

2003 Worldwide Refining Survey

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Survey Editor

All figures are
as of January 1, 2004

All figures in barrels per calendar day (b/cd)

LEGEND

Numbers identify processes in table

Coking

1. Fluid coking
2. Delayed coking
3. Other

Thermal process

1. Thermal cracking
2. Visbreaking

Catalytic cracking

1. Fluid
2. Other

Catalytic reforming

1. Semiregenerative
2. Cyclic
3. Continuous regen.
4. Other

Catalytic hydrocracking

1. Distillate upgrading
2. Residual upgrading
3. Lube oil manufacturing
4. Other
- c. Conventional (high pressure) hydrocracking: (>100 barg or 1,450 psig)
- m. Mild to moderate hydrocracking (<100 barg or 1,450 psig)

Catalytic hydrotreating

1. Pretreatment of cat reformer feeds
2. Other naphtha desulfurization
3. Naphtha aromatics saturation
4. Kerosine/jet desulfurization
5. Diesel desulfurization
6. Distillate aromatics saturation
7. Other distillates
8. Pretreatment of cat cracker feeds
9. Other heavy gas oil hydrotreating
10. Resid hydrotreating
11. Lube oil polishing
12. Post hydrotreating of FCC naphtha
13. Other

Alkylation

1. Sulfuric acid
2. Hydrofluoric acid

Polymerization/Dimerization

1. Polymerization
2. Dimerization

Aromatics

1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. Cumene

Isomerization

1. C₄ feed
2. C₅ feed
3. C₅ and C₆ feed

Oxygenates

1. MTBE
2. ETBE
3. TAME
4. Other

Hydrogen

- Production:
1. Steam methane reforming
 2. Steam naphtha reforming
 3. Partial oxidation
 - a. Third-party plant
- Recovery:
4. Pressure swing adsorption
 5. Cryogenic
 6. Membrane
 7. Other

NOTES

- A Formerly listed as ChevronTexaco
B Formerly listed as Flying J Refinery
C Formerly listed as Phillips 66 Co.
D Formerly listed as Isab SPA

- E Formerly listed as Narli Petroleum Refining Industry & Commerce Inc.
F Formerly listed as Sarpom
G City name changed from Tokuyama to Shunan.
H Formerly listed as Komitek.

- I Formerly listed as Norsi Oil.
J Formerly listed as Nizhnekamsk Oil Refinery.
K Formerly listed as Russian Investment Co..
L Formerly listed as Hurricane Hydrocarbons.

- M Formerly listed as Mineraloelraffinerie Oberrhein GMBH(g)
N Formerly listed as Cie. de Raffinage et de Distribution Total France

- O Formerly listed as Atofina Petrochemicals, Inc.
P Formerly listed as Elf Oil UK Ltd.
Q Formerly listed as Orion Refining Corp.
R Formerly listed as ConocoPhillips.

- S Formerly listed as Williams Energy Services
T Formerly listed as Praoil
U Formerly listed as ConocoPhillips

Capacity definitions:

Capacity expressed in barrels per calendar day (b/cd) is the maximum number of barrels of input that can be processed during a 24-hour period, after making allowances for the following: (a) Types and grades of inputs to be processed, (b) Types and grades of products to be manufactured, (c) Environmental constraints associated with refinery operations, (d) Scheduled downtime such as mechanical problems, repairs, and slowdown. Capacity expressed in barrels per stream day (b/sd) is the amount a unit can process when running at full capacity under optimal feedstock and product slate conditions. An asterisk (*) beside a refinery location indicates that the number has been converted from b/sd to b/cd using the conversion factor 0.95 for crude and vacuum distillation units and 0.9 for all downstream cracking and conversion units.

Hydrogen:

Hydrogen volumes presented here represent either generation or upgrading to 90+% purity.

Catalytic reforming:

1. Semiregenerative reforming is characterized by shutdown of the reforming unit at specified intervals, or at the operators's convenience, for in situ catalyst regeneration.
2. Cyclic regeneration reforming is characterized by continuous or continual regeneration of catalyst in situ in any one of several reactors that can be isolated from and returned to the reforming operation. This is accom-

plished without changing feed rate or octane.

3. Continuous regeneration reforming is characterized by the continuous addition of this regenerated catalyst to the reactor.
4. "Other" includes nonregenerative reforming (catalyst is replaced by fresh catalyst) and moving-bed catalyst systems.

REFINERY REMOVALS

Name	Location	Country	Crude b/cd	Reason
Addinol Mineralol GMBH	Krumpa	Germany	4,533	Shutdown in 1998.
American International Refining	Lake Charles, La.	US	30,000	Shut down.
Caltex (Philippines) Inc.	Batangas	Philippines	86,500	Operating as an oil terminal as of Oct. 2003.
Canal Refining	Church Point, La.	US	30,000	Shutdown.
ExxonMobil Refining & Supply	Adelaide	Australia	74,000	Shut down.
Idemitsu Kosan Co. Ltd.	Himeji, Hyogo	Japan	76,000	Shut down.
Sociir	Moanda	Congo, Zaire	15,000	Decommissioned, used as storage facility.

NEW REFINERIES

Name	Location	Country	Crude b/cd	
Paramount	Long Beach, Calif.	US	52,000	Added back in. Mistakenly removed from last report.
Bosicor Refinery Ltd.	Karachi	PAKISTAN	30,000	