



World Well Stimulation Materials

Industry Study with Forecasts for **2015 & 2020**

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Table of Contents

EXECUTIVE SUMMARY

MARKET ENVIRONMENT

General	4
World Economic Overview	5
Recent Historical Trends	6
Macroeconomic Outlook	8
World Demographic Outlook	12
World Manufacturing Outlook	13
World Oil & Gas Outlook	15
World Petroleum Outlook	18
Reserves & Exploration	19
Production	22
Crude Oil Pricing Patterns	25
World Natural Gas Outlook	27
Reserves & Exploration	28
Production	31
Natural Gas Pricing Patterns	35
Oilfield Services Overview	37
Environmental & Regulatory Issues	39

TECHNOLOGY

General	44
Well Drilling & Completion	46
Horizontal Drilling	46
Multilateral Drilling	47
Coiled Tubing Drilling	49
Underbalanced Drilling	50
Well Completion	50
Well Stimulation Technologies	52
Hydraulic Fracturing	52
Nitrogen Fracturing	55
Acidizing	55
Types	56
Uses	57
Retardation of Acid Reactions	59
Fracture Acidizing	60
Other Well Stimulation Technologies	61
Well Stimulation Fluids	63
Fracturing Fluids	64
Foamed Fracturing Fluids	67
Acidizing Fluids	68
Foamed Acidizing Fluids	68
Seismology	69

OVERVIEW

General	70
Proppants	74
Ceramic	78
Clay-Based Ceramic	80
Sintered Bauxite Ceramic	81
Coated Ceramic	82
Sand	82
Coated Frac Sand	84
Raw Frac Sand	86
Other Proppants	88

Base Fluid Materials	89
Gelling Agents	92
Guar Gum	93
Surfactant	94
Other Gelling Agents	95
Acids	96
Inorganic	97
Organic	97
Foaming Agents	98
Crosslinking Agents	99
Other Base Fluid Materials	101
Fluid Additives	102
Breakers	105
Acid Breakers	107
Oxidative Breakers	108
Enzyme Breakers	108
Friction Reducers	110
Fluid Loss Control Agents	111
Nonemulsifiers	112
Biocides	113
Corrosion Inhibitors	114
Other Additives	116
Gases	118
Nitrogen	120
Carbon Dioxide	122
Other Well Stimulation Materials	122

UNITED STATES

General	125
Oil & Gas Outlook	126
Well Stimulation Material Demand	130
Proppants	133
Base Fluid Materials	135
Fluid Additives	137
Gases	139
Other Well Stimulation Materials	141

RUSSIA

General	143
Oil & Gas Outlook	144
Well Stimulation Material Demand	147
Proppants	149
Base Fluid Materials	151
Fluid Additives	152
Gases & Other Well Stimulation Materials	153

CHINA

General	155
Oil & Gas Outlook	157
Well Stimulation Material Demand	160
Proppants	162
Base Fluid Materials	164
Fluid Additives	165
Gases & Other Well Stimulation Materials	166

CANADA

General	168
Oil & Gas Outlook	169
Well Stimulation Material Demand	171
Proppants	173
Base Fluid Materials	175
Fluid Additives	177
Gases & Other Well Stimulation Materials	178

OTHER REGIONS

General	181
Latin America	182
Europe	191
Asia/Pacific	201
Africa/Mideast	209

INDUSTRY STRUCTURE

General	215
Market Share	218
Ceramic Proppants	222
Sand Proppants	223
Fluids & Additives	224
Gases	225
Industry Restructuring	225
Cooperative Agreements	228
Marketing & Distribution	230
Research & Development	232
Competitive Strategies	234

COMPANY PROFILES

Air Products and Chemicals	237
Akzo Nobel	239
Albemarle Corporation	241
Ashland Incorporated	243
Badger Mining	246
Baker Hughes	248
BASF SE	251
Canfrac Sands	253
CARBO Ceramics	254
Carmeuse Group	258
Celanese Corporation	259
Champion Technologies	260
Chevron Phillips Chemical	262
China GengSheng Minerals	264
Dow Chemical	266
DuPont (EI) de Nemours	270
Enerchem International	272
Fairmount Minerals	273
FMC Corporation	275
FORES LLC	276
Frac Tech Services	277
Guizhou LinHai New Material Manufacturing	279
Halliburton Company	280
Huber (JM) Corporation	283

(continued on following page)

Table of Contents

COMPANY PROFILES

(continued from previous page)

