

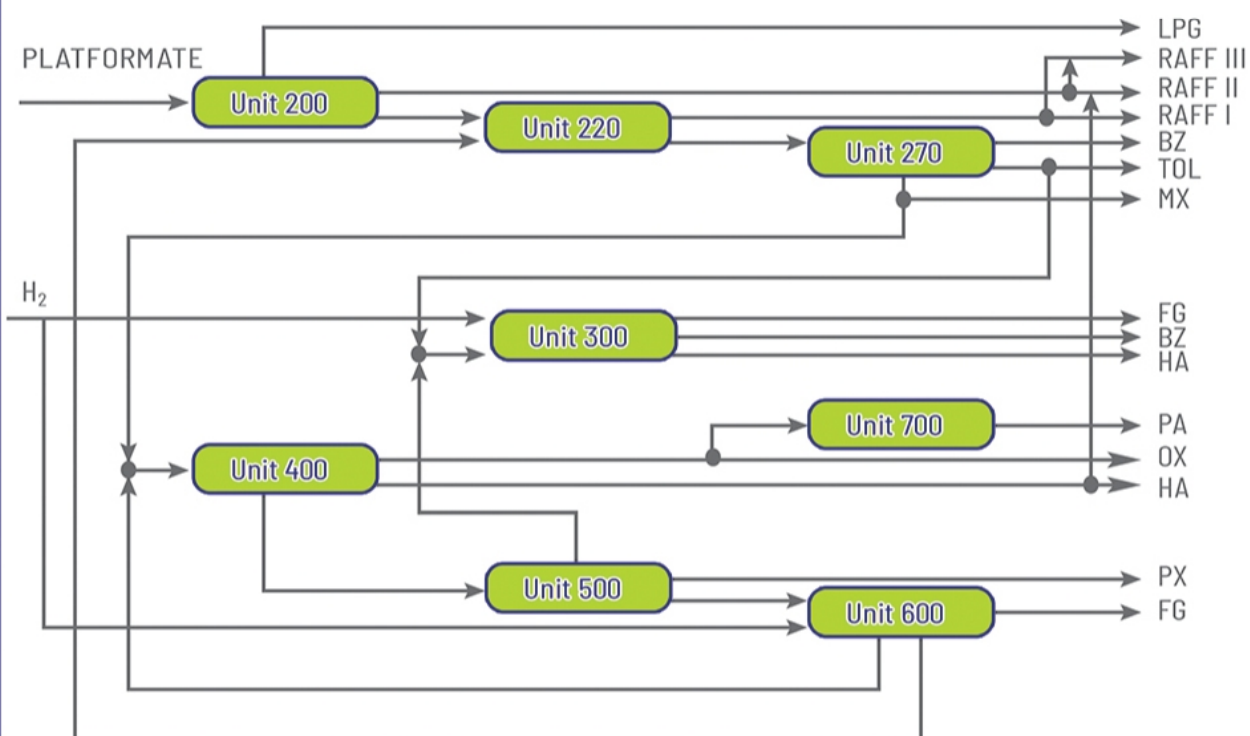


Esfahan Petrochemical
C o m p a n y

PRODUCTS SPECIFICATION



Production Process Flow Diagram



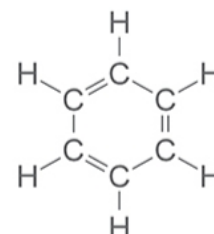
BZ=Benzene PX=Para-xylene MX=Mixed-xylene RAFF=Raffinate FG=Fuel Gas
 TOL=Toluene OX=Ortho-xylene PA=Phthalic Anhydride HA=Heavy Aromatics LPG=Liquified Petroleum Gas

NAME: Benzene

CAS NO: 71-43-2

OTHER DESIGNATION: Cyclohexatriene / C_6H_6

MANUFACTURER: EPC (Under UOP's License)



