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The relevance of reliability technology  
application to chemical process systems is

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discussed and assessed. Field data collection, classification and analysis methodologies applicable to existing process systems are developed. These are validated for a chlorine/caustic soda plant in Iraq, and one in Switzerland. Availability improvement techniques and strategies relevant to such existing process systems are developed and

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their values are demonstrated for the Iraqi plant. The study indicates that a significant availability improvement can be achieved by the adoption of suitable reliability and availability improvement programmes...

This report presents a cost analysis of Chlorine production from sodium chloride. The process examined is a typical

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diaphragm process. In this process, an aqueous solution of sodium chloride (brine) is decomposed electrolytically in a diaphragm cell, producing Chlorine. Caustic soda (50 wt%) and hydrogen are also generated as products. This report was developed based essentially on the following reference(s): (1) "Chlorine", Ullmann's

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Encyclopedia of Industrial Chemistry, 7th edition (2) EP Patent 1427871, issued to Industrie De Nora in 2011 Keywords: Chlor-Alkali, Caustic Soda, NaOH

Letter from the Secretary of the Army  
Transmitting a Letter from the Chief of  
Engineers, United States Army, Dated June  
28 1949, Submitting a Report Together with

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Accompanying Papers and Illustrations, on  
a Review of Reports On, and Preliminary  
Examinations and Surveys of the Columbia  
River and Tributaries, Northwestern United  
States, Made Pursuant to Several  
Congressional Authorizations Listed in the  
Report

Chlorine and Caustic Soda Manufacturing

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Pacific Northwest Economic Base Study for  
Power Markets: Supporting studies. pt. 1.  
Population. pt. 2. Labor force. pt. 3.  
Employment. pt. 4. Personal income. pt. 5.  
Agriculture and food processing. pt. 6.  
Forest industries. pt. 7. Minerals. pt. 8.  
Fisheries. pt. 9. Recreation. pt. 10. Water. pt.  
11. Fuels. pt. 12. Defense industries. pt. 13.

# Read Online Chlorine And Caustic Soda Manufacturing Plant Pavlodar Chemicals

Letter from the Secretary of the Army  
Transmitting a Letter from the Chief of  
Engineers, Department of the Army, Dated  
March 31, 1961, Submitting a Report ... and  
by the Committee on Public Works, House  
of Representatives, Listed in the Report  
United States Production. Inorganic



# Read Online Chlorine And Caustic Soda Manufacturing Plant Paylodar chemicals. M19A

Proceedings and Debates of the ... Congress

The papers in this book were submitted for the 1988 London International Chlorine Symposium. This was the fifth symposium organised by the

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Electro chemical Technology Group of the Society of Chemical Industry and proved as popular as ever, attracting a record number of 294 delegates from 31 countries. Twenty-seven papers were presented during the two

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and a half-day event covering the latest developments in chlor-alkali technology. The field of membranes and membrane cells was well represented by some 15 papers, reflecting the importance of membrane

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technology to the future of the industry. This is particularly relevant in view of increasing environmental pressures and rising costs. However, papers relating to the more traditional mercury and diaphragm cell

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technologies were also presented, together with a paper concerned with sodium chlorate manufacture. In addition, there were presentations covering the commercial and safety aspects of the chlor-alkali industry. The

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Electrochemical Technology  
Group of the Society of Chemical  
Industry offer thanks to the many  
people and organisations whose  
help ensured the success of this  
symposium. In particular, we  
would like to thank: 1. The

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contributors of the papers. 2. The session chairmen: Dr R. G. Smerko (The Chlorine Institute Inc.); Mr B. Lott (The Associated Octel Company Limited); Mr T. F. O'Brien (United Engineers and Constructors); Dr B. S. Gilliatt

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(ICI Chemicals and Polymers Limited); Mr D. Bell (Hays Chemicals Limited). 3. The Chlorine Institute for assistance with printing costs and for active participation.

