



# **Water-soluble Polymers:** *Technologies and Global Markets*

November 2017

*Abhigyan Sengupta*



Report Code: AVM147A

# Table of Contents

<b>Chapter 1: Introduction</b> .....	<b>1</b>
Study Goals and Objectives.....	1
Reasons for Doing This Study.....	1
Scope of Report.....	2
Research Methodology .....	2
Intended Audience.....	3
Information Sources.....	3
Geographic Breakdown.....	4
Analyst's Credentials.....	9
Related BCC Research Reports.....	9
<b>Chapter 2: Summary and Highlights</b> .....	<b>11</b>
<b>Chapter 3: Market and Technology Background</b> .....	<b>15</b>
Market Definition.....	15
Raw Material Analysis of Water-soluble Polymers Market .....	16
Synthetic Polymers .....	16
Natural Polymers.....	18
Value Chain Analysis .....	19
Supply Chain Analysis.....	20
Product Life Cycle Analysis.....	22
Future Outlook and Expectations .....	23
Company Market Share, 2016 .....	25
Quotes from Key Opinion Leaders.....	27
<b>Chapter 4: Market Breakdown by Origin</b> .....	<b>29</b>
Introduction .....	29
Market Dynamics .....	29
Drivers .....	29
Restraints.....	30
Synthetic Water-soluble Polymers.....	31
Natural Water-soluble Polymers .....	35
Mixed Water-soluble Polymers .....	40
<b>Chapter 5: Market Breakdown by Physical Form</b> .....	<b>45</b>
Introduction .....	45
Market Dynamics .....	45
Drivers .....	45
Restraints.....	46
Emulsion.....	46
Powder .....	50
Solutions .....	55
<b>Chapter 6: Market Breakdown by End-use Industry</b> .....	<b>60</b>
Introduction .....	60
Market Dynamics .....	60
Drivers .....	60
Restraints.....	61
Food Processing .....	63

Mining .....	68
Paper .....	71
Petrochemical and Oilfield Industry .....	75
Personal Care .....	78
Textiles .....	82
Water Treatment .....	86
Other Industries .....	90
<b>Chapter 7: Market Breakdown by Region .....</b>	<b>96</b>
Introduction .....	96
Market Dynamics .....	96
Drivers .....	96
Restraints.....	98
North America.....	98
Overview .....	98
Europe.....	103
Overview .....	103
Asia-Pacific .....	108
Overview .....	108
Rest of the World .....	113
Overview .....	113
<b>Chapter 8: Patent Review/ New Developments .....</b>	<b>119</b>
Patent Review by Country .....	119
Important Water-soluble Polymer Patents.....	121
Dry Water-soluble Polymer Particles .....	121
Cell Culture Support Using Water-soluble Polymers .....	122
Water-soluble Polymer Composition, Production Method for Water-soluble Polymer Composition, and Application for Water-soluble Polymer Composition .....	123
Method for Producing Water-soluble Polymer.....	123
Cosmetic Composition Comprising Sodium Polyacrylate and Water-soluble Polymer .....	124
Water-In-Oil Type Lip Cosmetic Composition Including Water-soluble Polymer .....	125
Separation of Suspensions of Solids Employing Water-soluble Polymer and a Chemical Agent.....	126
Synthetic Water-soluble Polymer for Dispersion Stabilizer of Graphene, Highly Stable Colloidal Graphene Solution Comprising Same Polymer, and Graphene Hydrogel and Graphene Aerogel Comprising Same Graphene Solution.....	127
Pharmaceutical Composition Comprising a Poorly Water-soluble Active Ingredient, a Surfactant and a Water-soluble Polymer .....	127
Negative Electrode Agent for Nonaqueous Electrolyte Secondary Battery, Negative Electrode for Nonaqueous Electrolyte Secondary Battery, and Nonaqueous Electrolyte Secondary Battery .....	128
Polishing Composition and Polishing Method.....	129
Cleaning Agent Container.....	130
Method for Simulating High-Pressure Paraffinic Froth Treatments .....	130
Tooth Whitening Product.....	131
Dry Water-soluble Polymer Particles .....	132
Thiol-Selective Water-soluble Polymer Derivatives .....	132
Liquid Antimicrobial Comprising a Water-soluble Polymer and a Water-soluble Antimicrobial Agent.....	133
Aqueous Composition Comprising a Water-soluble Polymer Compound Forming a Water-Resistant Film After Chemical Drying.....	134
Surface Treatment by Water-soluble Polymers and Lipids/Liposomes .....	135

