

## Contents

**Preface** *xi*

**Prior Publications** *xiii*

<b>1</b>	<b>General and Legal Aspects of Cosmetics</b>	<b>1</b>
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
<b>2</b>	<b>Economic Importance of Cosmetics</b>	<b>27</b>
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

<b>3</b>	<b>Cost Structure of the Cosmetic Products and Their Manufacturers</b>	<b>59</b>
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
<b>4</b>	<b>Scientific Descriptions of the Skin</b>	<b>103</b>
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
<b>5</b>	<b>Composition of Creams for Skin Care</b>	<b>131</b>
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
<b>6</b>	<b>Proven Active Ingredients for Various Categories of Skin Creams</b>	<b>175</b>
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
<b>7</b>	<b>Active Ingredients for Special Products</b>	<b>231</b>
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
<b>8</b>	<b>Proposals for the Formulation of Creams</b>	<b>275</b>
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
<b>9</b>	<b>Perfumes</b>	<b>309</b>
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

<b>10</b>	<b>Production of Cosmetic Creams</b>	<b>335</b>
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
<b>11</b>	<b>Regulations and Guidelines for the Execution of Hygienic Productions</b>	<b>371</b>
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
<b>12</b>	<b>Assessment of the Quality of Cosmetic Creams</b>	<b>399</b>
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
<b>13</b>	<b>Product Information File (P.I.F.)</b>	<b>417</b>
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**