Membrane reactors are



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increasingly replacing conventional separation, process and conversion technologies across a wide range of applications. Exploiting advanced membrane materials, they offer enhanced efficiency,

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are very adaptable and have great economic potential. There has therefore been increasing interest in membrane reactors from both the scientific and industrial communities, stimulating research and

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development. The two volumes of the Handbook of membrane reactors draw on this research to provide an authoritative review of this important field. Volume 2 reviews reactor types and industrial applications, beginning

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in part one with a discussion of selected types of membrane reactor and integration of the technology with industrial processes. Part two goes on to explore the use of membrane reactors in chemical and large-

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scale hydrogen production from fossil fuels. Electrochemical devices and transport applications of membrane reactors are the focus of part three, before part four considers the use of membrane reactors in

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environmental engineering,  
biotechnology and medicine.  
Finally, the book concludes with  
a discussion of the economic  
aspects of membrane reactors.  
With its distinguished editor and  
international team of expert

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contributors, the two volumes of the Handbook of membrane reactors provide an authoritative guide for membrane reactor researchers and materials scientists, chemical and biochemical manufacturers,

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industrial separations and  
process engineers, and  
academics in this field.

Discusses integration of  
membrane technology with  
industrial processes Explores the  
use of membrane reactors in



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chemical and large-scale  
hydrogen production from fossil  
fuels Considers electrochemical  
devices and transport  
applications of membrane  
reactors

Profile of the inorganic chemical

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industry

Reliability and Availability

Studies of Chlorine Production  
Plants

Congressional Record

Volume I: Fundamentals,

Volume II: Brine Treatment and

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Cell Operation, Volume III:  
Facility Design and Product  
Handling, Volume IV:  
Operations, Volume V:  
Corrosion, Environmental Issues,  
and Future Developments  
Caustic Soda Production

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Technique

Information Circular

***This report presents a cost analysis of Chlorine production from sodium chloride. The process examined is a typical membrane process. In this***

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***process, an aqueous solution of sodium chloride (brine) is decomposed electrolytically in a membrane cell, producing Chlorine. Caustic soda (50 wt%) and hydrogen are also generated as products. This***

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***report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses:***

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**\* Capital Investment, broken down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency - Alternative perspective on the total fixed capital, divided in**

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***direct costs, indirect costs and contingency - Working capital and costs incurred during industrial plant commissioning and start-up \* Production cost, broken down by: -  
Manufacturing variable costs***



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***(raw materials, utilities) -  
Manufacturing fixed costs  
(maintenance costs, operating  
charges, plant overhead, local  
taxes and insurance) -  
Depreciation and corporate  
overhead costs \* Raw materials***

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***consumption, products  
generation and labor  
requirements \* Process block  
flow diagram and description  
of industrial site installations  
(production unit and  
infrastructure) This report was***

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***developed based essentially on  
the following reference(s): (1)  
Handbook of Chlor-Alkali  
Technology, 2005; (2)  
"Chlorine", Ullmann's  
Encyclopedia of Industrial  
Chemistry, 7th edition***

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***Keywords: Chlor-Alkali,  
Caustic Soda, NaOH  
Sodium hypochlorite is an  
excellent disinfecting agent  
employed in water treatment,  
cleaning and laundry  
operations. Transport and***

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***handling safety concerns have direct public opinion towards the use of sodium hypochlorite rather than chlorine gas in water treatment, which represents a significant market expansion potential.***

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***This publication reviews the technical aspects of a industrial bleach production process similar to the Solvay Chemicals. The analysis also includes estimates for both the capital investment and the***

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***operating costs of typical plants on the US Gulf Coast and in Brazil. This study follows the same pattern as all Technology Economics studies developed by Intratec. About Technology Economics***

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***Technology Economics studies are advisory services ordered by leading chemical companies, which are disclosed to public after an agreeded upon period of time. All Technology Economics studies***



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*are based on the same rigorous methodology and well-defined structure, encompassing:  
Process flow diagrams and material balances Raw material and utility consumptions Major*

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***equipment sizing Inside and  
outside battery limits capital  
costs Detailed fixed and  
variable manufacturing  
expenses  
Practical Guide to Polyvinyl  
Chloride***

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***Technology Economics:  
Sodium Hypochlorite Chemical  
Production  
Feasibility of Caustic Soda-  
chlorine Production in  
Western North Dakota***

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***Manufacturing Chlorine,  
Sodium Hydroxide, Caustic  
Soda & Other Alkalies  
Staff Report***

Chlorine and Caustic Soda  
ManufacturingRecent  
DevelopmentsWorld Outlook

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Report

2006-2011 Manufacturing  
Chlorine, Sodium Hydroxide,  
Caustic Soda & Other  
Alkalies Chlorine Production  
from Sodium Chloride - Cost  
Analysis - Chlorine

