

Contents

Preface	<i>XI</i>	
How to use the Handbook	<i>XIII</i>	
Warranty disclaimer	<i>1</i>	
Tantalum, niobium and their alloys	<i>3</i>	
Introduction	<i>3</i>	
Acetates (Salts)	<i>4</i>	
L. Hasenberg		
Acetic Acid	<i>4</i>	
G. Elsner		
Acid Halides	<i>5</i>	
G. Elsner		
Aliphatic Aldehydes	<i>5</i>	
G. Elsner		
Aliphatic Amines	<i>6</i>	
L. Hasenberg		
Aliphatic Ketones	<i>6</i>	
H. Barkholt		
Alkaline Earth Chlorides	<i>6</i>	
R. Weidemann		
Alkaline Earth Hydroxides	<i>6</i>	
A. Weser		
Alkanecarboxylic Acids	<i>7</i>	
L. Hasenberg		
Alkanols	<i>7</i>	
K. Hauffe		
Aluminium Chloride	<i>7</i>	
L. Hasenberg		
Ammonia and Ammonium Hydroxide	<i>8</i>	
P. Drodten		
Ammonium Salts	<i>8</i>	
K. Hauffe		
Atmosphere	<i>9</i>	
K. Baumann		
Bromides	<i>10</i>	
K. John		
Bromine	<i>10</i>	
K. John		
Carbonic acid	<i>12</i>	
P. Drodten		
Carboxylic Acid Esters	<i>12</i>	
L. Hasenberg		
Chlorinated Hydrocarbons – Chloroethanes	<i>13</i>	
H. G. Spilker		
Chlorinated Hydrocarbons – Chloromethanes	<i>14</i>	
H. G. Spilker		
Chlorine and Chlorinated Water	<i>15</i>	
K. Hauffe		
Chlorine Dioxide	<i>17</i>	
L. Hasenberg		
Ferrous Chlorides	<i>17</i>	
A. Werner		
Fluorides	<i>18</i>	
K. Hauffe		

Fluorine, Hydrogen Fluoride, Hydrofluoric Acid	19
K. Hauffe	
Formic Acid	22
H. Leyerzapf	
Hot Oxidizing Gases	22
K. Hauffe	
Hydrochloric Acid	29
A. Bäuml, P. Drodten	
Hydrogen Chloride	43
H. Barkholt	
Hypochlorites	44
L. Hasenberg	
Industrial Waste Gases	45
G. Subat	
Lithium Hydroxide	45
K. John	
Methanol	45
H. G. Spilker	
Mixed acids	49
M. B. Rockel	
Nitric acid	52
K. Hauffe	
Phosphoric Acid	55
L. Hasenberg	
Polyols	59
G. Elsner	
Potassium Chloride	59
L. Hasenberg	
Potassium Hydroxide	60
P. Drodten	
Seawater	61
P. Drodten	
Sodium Chloride	61
M. B. Rockel	
Sodium Hydroxide	62
P. Drodten	
Sodium Sulfate	64
J. Küpper-Feser	
Soil (Underground corrosion)	65
G. Elsner	
Steam	65
H. Leyerzapf	
Sulfonic Acids	65
K. Hauffe	
Sulfur dioxide	66
L. Hasenberg	
Sulfuric Acid	67
L. Hasenberg	
Waste Water (industrial)	83
E. Heitz, G. Subat	
Bibliography	84

- Titanium and titanium alloys** 105
- Introduction** 105
- Acetates (Salts)** 107
L. Hasenberg
- Acetic Acid** 107
G. Elsner
- Acid Halides** 113
G. Elsner
- Aliphatic Aldehydes** 113
G. Elsner
- Aliphatic Amines** 114
L. Hasenberg
- Aliphatic Ketones** 114
H. Barkholt
- Alkaline Earth Chlorides** 114
R. Weidemann
- Alkaline Earth Hydroxides** 116
A. Weser
- Alkanecarboxylic Acids** 118
L. Hasenberg
- Alkanols (Monovalent Alcohols)** 119
K. Hauffe
- Aluminium Chloride** 122
L. Hasenberg
- Amine Salts** 124
K. Hauffe
- Ammonia and Ammonium Hydroxide** 125
P. Drodten
- Ammonium Salts** 126
K. Hauffe
- Atmosphere** 136
K. Baumann
- Benzene and Benzene Homologues** 137
K. Hauffe
- Bromides** 139
K. John
- Bromine** 145
K. John
- Carbonic Acid** 146
P. Drodten
- Carboxylic Acid Esters** 146
L. Hasenberg
- Chlorinated Hydrocarbons – Chloroethanes** 148
H. G. Spilker
- Chlorinated Hydrocarbons – Chloromethanes** 151
H. G. Spilker
- Chlorine and Chlorinated Water** 155
K. Hauffe
- Chlorine Dioxide** 160
L. Hasenberg
- Ferrous/Ferric Chloride (FeCl₂, FeCl₃)** 163
A. Werner
- Fluorides** 178
K. Hauffe
- Fluorine, Hydrogen Fluoride, Hydrofluoric Acid** 185
K. Hauffe
- Formic acid** 191
H. Leyerzapf
- Hot Oxidizing Gases** 192
K. Hauffe
- Hydrochloric Acid** 201
A. Bäümel, P. Drodten
- Hydrogen Chloride** 218
H. Barkholt
- Hypochlorites** 220
L. Hasenberg
- Industrial Waste Gases** 222
G. Subat
- Lithium Hydroxide** 226
K. John

