

WORLDWIDE ETHYLENE OXIDE **& DERIVATIVES**

MARKETS, TECHNOLOGIES & TRENDS
2002-2007

Prospectus For
An In-Depth Strategic Analysis
Completed April 2003
(PR211)

The current status of EO and its derivatives
EO & derivatives Industry Structure - How has it changed in Recent
Years?

Consolidations/Closures in the Industry

* * * *

Overall Situation and Outlook

Market Impact and Analysis

Intermaterial Competition

Competitive Pressures

Environmental Pressures

* * * *

In-Depth Profiles & Analysis for

- **Ethylene Glycols (including higher glycols)**
- **Glycol Ethers**
- **Ethanolamines (including ethyleneamines)**

Raw Material Integration & Suppliers

Strategic Analysis & Options for Current Producers



Chemical Market Resources, Inc.

560 Blossom Street Suite C, Webster, TX 77598

Tel: 281-557-3320; Fax: 281-557-3310; Web: www.CMRHouTex.Com



Chemical Market Resources, Inc.
Tel: (281) 557-3320 Fax: (281) 557-3320

WORLDWIDE ETHYLENE OXIDE AND ITS DERIVATIVES

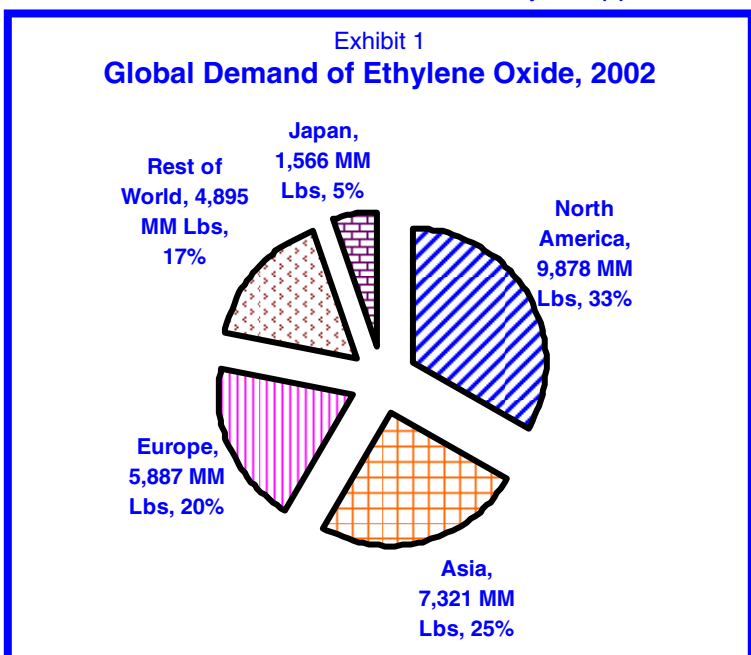
Markets, Technologies and Trends

2002-2007

INTRODUCTION

Ethylene oxide (EO) is an important chemical intermediate for the production of ethylene glycols, ethanolamines, and glycol ethers. EO is also used extensively in the manufacture of a broad range of surface-active agents. The global demand of EO in 2002 was 29,547 million pounds. Exhibit 1 shows the global demand for ethylene oxide by region. EO demand in North America is the largest accounting for about 33% or 9,879 million pounds of the global demand.

EO derivatives are used in a wide variety of applications. The major applications of ethylene



glycols include: (1) polyethylene terephthalate bottle grade resins, (2) polyester fibers & films, (3) antifreeze, deicing fluids, & industrial coolants, (4) natural gas dehydration, (5) surfactants, (6) unsaturated polyesters, and others.