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E11A Intratec Solutions

This report presents a cost analysis of Calcium Hypochlorite production from slaked lime, sodium hydroxide and chlorine The process examined is a typical sodium

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process. This process consists mainly in passing chlorine into a slurry of slaked lime and sodium hydroxide, generating Calcium Hypochlorite and sodium chloride. After separation steps, Calcium

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Hypochlorite (about 70 wt%) and an aqueous solution of sodium chloride are obtained as products. This report was developed based essentially on the following reference(s): (1) US Patent 4390512, issued to



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PPG Industries, Inc., in 1983  
(2) US Patent 4428919, issued  
to PPG Industries, Inc., in  
1984 Keywords: Caustic Soda,  
Calcium Salt, Bleaching  
Powder, Chlorination, Sodium  
Method, Slaked Lime

# Read Online Chlorine And Caustic Soda Manufacturing Plant Paylodar

A History of the Soda-  
manufacture

The Manufacture of Sulphuric  
Acid and Alkali: Ammonia-  
soda, various processes of  
alkali making and the chlorine  
industry

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Minerals Yearbook

Chlorine and Caustic Soda  
Manufacture

R.B. MacMullin Memorial  
Symposium : Proceedings of  
the Symposium

Chlorine Production from

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Sodium Chloride - Cost  
Analysis - Chlorine E11A

**Chlorine is one of the most important inorganic basic chemicals It is not only an essential reaction component for the synthesis of numerous organic**

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**and inorganic chemicals and plastics, it is also of great importance for the production of pharmaceuticals, disinfectants, bleaches and insecticides. Everything you need to know about chlorine is described in this**

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**book. It provides a practical and up-to-date account of the scientific and technological basics for the production of chlorine and describes various applications and prospects for future developments. Current issues,**

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**such as environmental protection,  
occupational health and safety  
aspects, storage and  
transportation, economic aspects,  
quality specifications and analysis  
are treated in a competent and  
well-balanced manner. Chemists,**

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**chemical engineers and chemical process engineers in various industrial sectors, engineering companies, universities and government authorities will certainly profit from this comprehensive review.**



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**This report presents a cost analysis of Chlorine production from sodium chloride. The process examined is a typical mercury cell process. In this process, an aqueous solution of sodium chloride (brine) is**

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**decomposed electrolytically in a mercury cell, producing Chlorine. Caustic soda (50 wt%) and hydrogen are also generated as products. This report was developed based essentially on the following reference(s): (1)**

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**Handbook of Chlor-Alkali  
Technology, 2005 (2) "Chlorine",  
Ullmann's Encyclopedia of  
Industrial Chemistry, 7th edition  
Keywords: Chlor-Alkali, Caustic  
Soda, NaOH  
Recent Developments**

*Page 59/87*

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**Volume 4**

**Columbia River and Tributaries,  
Northwestern United States**

**Sodium Hypochlorite via**

**Chemical Process - Cost Analysis -**

**Sodium Hypochlorite E11A**

**A Study of Chlorine, Caustic Soda**

*Page 60/87*

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**Prices**

**Reactor Types and Industrial  
Applications**

This report presents a cost analysis of Sodium Hydroxide production from brine. The process examined is a typical membrane process. In this

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process, an aqueous solution of sodium chloride (brine) is decomposed electrolytically in a membrane cell, producing Sodium Hydroxide and chlorine. The Sodium Hydroxide product obtained is a 50 wt% aqueous solution. Hydrogen is also generated as

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by-products in the process. This report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses: \* Capital Investment, broken

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down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency  
- Alternative perspective on the total fixed capital, divided in direct costs, indirect costs and contingency -  
Working capital and costs incurred



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during industrial plant commissioning and start-up \* Production cost, broken down by: - Manufacturing variable costs (raw materials, utilities) - Manufacturing fixed costs (maintenance costs, operating charges, plant overhead, local taxes and

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insurance) - Depreciation and corporate overhead costs \* Raw materials consumption, products generation and labor requirements \* Process block flow diagram and description of industrial site installations (production unit and infrastructure) This report was