Methanol 227

H. G. Spilker

Mixed Acids 240

M. B. Rockel

Nitric Acid 246

K. Hauffe

Phosphoric Acid 261

L. Hasenberg

Polyols 266

G. Elsner

Potassium Chloride 267

L. Hasenberg

Potassium Hydroxide 271

P. Drodten

Seawater 273

P. Drodten

Sodium Chloride 280

M. B. Rockel

Sodium Hydroxide 304

P. Drodten

Sodium Sulfate 307

J. Küpper-Feser

Soil 311

G. Elsner

Steam 311

H. Leyerzapf

Sulfonic Acids 312

K. Hauffe

Sulfur Dioxide 313

L. Hasenberg

Sulfuric Acid 317

L. Hasenberg

Waste Water (industrial) 334

E. Heitz, G. Subat

Bibliography 335

- Zirconium and zirconium alloys** 383
- Introduction** 383
- Acetates (Salts)** 384
L. Hasenberg
- Acetic Acid** 384
G. Elsner
- Acid Halides** 386
G. Elsner
- Aliphatic Aldehydes** 386
G. Elsner
- Aliphatic Amines** 386
L. Hasenberg
- Aliphatic Ketones** 386
H. Barkholt
- Alkaline Earth Chlorides** 387
R. Weidemann
- Alkaline Earth Hydroxides** 388
A. Weser
- Alkanecarboxylic Acids** 388
L. Hasenberg
- Alkanols** 389
K. Hauffe
- Aluminium Chloride** 390
L. Hasenberg
- Ammonia and Ammonium Hydroxide** 390
P. Drodten
- Ammonium Salts** 391
K. Hauffe
- Atmosphere** 394
K. Baumann
- Bromides** 395
K. John
- Bromine** 396
K. John
- Carbonic Acid** 396
P. Drodten
- Carboxylic Acid Esters** 396
L. Hasenberg
- Chlorinated Hydrocarbons – Chloroethanes** 398
H. G. Spilker
- Chlorinated Hydrocarbons – Chloromethanes** 398
H. G. Spilker
- Chlorine and Chlorinated Water** 400
K. Hauffe
- Chlorine Dioxide** 401
L. Hasenberg
- Ferrous Chlorides** 401
A. Werner
- Fluorides** 411
K. Hauffe
- Fluorine, Hydrogen Fluoride, Hydrofluoric Acid** 416
K. Hauffe
- Formic Acid** 418
H. Leyerzapf
- Hot Oxidizing Gases** 418
K. Hauffe
- Hydrochloric Acid** 427
A. Bäumel, P. Drodten
- Hydrogen Chloride** 431
H. Barkholt
- Hypochlorites** 432
L. Hasenberg
- Industrial Waste Gases** 433
G. Subat
- Lithium Hydroxide** 434
K. John
- Methanol** 442
H. G. Spilker
- Mixed Acids** 445
M. B. Rockel
- Nitric Acid** 448
K. Hauffe

Phosphoric Acid 453

L. Hasenberg

Polyols 455

G. Elsner

Potassium Chloride 455

L. Hasenberg

Potassium Hydroxide 456

P. Drodten

Seawater 457

P. Drodten

Sodium Chloride 457

M. B. Rockel

Sodium Hydroxide 459

P. Drodten

Sodium Sulfate 460

J. Küpper-Feser

Steam 460

H. Leyerzapf

Sulfonic Acids 463

K. Hauffe

Sulfur Dioxide 463

L. Hasenberg

Sulfuric acid 468

L. Hasenberg

Bibliography 474

Index of materials 493

Subject index 501