The most widely used ethylene oxide based glycol ethers include: (1) ethylene glycol monomethyl ether, (2) ethylene glycol monoethyl ether, and (3) ethylene glycol monobutyl ether. Glycol ethers are widely used in several applications including: (1) paints and varnishes (coatings), (2) printing inks, (3) adhesives, (4) cleaning, (5)

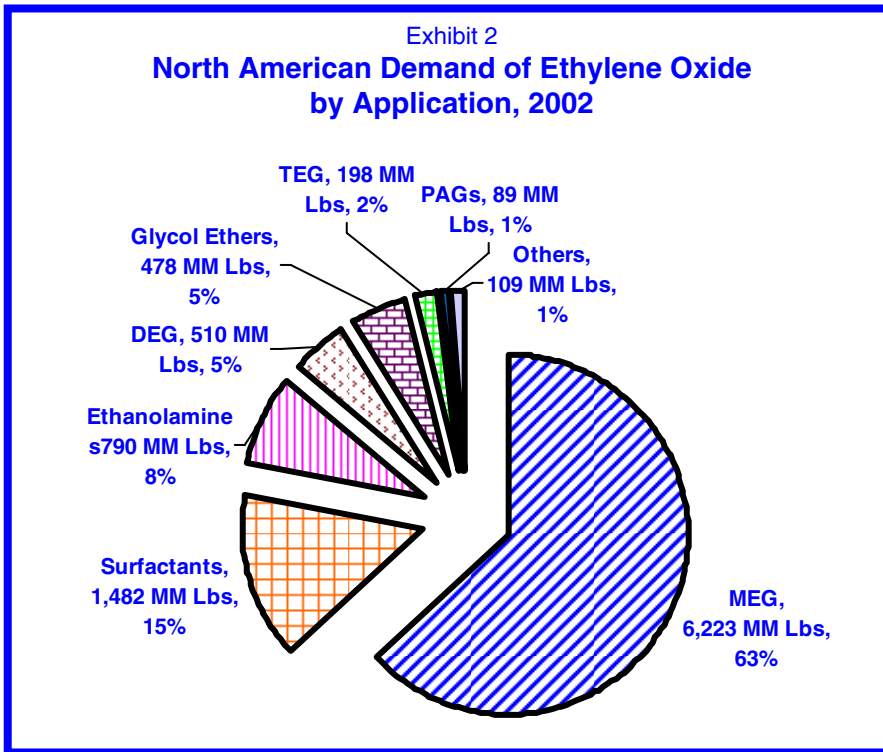
electronics. Non-solvent applications for glycol ethers include components in: (1) jet fuel (anti icing inhibitors), (2) hydraulic/brake systems, and (3) chemical intermediates for plasticizers, and other compounds.

The major applications of ethanolamines include: (1) herbicides, (2) surfactants, (3) gas cleaning, and others. Ethanolamines based surfactants are mainly used in personal care household products. Diethanolamine (DEA) is used in the manufacture of glyphosate herbicide. It is the fastest growing application of DEA and driving the ethanolamines demand.

The total North American demand for ethylene oxide in 2002 was 9,878 million pounds. Exhibit 2 shows the North American demand for ethylene oxide in North America in 2002. Monoethylene glycol was the largest application of EO accounting for about 63% or 6,223 million pounds of the total North American demand. Ethoxylates or surfactants were the second largest application of ethylene oxide accounting for about 15% or 1,482 million pounds of the North American EO demand. Ethanolamines accounted for about 8% or 790



million pounds of the EO demand. The other applications of EO include: (1) DEG (5% or 510 million pounds), (2) glycol ethers, (5% or 478 million pounds), (3) TEG, (2% or 198 million pounds), (4) PAGs (1% or 89 million pounds), and others. (109 million pounds)



The major global producers of EO include: (1) Dow Chemical (2,140 thousand tons), (2) Shell Chemical (1,226 thousand tons), (3) SABIC (925 thousand tons), (4) BASF (865 thousand tons), (5) BP Chemicals (475 thousand tons), and others. The overall global demand for EO is expected to grow at 2.8% per annum for the next five years, with demand reaching 33,996 million

pounds by 2007. Asia Pacific excluding Japan is the fastest growing region for EO. In North America, the demand for EO is expected to grow at about 2.7% per annum for the next five years with demand reaching 11,274 million pounds by 2007.

