

MARKETS AND PROFITABILITY

Profitability Forecast: Methanol and Derivatives - 2019

Global

September 2019



This Report was prepared by Nexant, Inc. ("Nexant"). Except where specifically stated otherwise in this Report, the information contained herein is prepared on the basis of information that is publicly available, and contains no confidential third party technical information to the best knowledge of Nexant. Aforesaid information has not been independently verified or otherwise examined to determine its accuracy, completeness or financial feasibility. Neither Nexant, Subscriber nor any person acting on behalf of either assumes any liabilities with respect to the use of or for damages resulting from the use of any information contained in this Report. Nexant does not represent or warrant that any assumed conditions will come to pass.

The Report is submitted on the understanding that the Subscriber will maintain the contents confidential except for the Subscriber's internal use. The Report should not be reproduced, distributed or used without first obtaining prior written consent by Nexant. Each Subscriber agrees to use reasonable effort to protect the confidential nature of the Report.

Copyright © by Nexant Inc. 2019. All rights reserved.



Contents

1	Executive Summary	1
1.1	Introduction.....	1
2	Economic Assumptions and Methodology	2
2.1	Introduction.....	2
2.2	Scenarios	3
2.3	Crude Oil	4
2.3.1	Crude Oil Price Basis	4
2.3.2	Crude Oil Scenarios	5
2.3.3	Low Crude Oil Price	7
2.3.4	Medium Crude Oil Price	8
2.3.5	High Crude Oil Price	8
2.4	Economic Growth	9
2.4.1	Forecasting Methodology/Assumptions	9
2.4.2	Global Economic Growth	9
2.5	Inflation	12
2.6	Exchange Rates	13
2.6.1	Forecasting Methodology and Assumptions	13
2.6.2	Outlook for the Euro	13
2.7	Profitability Forecasting Methodology	14
2.7.1	Introduction.....	14
2.7.2	Price Influences.....	15
2.7.3	Petrochemical Production Costs	17
2.7.4	Driving Forces for Profitability	19
2.7.5	Cyclicality of the Petrochemical Industry	23
3	Petrochemical and Polymer Industry Profitability	24
3.1	Asia Pacific.....	24
3.2	United States.....	26
3.3	Western Europe	28
4	Petrochemical Feedstocks and Refined Products Pricing	30
4.1	Naphtha.....	32
4.2	Gasoline	33
4.3	Fuel Oil	34
4.4	Natural Gas	35
4.5	Ethane	36
4.6	Propane.....	37
4.7	Coal.....	38
5	Methanol.....	39
5.1	Introduction.....	39
5.1.1	Pricing Basis and Mechanism	39
5.1.2	Regional Price Definitions	39



5.2	Asia Pacific.....	40
5.2.1	Profitability Projections.....	40
5.2.2	Price Projections.....	42
5.3	United States.....	44
5.3.1	Profitability Projections.....	44
5.3.2	Price Projections.....	46
5.4	Western Europe.....	48
5.4.1	Profitability Projections.....	48
5.4.2	Price Projections.....	50
5.5	Regional Price Spreads.....	52
6	Methyl Tertiary Butyl Ether (MTBE).....	53
6.1	Introduction.....	53
6.1.1	Pricing Basis and Mechanism.....	53
6.1.2	Regional Price Definitions.....	53
6.2	Asia Pacific.....	54
6.2.1	Profitability Projections.....	54
6.2.2	Price Projections.....	56
6.3	United States.....	58
6.3.1	Profitability Projections.....	58
6.3.2	Price Projections.....	60
6.4	Western Europe.....	62
6.4.1	Profitability Projections.....	62
6.4.2	Price Projections.....	63
6.5	Regional Price Spreads.....	65
7	Acetic Acid.....	66
7.1	Introduction.....	66
7.1.1	Pricing Basis and Mechanism.....	66
7.1.2	Regional Price Definitions.....	66
7.2	Asia Pacific.....	67
7.2.1	Profitability Projections.....	67
7.2.2	Price Projections.....	69
7.3	United States.....	70
7.3.1	Profitability Projections.....	70
7.3.2	Price Projections.....	72
7.4	Western Europe.....	73
7.4.1	Profitability Projections.....	73
7.4.2	Price Projections.....	75
7.5	Regional Price Spreads.....	76



