

# Silicates and Silicas

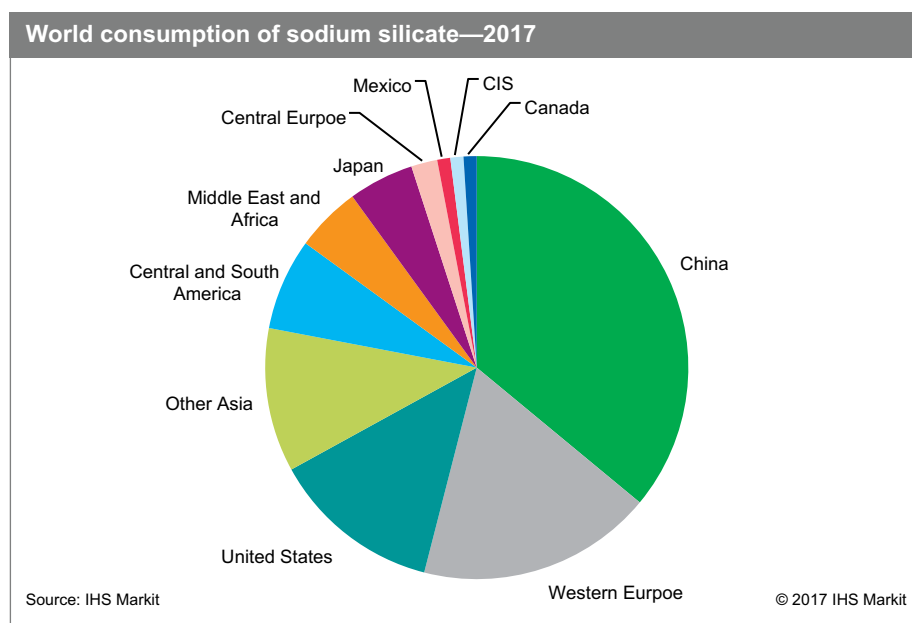
29 December 2017

## Abstract

This report covers the markets for silicates and silicas. Specifically, it covers the silicates of sodium, calcium, zirconium, potassium, and magnesium, along with ethyl silicate. It also covers the specialty silicas of precipitated silica, colloidal silica, silica gel, fumed silica, and fused silica.

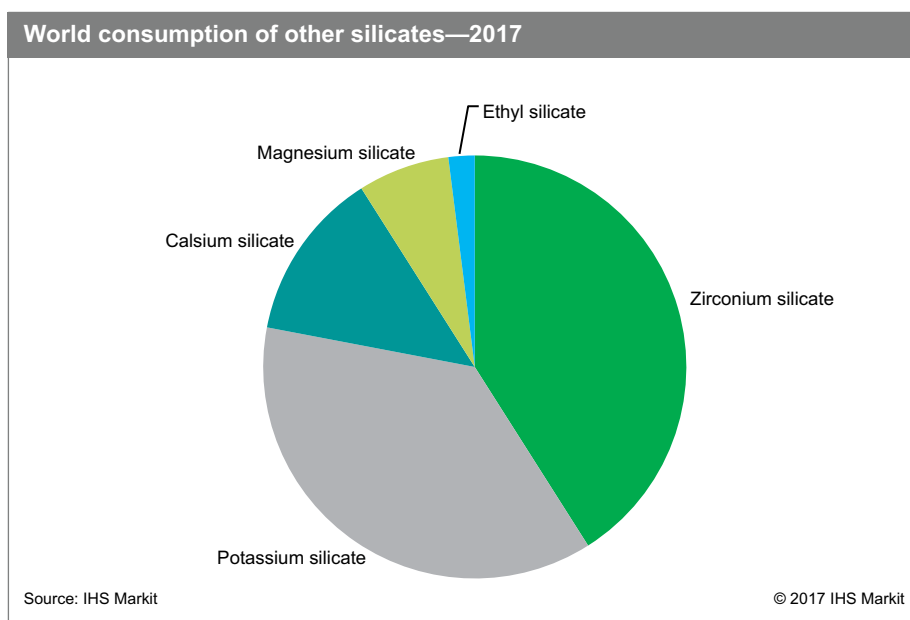
Sodium silicates account for 92% of the global consumption of silicates. Laundry detergents represent the largest single market for sodium silicates in most regions for both direct use and indirect use. Another important direct-use market is in pulp and paper, where sodium silicate is used primarily to stabilize hydrogen peroxide in pulp bleaching and for deinking of recycled paper. Precipitated silicas account for about 62% of the global consumption of silicas.