BENZENE

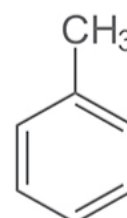
#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Purity wt. %	99.90min	ASTM D 4492-10
2	Non Aromatics wt. %	0.070max	ASTM D 4492-10
3	Toluene wt. %	0.015max	ASTM D 4492-10
4	Distillation range °C at 760 mm Hg	1.0max including 80.1	ASTM D 850-02
5	Appearance	Clear liquid free of sedimentation or haze at 18.3 to 25.6 °C	VISUAL
6	Total Sulfur wt. ppm	1.0max	ASTM D 4045-04
7	Copper corrosion	Pass (1a or 1b)	ASTM D 849-11
8	Color, Pt-co scale	10max	ASTM D 1209-11
9	Acid wash color	Pass with 1	ASTM D 848-09
10	Acidity	None detected	ASTM D 847-08
11	Specific Gravity at 15.56 °C	0.882 - 0.886	ASTM D 4052-11
12	SO ₂ /H ₂ S	None detected	ASTM D 853-04
13	Solidification point °C	5.45min	ASTM D 852-08
14	Thiophene w. ppm	0.6max	ASTM D 5623-09

NAME: Toluene

CAS NO: 108-88-3

OTHER DESIGNATION: Methyl Benzene / C₇H₈

MANUFACTURER: EPC (Under UOP's License)



TOLUENE

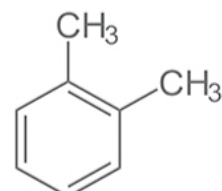
#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Purity wt. %	99.9min	ASTM D 2360-11
2	Non Aromatics wt. %	0.1max	ASTM D 2360-11
3	Benzene wt. %	0.03max	ASTM D 2360-11
4	Distillation range °C at 760 mm Hg	1.0max including 110.6	ASTM D 850-02
5	Appearance	Clear liquid free of sedimentation or haze at 18.3 to 25.6 °C	VISUAL
6	Total Sulfur wt. ppm	1.0max	ASTM D 4045-04
7	Copper corrosion	Pass (1a or 1b)	ASTM D 849-11
8	Color, Pt-co scale	20max	ASTM D 1209-11
9	Acid wash color	2max	ASTM D 848-09
10	Acidity	None detected	ASTM D 847-08
11	Specific Gravity at 15.56 °C	0.869 - 0.873	ASTM D 4052-11
12	S02/H2S	None detected	ASTM D 853-04

NAME: Ortho Xylene

CAS NO: 95-47-6

OTHER DESIGNATION: 1,2 Dimethy Benzene / C_8H_{10}

MANUFACTURER: EPC (Under UOP's License)



ORTHO XYLENE

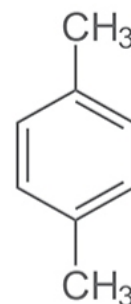
#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Purity wt. %	98.0min	UOP 744-86
2	Non Aromatics wt. %	0.5max	ASTM D 2360-11
3	Benzene plus C9 and heavier aromatics wt. %	1.0max	UOP 744-86
4	Ortho, Meta & Para Xylene plus Toluene plus Ethylbenzene wt. %	98.5max	UOP 744-86
5	Distillation range °C at 760 mm Hg	2.0max including 144.4	ASTM D 850-02
6	Total Sulfur wt. ppm	1.0max	ASTM D 4045-04
7	Color, Pt-co scale	20max	ASTM D 1209-11
8	Acidity	None detected	ASTM D 847-08
9	Hydrocarbon residue after evaporation wt. ppm	20max	ASTM D 1353-13
10	S02/H2S	None detected	ASTM D 853-04
11	Specific Gravity at 15.56 °C	0.88-0.89	ASTM D 4052-11

NAME: Para Xylene

CAS NO: 106-42-3

OTHER DESIGNATION: 1/4 Dimethyl Benzene / C_8H_{10}

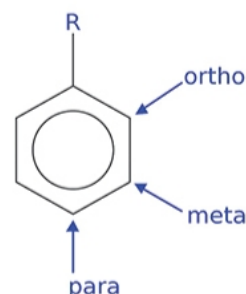
MANUFACTURER: EPC (Under UOP's License)