A NEW MULTICLIENT STUDY

The report will benefit: (1) present and future EO derivatives market participants, (2) the individual end users, (3) entrepreneurs, and (4) organizations attempting to understand these complex issues and capture future growth in the marketplace.

OBJECTIVES

Develop detailed attribute analysis and value based analysis of the major EO applications

Assist EO derivatives end users in assessing the market trends and intermaterial competition.

Assist EO producers in effectively positioning their market development programs.

Assist formulators, blenders and packaging companies and suppliers in assessing the impact of all of the above-mentioned issues in the near future.



KEY ISSUES TO BE ADDRESSED

The worldwide EO market/technology status and concerns of: (1) end users, (2) producers and (3) competing material suppliers in North America, Europe and Japan

Worldwide packaging PET resin, compound and additive suppliers' responses to key issues

Impact of key issues related to EO derivatives and their vulnerability in selected end use markets on suppliers.

Multi-attribute analysis of met/ unmet needs of all EO and its derivatives in over major end uses.

End Use profitability and manufacturing cost.

Global Market/Technology positioning of major EO & derivatives producers.

TIMING & SUBSCRIPTION INFORMATION

An order form is included as the last page of this prospectus. The report has been issued and is available for immediate delivery. The price per report will be \$15,000. Additional copies will be available for \$400 each.

APPROACH

The information, data and conclusions of this analysis were developed from sources in North America, Western Europe and China, Asia and Japan and are based upon, but not limited to, the following methods:

Search, review and interpretation of information from government sources, trade and industry groups, public interest groups, government agencies, published articles and product promotional information

Information from private experts and CMR proprietary projects (over 20 of them related to these topics in the last two years)

Interviews with leading EO and derivatives, PET packaging, antifreeze, coating, automotive suppliers, end users and distributors.

PROJECT MANAGEMENT

As usual, this report will be a result of diligent efforts of our lead team members and a shining example of our dedication to quality and thoroughness.

Inquiries for this Study should be directed to: BSingh@CMRHouTex.com



Chemical Market Resources, Inc.
Tel: (281) 557-3320 Fax: (281) 557-3320

TABLE OF CONTENTS

CHAPTER 1: EXECUTIVE SUMMARY

Introduction	-1
The Study Organization.....	1-2
Chapter 3: Ethylene Oxide.....	1-2
Introduction	1-2
North America.....	1-2
Europe	1-6
Japan.....	1-10
China	1-16
Rest of Asia	1-16
Rest of World	1-22
Strategic Analysis.....	1-22
Conclusions	1-28
Chapter 4: Ethylene Glycols.....	1-28
Introduction	1-28
North America.....	1-31
Europe	1-39
Japan.....	1-48
Rest of Asia	1-48
Rest of World	1-48
Tetraethylene Glycol	1-60
Polyalkylene Glycol	1-60
Strategic Analysis.....	1-66
Conclusions	1-66
Chapter 5: Ethanolamines.....	1-66
Introduction	1-66
North America.....	1-66
Europe	1-74
Japan.....	1-74
China	1-74
Rest of World	1-84
Strategic Analysis.....	1-84
Conclusions	1-84
Chapter 6: Ethylene Oxide Glycol Ethers.....	1-84
Introduction	1-84

North America	1-88
Europe	1-88
Japan	1-99
Rest of World	1-99
Strategic Analysis	1-99
Conclusion.....	1-108

CHAPTER 2: INTRODUCTION

Background.....	2-1
Objectives	2-2
CMR Research Methodology	2-3
A Message from the Authors	2-3

CHAPTER 3: ETHYLENE OXIDE

Introduction.....	3-1
Typical Manufacturing Process	3-1
History	3-1
Commercial Manufacturing.....	3-3
The Chlorohydrin Process.....	3-3
Direct Oxidation of Ethylene	3-3
Ethylene Oxide Raw Materials	3-5
Ethylene	3-5
Oxygen.....	3-5
Manufacturing Cost Economics	3-7
Global Supply and Demand	3-7
Supply	3-11
Demand.....	3-11
Suppliers	3-11
North American Suppliers of ethylene oxide.....	3-15
Alberta & Orient Glycol	3-15
BASF Corporation	3-15
Dow Chemical Company.....	3-18
Eastman Chemical Company.....	3-18
Equistar Suppliers for Soft TPOs	3-19
Formosa Plastics Corp.	3-19
Huntsman.....	3-19