JSC Borovichi Refractories	284
L'Air Liquide	285
Linde Group	287
Mineração Curimbaba	291
Momentive Specialty Chemicals	292
Nalco Holding	294
Navdeep Chemicals	296
Nexeo Solutions	297
Praxair Incorporated	298
PT Tesso Tetra Chemika	300
Rhodia SA	301
Rio Tinto Group	304
RPC Incorporated	306
Saint-Gobain	308
Schlumberger Limited	310
SCR-Sibelco	314
Trekhgorny Ceramic Factory	315
US Silica	316
Yixing Orient Petroleum Proppant	317
Other Companies Involved in the World Well Stimulation Materials Industry	319

List of Tables/Charts

EXECUTIVE SUMMARY

1 Summary Table	3
-----------------------	---

MARKET ENVIRONMENT

1 World Gross Domestic Product by Region ..	11
2 World Population by Region	13
3 World Manufacturing Value Added by Region	15
4 World Oil & Gas Output	18
5 World Petroleum Proved Reserves by Country, 2010	21
Cht World Petroleum Proved Reserves by Region, 2010	22
6 World Crude Oil Production by Region	24
Cht World Crude Oil Production by Region, 2010	25
Cht Average Annual Spot Prices for Crude Oil, 2000-2010	27
7 World Natural Gas Proved Reserves by Country, 2010	30
Cht World Natural Gas Proved Reserves by Country, 2010	31
8 World Natural Gas Production by Region ..	34
Cht World Natural Gas Production by Region, 2010	35
Cht Average Annual Spot Prices for Natural Gas, 2000-2010	37

9 World Oilfield Service Indicators	39
---	----

OVERVIEW

1 World Well Stimulation Materials Demand by Type & Country	73
Cht World Well Stimulation Materials Demand by Country, 2010	74
2 World Proppant Demand by Type & Country	77
Cht World Proppant Demand by Country, 2010	78
3 World Ceramic Proppant Demand by Country	80
4 World Sand Proppant Demand by Type & Country	84
5 World Demand for Other Proppants by Country	89
6 World Base Fluid Demand by Type & Country	91
Cht World Base Fluid Material Demand by Country, 2010	92
7 World Fluid Additive Demand by Type & Country	104
Cht World Fluid Additive Demand by Country, 2010	105
8 World Well Stimulation Gases Demand by Type & Country	120
9 World Demand for Other Well Stimulation Materials	124

UNITED STATES

1 United States: Key Indicators for Well Stimulation Material Demand	130
2 United States: Well Stimulation Material Demand by Type	132
3 United States: Proppant Demand by Type	135
4 United States: Base Fluid Material Demand by Type	137
5 United States: Fluid Additive Demand by Type	139
6 United States: Well Stimulation Gases Demand by Type	141
7 United States: Other Well Stimulation Material Demand	142

RUSSIA

1 Russia: Key Indicators for Well Stimulation Material Demand	147
2 Russia: Well Stimulation Material Demand by Type	149
3 Russia: Proppant Demand by Type	151
4 Russia: Base Fluid Demand by Type	152
5 Russia: Fluid Additive Demand by Type ..	153
6 Russia: Gases & Other Well Stimulation Material Demand	154

CHINA

1 China: Key Indicators for Well Stimulation Material Demand	160
2 China: Well Stimulation Material Demand by Type	162
3 China: Proppant Demand by Type	164
4 China: Base Fluid Material Demand	165
5 China: Fluid Additive Demand by Type ...	166
6 China: Gases & Other Well Stimulation Material Demand by Type	167

CANADA

1 Canada: Key Indicators for Well Stimulation Material Demand	171
2 Canada: Well Stimulation Material Demand by Type	173
3 Canada: Proppant Demand by Type	175
4 Canada: Base Fluid Material Demand by Type	176
5 Canada: Fluid Additive Demand by Type .	178
6 Canada: Gases & Other Well Stimulation Material Demand	180

OTHER REGIONS

1 Latin America: Key Indicators for Well Stimulation Material Demand	185
2 Latin America: Well Stimulation Material Demand by Type	189
3 Latin America: Well Stimulation Material Demand by Country	191
4 Europe: Key Indicators for Well Stimulation Material Demand	195
5 Europe: Well Stimulation Material Demand by Type	198
6 Europe: Well Stimulation Material Demand by Country	201
7 Asia/Pacific: Key Indicators for Well Stimulation Material Demand	204
8 Asia/Pacific: Well Stimulation Material Demand by Type	206
9 Asia/Pacific: Well Stimulation Material Demand by Country	208
10 Africa/Mideast: Key Indicators for Well Stimulation Material Demand	212
11 Africa/Mideast: Well Stimulation Material Demand by Type	214