Fluid Loss Control Agents and Compositions for Cementing Oil and Gas Wells Comprising Said Fluid Loss Control Agent .....	136
Water-soluble Polymer and Polymer Internal Lubricant .....	136
Thiol-Selective Water-soluble Polymer Derivatives .....	137
Metal Nanoparticle Composition with Water-soluble Polymer.....	138
Papermaking Method Using Fluid Dispersion Comprising Water-soluble Polymer.....	138
Articles of Manufacture Comprising Water-soluble Polymer Particles and Processes for Making Same .....	139
Papermaking Method Using Water-soluble Polymer Fluid Dispersion Composed of Fine Particles ....	140
Pharmaceutical Composition Comprising a Poorly Water-soluble Active Ingredient, a Surfactant and a Water-soluble Polymer .....	140
Water-soluble Polymers for Agrochemical Compositions .....	141
Water-soluble Polymers for Agrochemical Compositions .....	142
Rapidly Disintegrating Films for Delivery of Pharmaceutical or Cosmetic Agents .....	143
Compositions and Methods for Delivery of Poorly Soluble Drugs .....	143
Pharmaceutical Composition for Application to Nail .....	144
Low Dose Pharmaceutical Composition.....	145
Dispersing Agent for Agrochemicals and Fluid Dispersion Using the Same.....	146
<b>Chapter 9: Company Profiles .....</b>	<b>148</b>
<b>About BCC Research.....</b>	<b>183</b>
About BCC Research.....	184
BCC Membership .....	184
BCC Custom Research .....	184

# List of Tables

Summary Table: Global Market for Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	12
Table 1 Global Market for Synthetic Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	31
Table 2 Global Market for Synthetic Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	33
Table 3 Global Market for Synthetic Water-soluble Polymers, by Region, Through 2022 (\$ Millions).....	34
Table 4 Global Market for Natural Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	35
Table 5 Global Market for Natural Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	37
Table 6 Global Market for Natural Water-soluble Polymers, by Region, Through 2022 (\$ Millions).....	39
Table 7 Global Market for Mixed Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	40
Table 8 Global Market for Mixed Water-soluble Polymer, by End-use Industry, Through 2022 (\$ Millions) .....	41
Table 9 Global Market for Mixed Water-soluble Polymers, by Region, Through 2022 (\$ Millions).....	43
Table 10 Global Market for Emulsion Water-soluble Polymers, by Origin, Through 2022 (\$ Millions) ....	46
Table 11 Global Market for Emulsion Water-soluble Polymers, by End-user Industry, Through 2022 (\$ Millions) .....	47
Table 12 Global Market for Emulsion Water-soluble Polymers, by Region, Through 2022 (\$ Millions) ....	49
Table 13 Global Market for Powder Water-soluble Polymers, by Origin, Through 2022 (\$ Millions).....	50
Table 14 Global Market for Powder Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	52
Table 15 Global Market for Powder Water-soluble Polymers, by Region, Through 2022 (\$ Millions) .....	54
Table 16 Global Market for Water-soluble Polymer Solutions, by Origin, Through 2022 (\$ Millions).....	55
Table 17 Global Market for Water-soluble Polymer Solutions, by End-use Industry, Through 2022 (\$ Millions) .....	56
Table 18 Global Market for Water-soluble Polymer Solutions, by Region, Through 2022 (\$ Millions) .....	58
Table 19 Global Market for Water-soluble Polymers for Food Processing, by Origin, Through 2022 (\$ Millions) .....	64
Table 20 Global Market for Water-soluble Polymers for Food Processing, by Physical Form, Through 2022 (\$ Millions) .....	65
Table 21 Global Market for Water-soluble Polymers for Food Processing, by Region, Through 2022 (\$ Millions) .....	67
Table 22 Global Market for Water-soluble Polymers for Mining, by Origin, Through 2022 (\$ Millions) ..	68
Table 23 Global Market for Water-soluble Polymer for Mining, by Physical Form, Through 2022 (\$ Millions) .....	69
Table 24 Global Market for Water-soluble Polymers for Mining, by Region, Through 2022 (\$ Millions) .	70
Table 25 Global Market for Water-soluble Polymers for Paper, by Origin, Through 2022 (\$ Millions) ....	72
Table 26 Global Market for Water-soluble Polymers for Paper, by Physical Form, Through 2022 (\$ Millions) .....	73
Table 27 Global Market for Water-soluble Polymers for Paper, by Region, Through 2022 (\$ Millions)...	74
Table 28 Global Market for Water-soluble Polymers for Petrochemical and Oilfield Industry, by Origin, Through 2022 (\$ Millions).....	75
Table 29 Global Market for Water-soluble Polymers for Petroleum and Oilfield Industry, by Physical Form, Through 2022 (\$ Millions).....	76