The following pie charts show world consumption of silicates.



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World consumption of sodium silicate is forecast to grow at almost 2% annually during 2017–22. China is the leading consumer, accounting for about 36% of total world consumption, followed by Western Europe, the United States, and Other Asia. In addition to a variety of direct uses, sodium silicate is consumed in the downstream production of derivative silicates, silicas, and aluminosilicates, including zeolites. These derivatives account for a substantial percentage of total sodium silicate consumption.

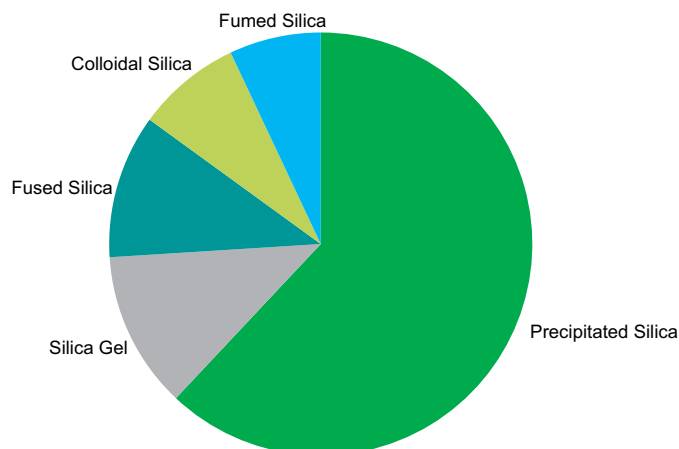
World consumption of potassium silicate is forecast to grow at an average rate of 1.5% annually during 2017–22. Other Asia is the leading consumer, accounting for nearly 42% of total world consumption, followed by Central and South America at about 21%, China at about 18%, and Western Europe at almost 10%. Potassium silicate is used as a binder in welding rods and in several other markets. It is also used as a detergent builder in both consumer and industrial and institutional (I&I) products, and in various water-based coatings for the construction industry.

World consumption of calcium silicate is forecast to grow at about 2.5% annually during 2017–22. China, where calcium silicate is used as a compounding additive in plastics and rubbers, is by far the leading consuming region at almost 34% of world consumption. Calcium silicates are amorphous, water-insoluble powders precipitated from sodium silicate solutions, which function as specialty carriers (especially of oils), flow-control agents, and fillers.

World consumption of zirconium silicate is forecast to grow at 0.9% annually during 2017–22. China is the leading consuming region, accounting for almost 83% of total world demand. Zirconium silicate is used in the manufacturing of refractory materials, where resistance to corrosion by alkali materials is necessary. It is also used in ceramics, ceramic glazes, and enamels.

The following pie chart shows world consumption of specialty silicas:

World consumption of specialty silicas—2017



Source: IHS Markit

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Precipitated silica is the driving force for specialty silicas and is being driven by the “green revolution” to meet environmental and legislative regulations to improve automotive fuel efficiency. It is projected to grow at almost 4% annually during 2017–22. China is the leading consuming region, followed by Other Asia and Western Europe.

Colloidal silica (silica sol), which has a much smaller particle size and a lower tendency to clump, is being adopted in chemical mechanical planarization (CMP) slurries, a reason for its accelerating growth. Its consumption is also growing in pulp and paper mills as part of a retention/drainage aid system with a polymer. Growth is forecast at about 3% annually. The leading growth market is in the electronics/semiconductor industry as a polishing agent.