INDUSTRY STRUCTURE

1 World Well Stimulation Material Sales by Company, 2010	217
Cht World Well Stimulation Material Market Share, 2010	219
2 Selected Acquisitions & Divestitures	227
3 Selected Cooperative Agreements	229

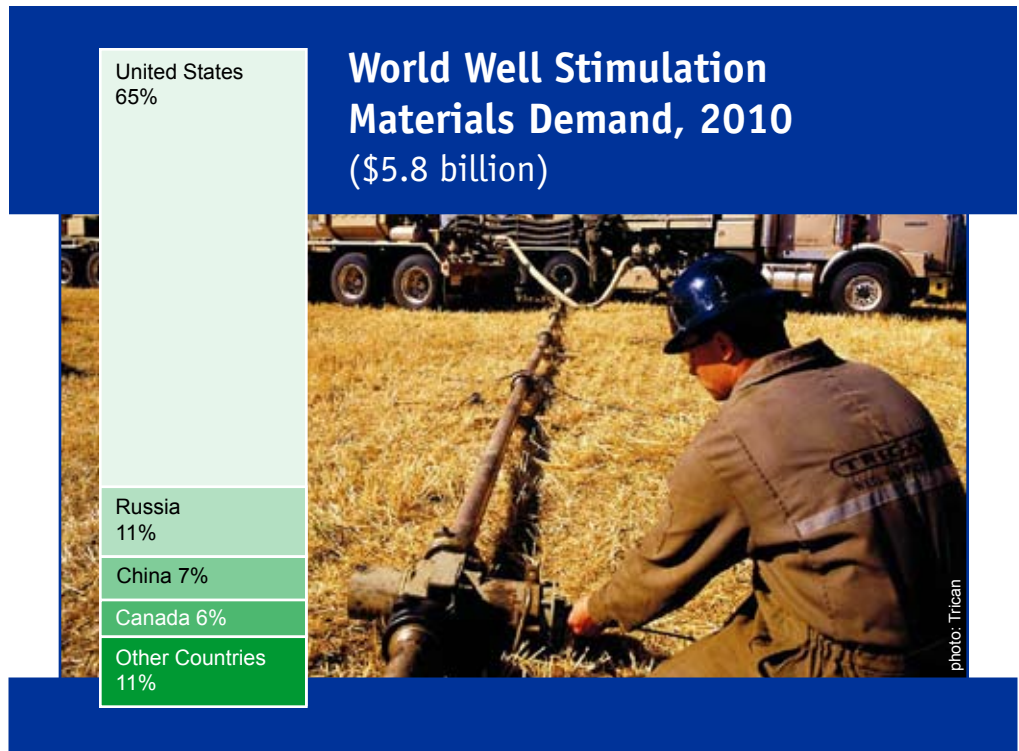
Advances will be driven by relatively high oil prices that have spurred increased drilling activity and justified the additional costs associated with well stimulation processes.

World demand to rise 13.9% annually through 2015

World demand for well stimulation materials is projected to increase nearly 14 percent annually through 2015. Overall, advances will be driven by relatively high oil prices that have spurred increased drilling activity and justified the additional costs associated with hydraulic fracturing and other well stimulation processes. Additionally, more sophisticated techniques, such as the use of multistage fracturing procedures in horizontal wells, will boost demand for proppants and other materials used to optimize oil and gas production. Among the four major national markets, Canada is expected to register the fastest growth due to its ongoing recovery from a sharp downturn in upstream oil and gas activity in recent years.

Proppants to continue as largest product category

Proppants -- typically sand or ceramic material -- will continue to be the largest product category, accounting for nearly half of overall well stimulation material demand. Proppant demand has been so strong in 2010 and the early months of 2011 that a number of suppliers, including overall market leader CARBO Ceramics, have added capacity or are in the process of doing so. In CARBO's case, these efforts have included the addition of resin coated sand proppants to their line of ceramic proppants. Numerous sand proppant suppliers have



also recently expanded capacity, and a number of new market entrants have begun to supply raw frac sand for use in well stimulation applications.

US to remain top market

The United States will remain by far the largest well stimulation materials market, accounting for nearly two-thirds of overall demand. The US produced about 13 percent of the world's oil and gas in 2010, but more than 45 percent of the oil and gas wells drilled in the world that year were in the US. Oil drilling will continue to grow substantially after a sharp decline in 2009. Gas drilling levels will be sustained by efforts to develop shale gas formations such as the Barnett Shale in Texas; the Haynesville Shale in

Texas and Louisiana; and the Marcellus Shale in the eastern part of the US.

