

MARKETS AND PROFITABILITY

Market Analytics: Aromatics - 2019

Western Europe

October 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
1.2	Aromatics Market Overview	3
1.3	Benzene	5
1.4	Xylenes.....	9
1.5	Toluene	16
2	The Aromatics Industry	17
2.1	Introduction.....	17
2.2	Market Summary.....	18
2.3	Consumption of Aromatics	21
2.3.1	Benzene	21
2.3.2	Toluene	22
2.3.3	Mixed Xylenes.....	22
2.3.4	<i>para</i> -Xylene	23
2.4	Market Coverage.....	23
3	Benzene.....	24
3.1	Global	24
3.1.1	Key Developments	24
3.1.2	Consumption	24
3.1.2.1	Styrene.....	25
3.1.2.2	Cumene/Phenol	26
3.1.2.3	Cyclohexane	27
3.1.2.4	Nitrobenzene.....	28
3.1.2.5	LAB/BAB	28
3.1.2.6	Others	29
3.1.3	Supply	32
3.1.4	Supply, Demand and Trade	35
3.2	Western Europe	38
3.2.1	Key Developments	38
3.2.2	Consumption	38
3.2.3	Supply	41
3.2.4	Supply, Demand and Trade	46
4	<i>para</i>-Xylene.....	48
4.1	Global.....	48
4.1.1	Key Developments	48
4.1.2	Consumption	49
4.1.2.1	PTA	49
4.1.2.2	DMT	50
4.1.2.3	Polyester	50
4.1.3	Supply	53



4.1.4	Supply, Demand and Trade	57
4.2	Western Europe	61
4.2.1	Key Developments	61
4.2.2	Consumption	61
4.2.3	Supply	62
4.2.4	Supply, Demand and Trade	65
5	Toluene.....	66
5.1	Introduction.....	66
5.2	Global	67
5.3	Western Europe	69
6	Mixed Xylenes.....	71
6.1	Introduction.....	71
6.2	Global	72
6.3	Western Europe	74

Appendices

A	Market Dynamics Forecasting Methodology.....	75
A.1.1	Capacity Availability and Forecasting	75
A.1.1	End-Use Consumption Forecasting	75
A.1.1.1	End-Use Sector Growth	76
A.1.1.2	Penetration (New Application Growth).....	76
A.1.1.3	Short-term Influences.....	77
A.1.2	Monomer Consumption Forecasting	77
A.1.3	Production and Trade Forecasting.....	78
B	The Aromatics Industry	79
B.1	Technology.....	79
B.1.1	Production from Pygas.....	80
B.1.2	Production from Reformate.....	83
B.1.3	Production from Coal	86
B.1.4	Production from Hydro-dealkylation (HDA), Toluene Disproportionation (TDP) and Transalkylation (TA)	86
B.1.5	<i>para</i> -Xylene Recovery.....	90

Figures

Figure 1	Aromatics Molecules	17
Figure 2	Main Chemical Uses of Aromatics	21
Figure 3	Global Benzene Demand, 2019-e	30
Figure 4	Global GDP Growth vs. Benzene Consumption Growth.....	30
Figure 5	Global Benzene Consumption.....	31
Figure 6	Global Benzene Capacity Share by Marketer in 2019-e	33
Figure 7	Global Benzene Capacity Additions	34
Figure 8	Global Benzene Capacity	34
Figure 9	Global Benzene Supply and Demand	36
Figure 10	Regional Benzene Net Exports/Imports	37
Figure 11	Western Europe Benzene Consumption, 2019-e.....	40



Figure 12	Location of Benzene Plants in Western Europe.....	45
Figure 13	Western Europe Benzene Supply, Demand and Trade	47
Figure 14	Global <i>para</i> -Xylene Demand, 2019-e.....	52
Figure 15	Global GDP Growth vs. <i>para</i> -Xylene Consumption Growth.....	52
Figure 16	Global <i>para</i> -Xylene Consumption by Region	53
Figure 17	Global <i>para</i> -Xylene Capacity Share by Marketer in 2019-e.....	55
Figure 18	Global <i>para</i> -Xylene Capacity Additions.....	56
Figure 19	Global <i>para</i> -Xylene Capacity.....	56
Figure 20	Global <i>para</i> -Xylene Supply and Demand	59
Figure 21	Global <i>para</i> -Xylene Net Exports(Imports)	60
Figure 22	Western Europe <i>para</i> -Xylene Consumption, 2019-e	62
Figure 23	Location of <i>para</i> -Xylene Plants in Western Europe	64
Figure 24	Western Europe <i>para</i> -Xylene Supply, Demand and Trade.....	65
Figure 25	Global Toluene Net Exports(Imports).....	68
Figure 26	Western Europe Toluene Net Trade	69
Figure 27	Global Mixed Xylene Net Trade	73
Figure 28	Western Europe Mixed Xylene Net Trade.....	74
Figure 29	End-Use Consumption Drivers.....	76
Figure 30	Monomer Consumption Drivers	77
Figure 31	Trade Considerations	78
Figure 32	Global Benzene Capacity by Process, 2019	80
Figure 33	Effect of Feedstock Onstream Cracker Aromatics Yields	81
Figure 34	Effect of Severity Onstream Cracker Aromatics Yields	81
Figure 35	BTX Recovery From Pygas Block Flow Diagram.....	82
Figure 36	Simplified Block Flow Diagram for a Simple Aromatics Plant	84
Figure 37	Continuous Catalytic Reforming Process Flow Diagram	85
Figure 38	Toluene Hydrodealkylation Process Flow Diagram	87
Figure 39	Toluene Disproportionation Process Flow Diagram.....	88
Figure 40	Transalkylation Process Flow Diagram	89
Figure 41	Xylenes Recovery Block Flow Diagram	91

Tables

Table 1	Global Benzene Consumption by Derivative.....	30
Table 2	Global Benzene Consumption by Region	31
Table 3	Global Benzene Supply and Demand	36
Table 4	Western Europe Benzene Consumption by Derivative	40
Table 5	Benzene Capacity in Western Europe	43
Table 6	Western Europe Benzene Supply, Demand and Trade	47
Table 7	Global <i>para</i> -Xylene Consumption by End-Use.....	52
Table 8	Global <i>para</i> -Xylene Consumption by Region	53
Table 9	Global <i>para</i> -Xylene Supply and Demand.....	59
Table 10	Western Europe <i>para</i> -Xylene Consumption by End-Use.....	62
Table 11	<i>para</i> -Xylene Capacity in Western Europe	63
Table 12	Western Europe <i>para</i> -Xylene Supply, Demand and Trade.....	65