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developed based essentially on the following reference(s): "Chlorine", Ullmann's Encyclopedia of Industrial Chemistry, 7th edition Keywords: Chlor-Alkali, Caustic Soda, NaOH Polyvinyl chloride (PVC) has been around since the late part of the 19th

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century, although it was not produced commercially until the 1920s; it is the second largest consumed plastic material after polyethylene. PVC products can be rigid or flexible, opaque or transparent, coloured, and insulating or conducting. There is not

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just one PVC but a whole family of products tailor-made to suit the needs of each application. PVC is extremely cost effective in comparison to other plastics with a high degree of versatility in end-use and processing possibilities, as the reader will note

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from this book. It is durable, easily maintained, and can be produced in a large range of colours. As a result PVC finds use in an extensive range of applications in virtually all areas of human activity, including medical equipment, construction applications

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such as flexible roof membranes, pipes and window profiles, toys, automotive parts and electrical cabling. The PVC industry has also started to tackle some of its end-of-life issues. This practical guide provides comprehensive background on the resins and additives,

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their properties and processing characteristics, as well as discussion of product design and development issues. There have been, and still are, issues and perceptions over environmental and health acceptance covering vinyl chloride monomer, dioxins, phthalate



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plasticisers, and lead (and cadmium) based heat stabilisers and these are discussed in depth in this book. This book will be of interest to raw materials suppliers and processors or end-users of PVC, as well as anyone with a general interest in this versatile

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material: resins and additives

properties and testing design issues

processing, including post processing  
and assembly property enhancement

sustainable development

Handbook of Chlor-Alkali Technology

United States Congressional Serial Set

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Caustic Soda Manufacturing  
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Chlorine Production from Sodium  
Chloride - Cost Analysis - Chlorine  
E13A

Policy Brief on the Production of  
Caustic Soda in Nigeria  
EPA Office of Compliance Sector  
Notebook Project

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Handbook of Membrane Reactors

This report presents a cost analysis of sodium hypochlorite production from sodium hydroxide and chlorine. The process examined is a typical chemical process. This report examines one-time costs

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associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses: \* Capital Investment, broken down by: - Total fixed capital required,

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divided in production unit (ISBL);  
infrastructure (OSBL) and  
contingency - Alternative  
perspective on the total fixed  
capital, divided in direct costs,  
indirect costs and contingency -  
Working capital and costs  
incurred during industrial plant

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commissioning and start-up \*

Production cost, broken down by:

- Manufacturing variable costs  
(raw materials, utilities) -
- Manufacturing fixed costs  
(maintenance costs, operating  
charges, plant overhead, local  
taxes and insurance) -

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Depreciation and corporate overhead costs \* Raw materials consumption, products generation and labor requirements \* Process block flow diagram and description of industrial site installations (production unit and



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infrastructure) This report was developed based essentially on the following reference(s):

"Chlorine Oxides and Chlorine Oxygen Acids", Ullmann's Encyclopedia of Industrial Chemistry, 7th edition  
Keywords: Bleach, Chlorination, Caustic

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Soda, NaOH, Solvay Chemicals,  
Chlor-alkali

Concentrated treatment of all  
aspects of technology and  
handling directly related to the  
products of electrolysis.

Thoroughly up to date and should  
become the standard reference in

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its field.

Chlorine

Atmospheric Emissions from Chlor-  
alkali Manufacture

Chlorine Production from Sodium  
Chloride - Cost Analysis - Chlorine  
E12A

Sodium Hydroxide via Membrane

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Process - Cost Analysis - Sodium  
Hydroxide E11A

Facts for Industry

Columbia River and Tributaries

The Congressional Record is the  
official record of the proceedings and  
debates of the United States

Congress. It is published daily when

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Congress is in session. The Congressional Record began publication in 1873. Debates for sessions prior to 1873 are recorded in The Debates and Proceedings in the Congress of the United States (1789-1824), the Register of Debates in Congress (1824-1837), and the

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Congressional Globe (1833-1873)  
Chlor-alkali and Chlorate Technology  
U.S. Industrial Outlook  
Calcium Hypochlorite Production via  
Sodium Method - Cost Analysis -  
Calcium Hypochlorite E11A  
Environmental Considerations of  
Selected Energy Conserving

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Manufacturing Process Options: Chlor-alkali industry report

World Outlook Report 2006-2011

Modern Chlor-Alkali Technology