Table 30 Global Market for Water-soluble Polymers for Petroleum and Oilfield Industry, by Region, Through 2022 (\$ Millions) .....	77
Table 31 Global Market for Water-soluble Polymers for Personal Care, by Origin, Through 2022 (\$ Millions) .....	79
Table 32 Global Market for Water-soluble Polymers for Personal Care, by Physical Form, Through 2022 (\$ Millions) .....	80
Table 33 Global Market for Water-soluble Polymer for Personal Care, by Region, Through 2022 (\$ Millions) .....	81
Table 34 Global Market for Water-soluble Polymers for Textiles, by Origin, Through 2022 (\$ Millions) .	83
Table 35 Global Market for Water-soluble Polymers for Textiles, by Physical Form, Through 2022 (\$ Millions) .....	84
Table 36 Global Market for Water-soluble Polymers for Textiles, by Region, Through 2022 (\$ Millions)	85
Table 37 Global Market for Water-soluble Polymers for Water Treatment, by Origin, Through 2022 (\$ Millions) .....	86
Table 38 Global Market for Water-soluble Polymers for Water Treatment, by Physical Form, Through 2022 (\$ Millions) .....	88
Table 39 Global Market for Water-soluble Polymers for Water Treatment, by Region, Through 2022 (\$ Millions) .....	89
Table 40 Global Market for Water-soluble Polymers for Other Industries, by Origin, Through 2022 (\$ Millions) .....	91
Table 41 Global Market for Water-soluble Polymers for Other Industries, by Physical Form, Through 2022 (\$ Millions) .....	92
Table 42 Global Market for Water-soluble Polymers for Other Industries, by Region, Through 2022 (\$ Millions) .....	93
Table 43 North American Market for Water-soluble Polymers, by Origin, Through 2022 (\$ Millions).....	99
Table 44 North American Market for Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	100
Table 45 North American Market for Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	101
Table 46 North American Market for Water-soluble Polymers, by Country, Through 2022 (\$ Millions)	102
Table 47 European Market for Water-soluble Polymers, by Origin, Through 2022 (\$ Millions).....	104
Table 48 European Market for Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions)	105
Table 49 European Market for Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	106
Table 50 European Market for Water-soluble Polymers, by Country, Through 2022 (\$ Millions).....	107
Table 51 Asia-Pacific Market for Water-soluble Polymers, by Origin, Through 2022 (\$ Millions) .....	108
Table 52 Asia-Pacific Market for Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	109
Table 53 Asia-Pacific Market for Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	110
Table 54 Asia-Pacific Market for Water-soluble Polymers, by Country, Through 2022 (\$ Millions) .....	112
Table 55 Rest of World Market for Water-soluble Polymers, by Origin, Through 2022 (\$ Millions) .....	113
Table 56 Rest of the World Market for Water-soluble Polymers, by Physical Form, Through 2022 (\$ Millions) .....	114
Table 57 Rest of World Market for Water-soluble Polymers, by End-use Industry, Through 2022 (\$ Millions) .....	115
Table 58 Rest of the World Market for Water-soluble Polymers, by Country, Through 2022 (\$ Millions) .....	117
Table 59 Akzo Nobel's Financials, Through 2016 (\$ Billions) .....	149
Table 60 Akzo Nobel's Recent Developments .....	149
Table 61 Arkema's Financials, Through 2016 (\$ Millions) .....	151

Table 62 Ashland’s Financials, Through 2016 (\$ Millions) .....	153
Table 63 BASF’s Financials, Through 2016 (\$ Millions).....	154
Table64 China National Petroleum Corporation’s Financials, Through 2016 (\$ Millions).....	157
Table 65 CP Kelco’s Recent Developments .....	160
Table 66 Dow’s Financials, Through 2016 (\$ Millions).....	161
Table 67 Drilling Specialties Company’s Financials, Through 2016 (\$ Millions) .....	162
Table 68 DuPont’s Financials, Through 2016 (\$ Millions).....	164
Table 69 Gelita AG’s Recent Developments .....	167
Table70 Kemira’s Financials, Through 2016 (\$ Billions).....	168
Table71 Kuraray’s Financials, Through 2016 (\$ Billions) .....	169
Table72 LG Chem Ltd.’s Financials, Through 2015 (\$ Billions).....	171
Table 73 Michelman’s Recent Developments .....	173
Table 74 Nippon Shokubai Financials, Through 2016 (\$ Billions) .....	174
Table75 Nitta Gelatin’s Financials, Through 2016 (\$ Millions) .....	176
Table 76 Noltex’s Financials, Through 2015 (\$ Millions) .....	177
Table 77 SABIC’s Financials, Through 2016 (\$ Billions).....	179
Table 78 Sumitomo Seika’s Financials, Through 2016 (\$ Millions) .....	182