Silica gel is a major driver for specialty silicas, as a result of China’s growing demand for adsorbents and desiccants. China is the largest consumer of silica gel, followed by Other Asia. Use in cosmetics and cat litter has reached maturity in developed markets. Global consumption is forecast to grow at 4% annually during 2017–22.

Fumed silica consumption is projected to grow at 2.5% annually during 2017–22, led by growth in electronic components as a result of advances in CMP, the rubber market, and new appliances, and the rebound in the production of silicones. China will be the fastest growing region at about 4.5% in the next five years. Rubber is estimated to account for 44–45% of consumption in 2017.

# Contents

<b>Executive summary</b>	<b>12</b>
<b>Summary</b>	<b>13</b>
Sodium silicates	13
Potassium silicates	13
Calcium silicates	14
Magnesium silicates	15
Zirconium silicates	15
Ethyl silicate	15
Specialty silicas	16
– Precipitated silica	16
– Silica gel	17
– Colloidal silica (silica sol)	18
– Fumed silica	18
– Fused silica	19
<b>Introduction</b>	<b>20</b>
Industry structure and dynamics	20
– Sodium silicates	20
– Siliceous sodium silicates	21
– Solid	21
– Liquid	21
– Alkaline sodium silicates	21
– Potassium silicates	22
– Other silicates	22
– Precipitated silica	22
– Silica gel	23
– Colloidal silica	23
– Fumed silica	23
– Fused silica	23
<b>Manufacturing processes</b>	<b>25</b>
Sodium and potassium silicates	25
Other silicates	26
Silicas	26
– Precipitated silica	26
– Silica gel	27
– Colloidal silica (silica sol)	27
– Fumed silica	27
– Fused silica	27
<b>Environmental issues</b>	<b>28</b>
<b>Supply and demand by region</b>	<b>29</b>
United States	29
– Sodium silicates	29
– Producing companies	29
– Salient statistics	30
– Consumption	31
– Derivative chemicals	34

– Detergents, soaps, and cleaners	34
– Pulp and paper	35
– Other	35
– Price	36
– Trade	37
– Potassium silicates	38
– Producing companies	38
– Salient statistics	38
– Consumption	38
– Welding rods	39
– Other binder uses	39
– Detergent builder and other	39
– Price	40
– Calcium silicates	40
– Producing companies	40
– Salient statistics	41
– Consumption	42
– Rubber compounding	42
– Pesticide carrier	42
– Other	42
– Price	43
– Magnesium silicates	43
– Producing companies	43
– Salient statistics	43
– Consumption	44
– Adsorbent	45
– Anticaking	45
– Other	45
– Price	45
– Zirconium silicates	46
– Ethyl silicate	46
– Producing companies	46
– Salient statistics	47
– Consumption	47
– Paints and coatings	48
– Investment castings	48
– Other	48
– Price	49
– Precipitated silica	49
– Producing companies	49
– Salient statistics	50
– Consumption	50
– Elastomers	51
– Food and health care products	52
– Batteries	52
– Agricultural products	52
– Antifoams	53
– Catalysts	53

– Other	53
– Price	54
– Silica gel	55
– Producing companies	55
– Salient statistics	55
– Consumption	56
– Adsorbents/desiccants	56
– Food and health care products	56
– Paints and coatings	57
– Catalysts	57
– Other	58
– Trade	58
– Colloidal silica (silica sol)	59
– Producing companies	59
– Salient statistics	60
– Consumption	61
– Pulp and paper	62
– Investment castings	63
– Refractory binders	63
– Electronics	63
– Catalysts, antiblocking agents, and other	63
– Price	64
– Fumed silica	64
– Producing companies	64
– Salient statistics	64
– Consumption	65
– Silicones	66
– Coatings and inks	66
– CMP	67
– Polyester resins	67
– Adhesives and sealants	67
– Other	67
– Price	68
– Fused silica	68
– Producing companies	68
– Salient statistics	68
– Consumption	69
– Investment castings	70
– Other refractories	70
– Electronics and other	71
– Price	71
Canada	71
– Sodium silicates	71
– Producing companies	71
– Salient statistics	71
– Consumption	72
– Pulp and paper	73
– Detergents, soaps, and cleaners	74

