 Measurements for the Determination of Sun Protection 265
 - 7.16.7 Recommended Active Ingredients 268
 - 7.16.8 Care Creams with Sun Protection 269
- 7.17 Comment on Cosmeceuticals 271
- 7.18 Learnings 271
- References 272

- 8 Proposals for the Formulation of Creams 275**
 - 8.1 General Remarks 275
 - 8.2 Moisturizers 276
 - 8.3 Vitalizing Creams 277
 - 8.4 Creams with Smoothing Properties 282
 - 8.5 Antiaging Creams 284
 - 8.6 Acne Creams 287
 - 8.7 After Sun Creams/Lotions 288
 - 8.8 Baby Cream 289
 - 8.9 Bedsore Cream 295
 - 8.10 Cellulite Cream 295
 - 8.11 Foot Care Cream Against Athlete's Foot 300
 - 8.12 Hand Cream 300
 - 8.13 Callus Removal Cream 300
 - 8.14 Body Lotion 301
 - 8.15 Eye Area Formulation with Sun Protection 304
 - 8.16 Sunscreen Lotion 307

- 9 Perfumes 309**
 - 9.1 Importance of the Perfume for Cosmetic Creams 309
 - 9.2 History of Perfume Oils 310
 - 9.3 Perfume Composition and Markets 312
 - 9.4 Extraction of Fragrances from Plants 315
 - 9.5 Chemical Composition of Natural Fragrances 319
 - 9.6 Possibilities in Product Design of Perfume Oils 327
 - 9.7 Personal Care and Other Products 329
 - 9.8 Safety 330
 - 9.9 Learnings 332
 - References 333

- 10 Production of Cosmetic Creams 335**
 - 10.1 Method 335
 - 10.2 Stirring and Homogenizing Tools 337
 - 10.3 Laboratory Equipment and Pilot Plant 342
 - 10.4 Batch Production 345
 - 10.5 Continuous Production 350
 - 10.6 Scale-up 350
 - 10.7 Mini-Emulsions 355
 - 10.8 Bottles and Filling Lines 361
 - 10.9 Learnings 366
 - References 368

- 11 Regulations and Guidelines for the Execution of Hygienic
Productions 371**
 - 11.1 Good Manufacturing Practice Rules for the Manufacture of
Cosmetics 371
 - 11.2 EHEDG Guidelines for the Construction of the Facility 379
 - 11.3 Materials for the Equipment of Cosmetic Plants 383
 - 11.3.1 Problem 383
 - 11.3.2 Choice of Material 384
 - 11.3.3 Stainless Steel 385
 - 11.3.4 Smoothing the Metal Surfaces 387
 - 11.4 Cleaning-in-Place 392
 - 11.5 Learnings 396
 - References 396

- 12 Assessment of the Quality of Cosmetic Creams 399**
 - 12.1 Options for Quality Evaluation 399
 - 12.2 Microbial Checks 400
 - 12.3 Specifying the Quality of Cosmetic Creams by Physical
Measurements 403
 - 12.3.1 Probes and Devices 403
 - 12.3.2 Moisture and Sebum 403
 - 12.3.3 Firmness and Elasticity 406
 - 12.3.4 Wrinkles 408
 - 12.3.5 Gloss and Color 409
 - 12.3.6 Support of Advertising Claims 409
 - 12.4 Example of a Cream Test by Customers 410
 - 12.5 Learnings 414
 - References 415

- 13 Product Information File (P.I.F.) 417**
 - 13.1 Provisions of the Cosmetics Regulation 417
 - 13.2 Requirements for the Product Safety Report According to the
Cosmetics Regulation 417

13.3	Safety Data Sheet	420
13.4	Structure of the P.I.F.	422
13.4.1	Product Identification and Description	422
13.4.2	Composition of the Cosmetic Cream	422
13.4.3	Toxicological Profile	424
13.4.4	Production Instruction	426
13.4.5	Analysis Report of the Produced Cream	426
13.4.6	Cream Exposure to the Skin	429
13.4.7	Safety Consideration for Babies and Children	434
13.5	Example for a P.I.F. (Body Lotion)	437
13.6	Learnings	452
	References	453

Appendix A Formulations 455

Appendix B MSDS Niacinamide 465

Index 475