PARA XYLENE

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Purity wt. %	99.7min	ASTM D 3798-03
2	Non Aromatics wt. %	0.1max	ASTM D 3798-03
3	m-Xylene wt. %	0.2max	ASTM D 3798-03
4	o-Xylene wt. %	0.1max	ASTM D 3798-03
5	Ethylbenzene wt. %	0.2max	ASTM D 3798-03
6	Toluene wt. %	0.1max	ASTM D 3798-03
7	Appearance	Clear liquid free of sedimentation or haze at 18.3 to 25.6°C	VISUAL
8	Color, Pt-co scale	20max	ASTM D 1209-11
9	Distillation range °C at 760 mm Hg	2.0max including 138.3	ASTM D 850-02
10	Total Sulfur wt. ppm	0.1max	ASTM D 4045-04
11	Specific Gravity at 15.56°C	0.865-0.867	ASTM D 4052-11

NAME: Mixed Xylene
CAS NO: 1330-20-7
OTHER DESIGNATION: —
MANUFACTURER: EPC (Under UOP's License)



MIXID XYLENE (Isomer grade)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Non Aromatics wt. %	3.0max	ASTM D 2360-11
2	Distillation range °C at 760 mm Hg	10max	ASTM D 850-02
3	Initial Boiling point °C at 760mm Hg	135min	ASTM D 850-02
4	Dry point °C at 760 mm Hg	145max	ASTM D 850-02
5	Appearance	Clear liquid free of sedimentation or haze at 18.3 to 25.6°C	VISUAL
6	Copper corrosion	pas (1a or 1b)	ASTM D 849-11
7	Color, Pt-co scale	20max	ASTM D 1209-11
8	Acid wash color	6max	ASTM D 848-09
9	Acidity	None detected	ASTM D 847-08
10	Specific Gravity at 15.56°C	0.865-0.877	ASTM D 4052-11
11	S02/H2S	None detected	ASTM D 853-04

PRODUCTS & SPECIFICATION

PRODUCTS	BENZENE	TOLUENE	ORTHO XYLENE	PARA XYLENE	MIXID XYLENE	PHTHALIC ANHYDRIDE(PA)	RAFFINATE I	RAFFINATE II	RAFFINATE III
FINAL(t/y)	56000	72000	22000	44000	75000	40000	50000	20000	50000
Purity(%)	99.9 min	99.9 min	98 min	99.7 min	According to Relevant Standard	99.85 min	According to Relevant Standard	According to Relevant Standard	According to Relevant Standard





NAME: Phthalic Anhydride

CAS NO: 85-44-9

OTHER DESIGNATION: Isobenzofuran-1, 3 dione / $C_8H_4O_3$

MANUFACTURER: EPC (Under Rolle chim's License)

PHTHALIC ANHYDRIDE

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	PA Content, wt. %	99.85min	ROLLECHIM PA/AM01/3
2	Melting point, °C	131.6max	ASTM E-324-99(WITHDRAWN)
3	Maleic Anhydride Content wt. %	0.05max	ROLLECHIM PA/AM01/3
4	Color Index to Hazen	20max	ASTM D 3366-03
5	Color Index to Hazen After 90 min at 250°C	30max	ASTM D 3366-03
6	Phthalide Content, wt. %	0.02max	ROLLECHIM PA/AM01/3



NAME: Raffinate I (Light Naphtha)
MANUFACTURER: EPC (Under UOP's License)

RAFFINATE I (Light Naphtha)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Normal Paraffins wt. %	30max	ASTM-5134-98
2	ISO Paraffins wt. %	70max	ASTM-5134-98
3	Total Naphthenes wt. %	10max	ASTM-5134-98
4	Total Olefins wt. %	1.5max	ASTM-5134-98
5	Total Aromatics wt. %	1max	ASTM-5134-98
6	RON	60±2	ASTM D 2699
7	I.B.P °c	35min	ASTM D 850-02/ASTM D 86-05
8	F.B.P °c	142max	ASTM D 850-02/ASTM D 86-05
9	Specific Gravity at 15.56 °c	0.67-0.69	ASTM D 4052-11
10	Vapor pressure (psi)	<8.3	ASTM D 323-08
11	Total sulfur wt.ppm	2max	ASTM D 4055-04

NAME: Raffinate II (C9 Aromatics)
MANUFACTURER: EPC (Under UOP's License)