– Other	74
– Price	74
– Trade	75
– Potassium silicates	75
– Producing companies	75
– Salient statistics	75
– Consumption	76
– Other specialty silicas	77
Mexico	78
– Sodium silicates	78
– Producing companies	78
– Salient statistics	79
– Consumption	79
– Price	80
– Trade	81
– Potassium silicates	81
– Producing companies	81
– Salient statistics	81
– Precipitated silica	82
– Producing companies	82
– Salient statistics	82
– Consumption	83
– Price	84
– Silica gel	85
– Producing companies	85
– Salient statistics	85
– Colloidal silica	85
– Producing companies	85
– Salient statistics	85
– Fumed silica	86
– Producing companies	86
– Salient statistics	86
Central and South America	87
– Sodium silicates	87
– Producers	87
– Salient statistics	88
– Consumption	89
– Trade	89
– Potassium silicate	89
– Producers	89
– Salient statistics	90
– Calcium silicate	90
– Producers	90
– Salient statistics	91
– Magnesium silicate	91
– Producers	91
– Salient statistics	91
– Consumption	92

– Zirconium silicate	92
– Producers	92
– Salient statistics	92
– Consumption	93
– Precipitated silica	93
– Producers	93
– Salient statistics	94
– Consumption	94
– Silica gel	94
– Salient statistics	94
– Consumption	95
– Colloidal silica (silica sol)	95
– Salient statistics	95
<b>Western Europe</b>	<b>96</b>
– Sodium silicates	96
– Producing companies	96
– Salient statistics	98
– Consumption	99
– Derivative chemicals	103
– Detergents, soaps, and cleaners	103
– Pulp and paper	104
– Other direct uses	104
– Price	104
– Trade	105
– Potassium silicates	107
– Producing companies	107
– Salient statistics	107
– Consumption	108
– Construction industry	109
– Welding rods	109
– Detergents	109
– Molecular sieves	109
– Other	110
– Price	110
– Trade	110
– Calcium silicates	111
– Producing companies	111
– Salient statistics	111
– Magnesium silicates	112
– Producing companies	112
– Salient statistics	113
– Ethyl silicate	114
– Producing companies	114
– Salient statistics	114
– Precipitated silica	115
– Producing companies	115
– Salient statistics	115
– Consumption	116



– Elastomers	117
– Detergent and cosmetic auxiliaries	118
– Carrier material and free-flow agents	118
– Polymers and plastic products	118
– Other	118
– Price	118
– Silica gel	119
– Producing companies	119
– Salient statistics	119
– Consumption	120
– Food applications	121
– Adsorbents and desiccants	121
– Paint and coatings	121
– Plastics and textiles	121
– Pharmaceutical tableting	122
– Other	122
– Price	122
– Colloidal silica (silica sol)	122
– Producing companies	122
– Salient statistics	123
– Consumption	124
– Ceramics	124
– Coatings	124
– Pulp and paper	125
– Electronics	125
– Beverage clarification	125
– Textile processing	126
– Other	126
– Price	127
– Fumed silica	127
– Producing companies	127
– Salient statistics	128
– Consumption	128
– Silicones	129
– Paints and coatings	129
– Adhesives and sealants	129
– Other	129
– Price	130
– Fused silica	130
– Producing companies	130
– Salient statistics	130
– Consumption	131
– Trade	131
Central Europe	132
– Sodium silicates	132
– Producing companies	132
– Salient statistics	133
– Consumption	133