Figures

Figure 1	Crude Oil Price Scenarios	6
Figure 2	World Economic Performance and Outlook	10
Figure 3	United States GDP Price Deflator	12
Figure 4	Euro Versus US Dollar	13
Figure 5	Petrochemical Simulator Forecast Methodology.....	14
Figure 6	Petrochemical Price Influences	16
Figure 7	Production Cost Elements	17
Figure 8	Price Influences in the Cost Curve	19
Figure 9	Return on Capital and Operating Rate	20
Figure 10	Western Europe Average Return on Investment	21
Figure 11	United States Average Return on Investment	21
Figure 12	Petrochemical Industry Profitability and Operating Rate.....	23
Figure 13	Asian Petrochemical Industry Profitability	24
Figure 14	United States Petrochemical Industry Profitability	26
Figure 15	Western Europe Petrochemicals Industry Profitability	28
Figure 16	United States Petrochemical Feedstock and Refined Product Prices	31
Figure 17	United States Petrochemical Feedstock Prices Relative to WTI Crude Oil	31
Figure 18	Global Naphtha Prices.....	32
Figure 19	Global Premium Gasoline Prices	33
Figure 20	Global High Sulphur Fuel Oil Prices	34
Figure 21	Global Natural Gas Prices	35
Figure 22	United States Ethane Prices	36
Figure 23	Global Propane Prices.....	37
Figure 24	China Coal Prices	38
Figure 25	Asia Pacific Methanol Margins	41
Figure 26	Asia Pacific Methanol Costs and Margins	42
Figure 27	Asia Pacific Methanol Price Forecast Scenarios.....	43
Figure 28	United States Methanol Margin Projections	45
Figure 29	United States Methanol Costs and Margins	47
Figure 30	United States Methanol Price Forecast Scenarios.....	47
Figure 31	Western Europe Methanol Margin Projections	49
Figure 32	Western Europe Methanol Costs and Margins.....	51
Figure 33	Western Europe Methanol Price Forecast Scenarios	51
Figure 34	Global Methanol Prices	52
Figure 35	Asia Pacific MTBE Margins	55
Figure 36	Asia Pacific MTBE Costs and Margins.....	56
Figure 37	Asia Pacific MTBE/Gasoline Price Ratio	57
Figure 38	Asia Pacific MTBE Price Forecast Scenarios.....	57
Figure 39	United States MTBE Margin Projections	59
Figure 40	United States MTBE Costs and Margins	60
Figure 41	United States MTBE/Gasoline Price Ratio	61
Figure 42	United States MTBE Price Forecast Scenarios.....	61



Figure 43	Western Europe MTBE Margins.....	62
Figure 44	Western Europe MTBE Costs and Margins	63
Figure 45	Western Europe MTBE/Gasoline Price Ratio.....	64
Figure 46	Western Europe MTBE Price Forecast Scenarios	64
Figure 47	Global MTBE Prices	65
Figure 48	Asia Pacific Acetic Acid Margins	68
Figure 49	Asia Pacific Acetic Acid Costs and Margins	69
Figure 50	Asia Pacific Acetic Acid Price Forecast Scenarios.....	69
Figure 51	United States Acetic Acid Margin Projections	71
Figure 52	United States Acetic Acid Costs and Margins	72
Figure 53	United States Acetic Acid Price Forecast Scenarios.....	72
Figure 54	Western Europe Acetic Acid Margins.....	74
Figure 55	Western Europe Acetic Acid Costs and Margins.....	75
Figure 56	Western Europe Acetic Acid Price Forecast Scenarios	75
Figure 57	Global Acetic Acid Methanol Prices	76

Tables

Table 1	World Economic Growth.....	10
Table 2	Asia Pacific Methanol Profitability and Price Projections	41
Table 3	United States Methanol Profitability and Price Projections	45
Table 4	Western Europe Methanol Profitability and Price Projections.....	49
Table 5	Asia Pacific MTBE Profitability and Price Projections	55
Table 6	United States MTBE Profitability and Price Projections	59
Table 7	Western Europe MTBE Profitability Projections.....	62
Table 8	Asia Pacific Acetic Acid Profitability and Price Projections	68
Table 9	United States Acetic Acid Profitability and Price Projections	71
Table 10	Western Europe Acetic Acid Profitability Projections	74