Outside the US, shale gas offers considerable potential to boost demand for well stimulation materials. Hydraulic fracturing, the most common stimulation technique, is considered indispensable to the process of producing shale oil and gas from deep shale formations. While the US is further along in terms of shale gas development than elsewhere in the world, formations in Mexico, South America, Europe, Australia, Africa, China, and South Asia have generated tremendous interest on the part of large multinational producers, national energy companies, and smaller independent concerns.

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Sample Text, Table & Chart

RUSSIA

Russia: Well Stimulation Material Demand

Russia is one of the world's largest markets for well stimulation materials, far smaller than the US but larger than any other. The well stimulation market grew fast over the past ten years. While the Russian rig count declined during that period, much of the decline was due to the removal of older, less capable equipment, resulting in a net gain in true drilling capability.

Prior to the wide proliferation of hydraulic fracturing across Russia, the prevalent technique to boost oil well production is the use of very small skin fractures. Since the year 2000 or so, however, large fractures in low permeability wells have become increasingly common. This growth in hydraulic fracturing was one of the main reasons behind the significant increase in crude oil production in Russia during this decade, despite a large number of fairly old wells.

Demand for well stimulation materials in Russia is projected to increase more than 50 percent to \$5.8 billion in 2015. This growth, which is far outpacing the global market, will contribute to Russia's increased gas production. Russia is one of the two top oil and gas producing nations in the world, with only in older fields that have been producing for decades. The growing demand for well stimulation materials is a natural market development because Russia holds far and away the largest natural gas reserves of any nation in the world, there is significant exploration and drilling activity taking place at nearly all times. High regional natural gas prices and strong demand from China (with new pipelines between Russia and China in the final stages of negotiation) portend favorable exploration activity. More gas producers are becoming ever more receptive to the use of stimulation materials. Approximately 70 percent of Russia's crude oil reserves are found in low permeable rock formations, and the vast majority of these are difficult to recover without stimulation.

147

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**SAMPLE
TEXT**

TABLE VI-1

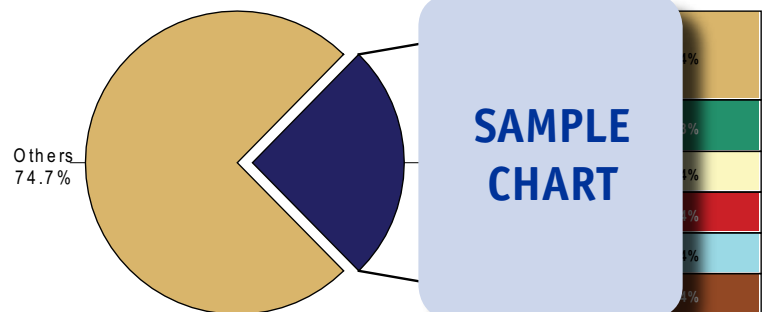
RUSSIA: KEY INDICATORS FOR WELL STIMULATION MATERIAL DEMAND

Item	2000	2005	2010	2015	2020
Population (million persons)	142.0	142.0	142.0	142.0	142.0
GDP/capita	4,000	4,000	4,000	4,000	4,000
Gross Domestic Product (bil 2009\$)	570	570	570	570	570
Oil & Gas Production (quad Btu)	16	16	16	16	16
Crude Oil Production (mil bbl)	5	5	5	5	5
Dry Natural Gas Prdn (tril cu ft)	4	4	4	4	4
Drilling Rigs in Use	10	10	10	10	10
Wells Drilled	100	100	100	100	100

**SAMPLE
TABLE**

CHART X-1

WORLD WELL STIMULATION MATERIALS MARKET SHARE (\$5.8 billion, 2010)

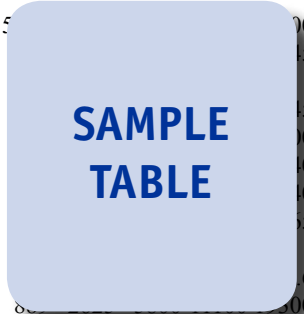


**SAMPLE
CHART**

Sample Profile, Table & Forecast

TABLE VI-2
RUSSIA: WELL STIMULATION MATERIAL DEMAND BY TYPE
 (million dollars)