# List of Figures

Summary Figure: Global Market for Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	13
Figure 1 Water-soluble Polymers: Value Chain .....	19
Figure 2 Water-soluble Polymers: Supply Chain.....	20
Figure 3 Product Lifecycle Graph .....	22
Figure 4 Company Market Share for Water-soluble Polymers, 2016 (%).....	25
Figure 5 Global Market for Synthetic Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions) .....	32
Figure 6 Global Market for Synthetic Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	33
Figure 7 Global Market for Synthetic Water-soluble Polymers, by Region, 2016-2022 (\$ Millions).....	34
Figure 8 Global Market for Natural Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions).36	
Figure 9 Global Market for Natural Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	38
Figure 10 Global Market for Natural Water-soluble Polymers, by Region, 2016-2022 (\$ Millions).....	39
Figure 11 Global Market for Mixed Water-soluble Polymer, by Physical Form, 2016-2022 (\$ Millions) ...	41
Figure 12 Global Market for Mixed Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	42
Figure 13 Global Market for Mixed Water-soluble Polymers, by Region, 2016-2022 (\$ Millions).....	43
Figure 14 Global Market for Emulsion Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions) .....	47
Figure 15 Global Market for Emulsion Water-soluble Polymer, by End-user Industry, 2016-2022 (\$ Millions) .....	48
Figure 16 Global Market for Emulsion Water-soluble Polymers, by Region, 2016-2022 (\$ Millions) .....	49
Figure 17 Global Market for Powder Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions).....	51
Figure 18 Global Market for Powder Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	53
Figure 19 Global Market for Powder Water-soluble Polymers, by Region, 2016-2022 (\$ Millions) .....	54
Figure 20 Global Market for Water-soluble Polymer Solutions, by Origin, 2016-2022 (\$ Millions).....	55
Figure 21 Global Market for Water-soluble Polymer Solutions, by End-use Industry, 2016-2022 (\$ Millions) .....	57
Figure 22 Global Market for Water-soluble Polymer Solutions, by Region, 2016-2022 (\$ Millions) .....	58
Figure 23 Capital Expenditure for Water Treatment in the U.S., 2012-2015 (\$ Millions) .....	61
Figure 24 Paper and Pulp Industry Demand, by Country, 2014-2015 (\$ Billions) .....	62
Figure 25 Metallurgy Industry Production, by Country, 2015 (%) .....	63
Figure 26 Global Market for Water-soluble Polymers for Food Processing, by Origin, 2016-2022 (\$ Millions) .....	64
Figure 27 Global Market for Water-soluble Polymers for Food Processing, by Physical Form, 2016-2022 (\$ Millions) .....	66
Figure 28 Global Market for Water-soluble Polymers for Food Processing, by Region, 2016-2022 (\$ Millions) .....	67
Figure 29 Global Market for Water-soluble Polymers for Mining, by Origin, 2016-2022 (\$ Millions) .....	69
Figure 30 Global Market for Water-soluble Polymers for Mining, by Physical Form, 2016-2022 (\$ Millions) .....	70
Figure 31 Global Market for Water-soluble Polymers for Mining, by Region, 2016-2022 (\$ Millions).....	71
Figure 32 Global Market for Water-soluble Polymers for Paper, by Origin, 2016-2022 (\$ Millions) .....	72
Figure 33 Global Market for Water-soluble Polymers for Paper, by Physical Form, 2016-2022 (\$ Millions) .....	73