RAFFINATE II (C9 Aromatics)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Non Aromatics wt. %	3max	UOP 744-86
2	Benzene wt. %	0.1max	UOP 744-86
3	Toluene wt. %	0.1max	UOP 744-86
4	EB+PX+MX+OX	4max	UOP 744-86
5	C9 Aromatics wt. %	75min	UOP 744-86
6	C10+ Aromatics wt. %	25max	UOP 744-86
7	Specific Gravity at 15.56 °c	0.88 - 0.89	ASTM D 4052-11
8	I.B.P °c	160	ASTM D 850-02/ASTM D 86-05
9	F.B.P °c	220max	ASTM D 850-02/ASTM D 86-05
10	RON	>105	ASTM D 2699-04
11	Corrosion	1a	ASTM D 130-04
12	Gum mg/100ml	wash:4.2-unwash:10.4	ASTM D 381
13	Induction Period, min	>700	ASTM D 525
14	Total Sulfur wt. ppm	1max	ASTM D 4045-99
15	Vapor pressure (psi)	<0.1	ASTM D 323-99A
16	Color, pt-co scale	-16	ASTM D 1209-11
17	Flash point °c	38	ASTM D 92-05A

NAME: Raffinate III
MANUFACTURER: EPC

RAFFINATE III (A 80)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Normal Paraffins wt. %	20max	ASTM D 5134-98
2	ISO Paraffins wt. %	50max	ASTM D 5134-98
3	Total Naphthenes wt. %	8max	ASTM D 5134-98
4	Total Olefins wt. %	0.7max	ASTM D 5134-98
5	Total Aromatics wt. %	30max	ASTM D 5134-98
6	RON	80min	ASTM D 2699
7	I.B.P °c	35	ASTM D 850-02/ASTM D 86-05
8	F.B.P °c	220max	ASTM D 850-02/ASTM D 86-05
9	Total sulfur wt.ppm	10max	ASTM D 4045-04
10	Specific Gravity at 15.56 °c	0.7-0.75	ASTM D 4052-11
11	corrosion	1a	ASTM D 130-04
12	Gum mg/100ml	wash:0.5-unwash: 6.6	ASTM D 381
13	Induction Period, min	>700	ASTM D 525
14	Vapor pressure (psi)	6-8	ASTM D 323-08

NAME: Raffinate III
MANUFACTURER: EPC

RAFFINATE III (A-92)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Non Aromatic wt. %	59min	UOP-744-86
2	Total Aromatic wt. %	35max	ASTM D 5134-98
3	Benzene	0.1max	UOP-744-86
4	Toluene	15max	UOP-744-86
5	RON	92min	ASTM D 2699
6	I.B.P °c at 760 mmHg	35	ASTM D 850-02/ASTM D 86-05
7	F.B.P °c	220max	ASTM D 850-02/ASTM D 86-05
8	Specific Gravity at 15.56 °c	0.73-0.76	ASTM D 4052-11
9	Total sulfur (wt.ppm)	10max	ASTM D 4045-04
10	Vapor pressure (psi)	<6	ASTM D 323-08
11	corrosion	1a	ASTM D 130-04
12	Gum mg/100ml	wash:0.5-unwash: 6.6	ASTM D 381
13	Induction Period, min	>700	ASTM D 525

NAME: Raffinate III
MANUFACTURER: EPC

RAFFINATE III (A-97)

#	PROPERTY	SPECIFICATION VALUE	TEST METHOD
1	Non Aromatic wt. %	65max	UOP-744-86
2	Total Aromatic wt. %	35min	ASTM D 5134-98
3	RON	97min	ASTM D 2699
4	I.B.P °c	35	ASTM D 850-02/ASTM D 86-05
5	D.P °c	220max	ASTM D 850-02/ASTM D 86-05
6	Total sulfur (wt.ppm)	10max	ASTM D 4045-04
7	Specific Gravity at 15.56 °c	0.73-0.76	ASTM D 4052-11
8	corrosion	1a	ASTM D 130-04
9	Gum mg/100ml	wash:0.5-unwash: 6.6	ASTM D 381
10	Induction Period, min	>700	ASTM D 525
11	Vapor pressure (psi)	<6	ASTM D 323-08



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