Item	2000	2005	2010	2015	2020
Wells Drilled	5	5	5	5	5
000\$ material/well					
Well Stimulation Material Demand					
Proppants					
Base Fluid Materials					
Fluid Additives					
Gases & Other					
% Russia					
World Well Stimulation Mtls Demand	8	8	8	8	8



COMPANY PROFILES

Mineracao Curimbaba Limitada
 Av. Joao Pinheiro, 3665
 Pocos de Caldas 37704
 Brazil
 55-35-3729-7600
 http://www.curimbaba.com.br

Annual Sales
 Employee
 Key Products

SAMPLE PROFILE

Mineracao Curimbaba is a major producer of bauxite ores for the oil and gas, chemical, agriculture, and aluminum smelting industries. The Company exports approximately 65 percent of its production, mainly to other South American countries, North America, Europe and Asia. Mineracao Curimbaba is part of Curimbaba Grupo (Brazil).

The Company is involved in the world well stimulation materials industry through the manufacture of SINTERBALL, SINTERLITE, SINTERLITE LOCK and SINTERBLAST bauxite proppants for use during the fracturing of deep gas and oil wells. SINTERBALL high-strength bauxite proppants are suitable for high-stress, high-temperature, high-flow rate hydraulic fracture treatments. Mineracao Curimbaba's SINTERLITE low-density, spherical-grained products are designed for use in high-temperature, high-closure stress conditions. These proppants are engineered to provide thermal stability, and high crush and chemical resistance. The Company makes SINTERLITE LOCK bauxite low-density proppants using a mixture of angular bauxite grains with spherical SINTERLITE bauxite grains. These products are designed to prevent proppant flowback in high-temperature, high-

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“Demand for base fluid materials in Russia is projected to increase nearly 13 percent per year through 2015 to \$210 million. Market growth will benefit as more expensive gelling agents such as micropolymer and polymer-free gelling systems replace traditional polymer gelling systems in some applications. New lower viscosity gels are also increasingly used in Russia to control fracture geometry and reduce the chances of breaking into water reservoirs in the process.”
 --Section VI, pg. 151

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OTHER STUDIES

World Catalysts

Global catalyst demand will rise six percent per year through 2014. Chemical synthesis and polymerization catalysts will lead gains, based on rapid growth in the Middle East, Asia, and Brazil. Petroleum refining catalyst demand will expand at a healthy pace, but will be limited by weak motor vehicle fuel demand in developed countries. This study analyzes the \$12.8 billion world catalyst industry, with forecasts for 2014 and 2019 by material, product, market, world region and for 25 countries. It also evaluates company market share and profiles industry players.

#2730 March 2011..... \$6200

World Oilfield Chemicals

Global oilfield chemical demand will rise 8.6 percent yearly through 2014, driven by a recovery in the oil and gas industry and higher oil and gas prices. North America will remain the dominant market while the Central and South American region grows the fastest. Stimulation and enhanced oil recovery chemicals will lead gains. This study analyzes the \$13.7 billion world oilfield chemical industry, with forecasts for 2014 and 2019 by product, world region and for 26 countries. It also evaluates market share and profiles industry players.

#2702 December 2010 \$5900

Well Stimulation Materials

US demand for oil and gas well stimulation materials is projected to increase 14 percent annually through 2014. Gains will be buoyed by renewed efforts to reduce dependence on foreign energy sources. The largest segment, proppants, will also be one of the fastest growing, along with gases and other materials. This study analyzes the \$3.8 billion US well stimulation material industry, with forecasts for 2014 and 2019 by product and US regional market. It also evaluates company market share and profiles industry players.

#2636 May 2010 \$4900

Refinery Chemicals

US refinery chemical demand will rise 5 percent annually through 2014, driven by the use of new, higher-value products that offer enhanced performance. Merchant hydrogen will remain the largest product type and grow the fastest. Petroleum treatment and conversion will remain the largest and fastest growing applications. This study analyzes the \$5.5 billion US refinery chemical industry, with forecasts for 2014 and 2019 by application and product. It also evaluates company market share and profiles industry players.

#2629 April 2010 \$4700

Oilfield Chemicals

US oilfield chemical demand will grow 4.4 percent annually through 2013. The market will decline in the short term then rebound by the end of the forecast period, based mainly on swings in oil and gas prices. Stimulation chemicals and EOR products will be the fastest growing segments. Acids and polymers used in stimulation fluids will see growth. This study analyzes the US oilfield chemical industry, with forecasts for 2013 and 2018 by product and raw material. It also evaluates company market share and profiles industry players.

#2546 September 2009..... \$4800

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