Figure 34 Global Market for Water-soluble Polymers for Paper, by Region, 2016-2022 (\$ Millions).....	74
Figure 35 Global Market for Water-soluble Polymers for Petroleum and Oilfield Industry, by Origin, 2016-2022 (\$ Millions) .....	76
Figure 36 Global Market for Water-soluble Polymers for Petroleum and Oilfield Industry, by Physical Form, 2016-2022 (\$ Millions).....	77
Figure 37 Global Market for Water-soluble Polymers for Petroleum and Oilfield Industry, by Region, 2016-2022 (\$ Millions) .....	78
Figure 38 Global Market for Water-soluble Polymers for Personal Care, by Origin, 2016-2022 (\$ Millions) .....	79
Figure 39 Global Market for Water-soluble Polymer for Personal Care, by Physical Form, 2016-2022 (\$ Millions) .....	81
Figure 40 Global Market for Water-soluble Polymers for Personal Care, by Region, 2016-2022 (\$ Millions) .....	82
Figure 41 Global Market for Water-soluble Polymers for Textile, by Origin, 2016-2022 (\$ Millions).....	83
Figure 42 Global Market for Water-soluble Polymers for Textiles, by Physical Form, 2016-2022 (\$ Millions) .....	84
Figure 43 Global Market for Water-soluble Polymers for Textiles, by Region, 2016-2022 (\$ Millions).....	85
Figure 44 Global Market for Water-soluble Polymers for Water Treatment, by Origin, 2016-2022 (\$ Millions) .....	87
Figure 45 Global Market for Water-soluble Polymers for Water Treatment, by Physical Form, 2016-2022 (\$ Millions) .....	88
Figure 46 Global Market for Water-soluble Polymers for Water Treatment, by Region, 2016-2022 (\$ Millions) .....	90
Figure 47 Global Market for Water-soluble Polymers for Other Industries, by Origin, 2016-2022 (\$ Millions) .....	92
Figure 48 Global Market for Water-soluble Polymers for Other Industries, by Physical Form, 2016-2022 (\$ Millions) .....	93
Figure 49 Global Market for Water-soluble Polymers for Other Industries, by Region, 2016-2022 (\$ Millions) .....	94
Figure 50 Food and Beverage Retail Sale Growth Rate, by Region, 2004 and 2009 (%) .....	97
Figure 51 North American Market for Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions).....	99
Figure 52 North American Market for Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions) .....	100
Figure 53 North American Market for Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	102
Figure 54 North American Market for Water-soluble Polymers, by Country, 2016-2022 (\$ Millions)....	103
Figure 55 European Market for Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions).....	104
Figure 56 European Market for Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions) ....	105
Figure 57 European Market for Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions).....	106
Figure 58 European Market for Water-soluble Polymers, by Country, 2016-2022 (\$ Millions).....	107
Figure 59 Asia-Pacific Market for Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions) .....	108
Figure 60 Asia-Pacific Market for Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions)..	109
Figure 61 Asia-Pacific Market for Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	111
Figure 62 Asia-Pacific Market for Water-soluble Polymers, by Country, 2016-2022 (\$ Millions) .....	112
Figure 63 Rest of World Market for Water-soluble Polymers, by Origin, 2016-2022 (\$ Millions) .....	113
Figure 64 Rest of the World Market for Water-soluble Polymers, by Physical Form, 2016-2022 (\$ Millions) .....	114
Figure 65 Rest of World Market for Water-soluble Polymers, by End-use Industry, 2016-2022 (\$ Millions) .....	116
Figure 66 Rest of World Market for Water-soluble Polymers, by Country, 2016-2022 (\$ Millions) .....	117

Figure 67 Patent Share for Water-soluble Polymers, by Region, 2016 (%) .....	119
Figure 68 Patent Share for Water-soluble Polymers, by Year, 2012-2016 (%) .....	120



*About BCC Research*

## *About BCC Research*

With our unparalleled 45-year history, BCC Research provides comprehensive analysis of global market sizing, forecasting and industry intelligence, covering markets where advances in science and technology are improving the quality, standard and sustainability of businesses, economies and lives.

## *BCC Membership*

From market sizing and forecasts, to opportunity assessments and competitive analyses, our ever-expanding library gives you the data, insights and intelligence required to ensure your project is a success. Members benefit from ongoing, unlimited access to the category or collections of their choice, and most membership packages pay for themselves within two to three reports being accessed.

Did you buy this report? You may qualify to apply your purchase price towards a full membership. Call 866/285-7215 or email [info@bccresearch.com](mailto:info@bccresearch.com) to request a demo.

## *BCC Custom Research*

Our experts provide custom research projects to those working to identify new markets, introduce new products, validate existing market share, analyze competition and assess the potential for products to impact existing markets. With impressive academic credentials and broad and deep knowledge of global industrial markets, our independent analysts and consultants develop the facts, figures, analysis and assessments to inform the decisions that will move your company ahead. Confidential inquiries to: [custom@bccresearch.com](mailto:custom@bccresearch.com) or 781-205-2429.

## DISCLAIMER

The information developed in this report is intended to be as reliable as possible at the time of publication and is of a professional nature. This information does not constitute managerial, legal or accounting advice, nor should it be considered as a corporate policy guide, laboratory manual or an endorsement of any product, as much of the information is speculative in nature. BCC Research and the author assume no responsibility for any loss or damage that might result from reliance on the reported information or from its use.

ISBN: 1-62296-568-X  
November-2017