– Potassium silicate	133
– Precipitated silica	134
Commonwealth of Independent States (CIS)	134
– Sodium silicates	134
– Producing companies	134
– Salient statistics	135
– Consumption	135
– Trade	135
Middle East and Africa	136
– Sodium silicates	136
– Producing companies	136
– Salient statistics	137
– Consumption	137
– Trade	138
– Precipitated silica	138
– Fumed silica	139
– Producing companies	139
– Salient statistics	139
– Consumption	139
Japan	140
– Sodium silicates	140
– Producing companies	140
– Salient statistics	141
– Production	142
– Consumption	143
– Civil engineering	145
– Derivative chemicals	145
– Pulp and paper	145
– Detergent builders	145
– Other	145
– Price	145
– Trade	146
– Potassium silicates	147
– Producing companies	147
– Salient statistics	147
– Production	147
– Consumption	148
– Detergent builders	149
– Paint additives	149
– Welding rods	149
– Price	149
– Trade	149
– Calcium silicates	150
– Magnesium silicates	150
– Precipitated silica	150
– Producing companies	150
– Salient statistics	151
– Consumption	151

– Elastomers	152
– Agricultural products	152
– Paper	153
– Other	153
– Price	153
– Trade	153
– Silica gel	153
– Producing companies	153
– Salient statistics	154
– Consumption	154
– Desiccants	155
– Other	155
– Price	155
– Trade	155
– Colloidal silica	156
– Producing companies	156
– Salient statistics	156
– Consumption	157
– CMP	157
– Catalysts	157
– Other	157
– Price	157
– Trade	158
– Fumed silica	158
– Producing companies	158
– Salient statistics	158
– Consumption	158
– Silicone elastomers	159
– CMP	159
– Other	159
– Price	159
– Trade	159
– Fused silica	160
– Producing companies	160
– Salient statistics	160
– Consumption	161
– Electronic encapsulants	162
– Refractories and other	162
– Price	162
– Trade	162
China	162
– Sodium silicates	162
– Producing companies	162
– Salient statistics	164
– Consumption	166
– Price	168
– Trade	169
– Potassium silicate	171

– Producing companies	171
– Salient statistics	171
– Consumption	171
– Price	172
– Calcium silicate	172
– Producing companies	172
– Consumption	173
– Price	173
– Magnesium silicate	174
– Producing companies	174
– Consumption	174
– Price	174
– Zirconium silicate	175
– Producing companies	175
– Consumption	175
– Price	176
– Ethyl silicate	176
– Producing companies	176
– Consumption	177
– Price	177
– Other silicates	177
– Precipitated silica	178
– Producing companies	178
– Salient statistics	179
– Consumption	180
– Price	182
– Trade	182
– Silica gel	182
– Producing companies	182
– Salient statistics	183
– Consumption	184
– Trade	185
– Colloidal silica	185
– Producing companies	185
– Consumption	186
– Price	187
– Fumed silica	187
– Producing companies	187
– Salient statistics	188
– Consumption	189
– Price	190
– Fused silica	190
– Producing companies	190
– Consumption	191
– Price	192
Other Asia	192
– Sodium silicates	192
– Producing companies	192

– Salient statistics	194
– Trade	194
– Potassium silicate	196
– Producing companies	196
– Salient statistics	197
– Calcium silicate	197
– Producing companies	197
– Salient statistics	198
– Magnesium silicate	198
– Producing companies	198
– Salient statistics	198
– Zirconium silicate	199
– Producing companies	199
– Salient statistics	199
– Ethyl silicate	199
– Precipitated silica	199
– Producing companies	199
– Salient statistics	201
– Silica gel	201
– Producing companies	201
– Salient statistics	202
– Other specialty silicas	203
– Colloidal silica	203
– Fumed silica	204
– Fused silica	204
<b>Bibliography</b>	<b>205</b>

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