CHAPTER 3: ETHYLENE OXIDE (CONT'D)

Old World Industries	3-20
PEMEX	3-20
Shell Chemicals	3-21
Sunoco Inc.	3-21
North American Demand for Ethylene Oxide	3-21
Ethylene Glycols: Mono, di, & tri	3-22
Surface Active Agents	3-37
Ethanalamines	3-39
Glycol Ethers	3-48
Polyalkylene Glycols	3-50
Others	3-56
European Suppliers of Ethylene Oxide	3-57
BASF	3-57
BP Chemicals	3-57
Clariant	3-60
Dow Chemical	3-60
INEOS	3-60
Shell Chemical	3-61
Lukoil	3-62
Petkim	3-62
European Demand for Ethylene Oxide	3-62
Ethylene Glycols: Mono, di, & tri	3-64
Surface Active Agents	3-71
Ethanalamines	3-78
Glycol Ethers	3-79
Polyalkylene Glycols	3-86
Others	3-86
Asia/Pacific Supply & Demand of Ethylene Oxide	3-86
Supply	3-86
Demand	3-86
Japanese Supply & Demand of Ethylene Oxide	3-89
Supply	3-89
Mitsubishi	3-89
Mitsui	3-89
Nippon Shokubai	3-92

Demand	3-92
Ethylene Glycols	3-95
Surface Active Agents	3-95
Ethanalamines	3-102
Glycol Ethers	3-102
Others	3-102
Chinese Supply & Demand of Ethylene Oxide	3-108
Supply	3-108
Demand	3-108
Rest of Asia Supply & Demand of Ethylene Oxide	3-115
Rest of the Asia Suppliers for Ethylene Oxide	3-115
Supply	3-115
Honam Petrochemical	3-115
Hyundai Petrochemical	3-115
GT Petrochem	3-118
Samsung General	3-118
Shell Chemical	3-118
Reliance Industries	3-119
Nan Ya Plastics	3-119
Demand	3-119
Rest of World Supply & Demand of Ethylene Oxide	3-119
Supply	3-119
SABIC	3-124
Oxiteno	3-124
Pralca	3-124
Demand	3-124
Global Pricing for Ethylene Oxide	3-125
Environmental Aspects	3-125
Industry Structure	3-133
Strategic Analysis	3-133
Status of Ethylene Oxide Industry	3-133
Growth Driver Tree Analysis	3-135
Future Trends	3-138
Strategic Options	3-138
Conclusions	3-144



CHAPTER 4: ETHYLENE GLYCOLS

Introduction	4-1	Polyurethanes	4-62
Manufacturing Technologies	4-1	Unsaturated Polyester Resins	4-67
Manufacturing Cost Economics	4-3	Antifreeze	4-69
Global Supply & Demand	4-5	Solvents	4-69
Supply of Ethylene Glycols.....	4-8	Morpholine	4-70
Demand of Ethylene Glycols	4-14	Textiles	4-70
Suppliers of Ethylene Glycols.....	4-14	Natural Gas Dehydration	4-70
North American Suppliers	4-21	1,4-Dioxane	4-70
Alberta & Orient Glycol.....	4-21	Others	4-70
BASF Corporation.....	4-25	North American Demand for Triethylene Glycol	4-71
Dow Chemical Company	4-25	Natural Gas Dehydration	4-71
Eastman Chemical Company	4-26	Plasticizers.....	4-76
Equistar Suppliers for Soft TPOs	4-26	Humectants	4-76
Formosa Plastics Corp.....	4-26	Others	4-77
Huntsman	4-27	Industry Structure for Di, & tri-ethylene glycols	4-77
Grupo IDESA.....	4-27	European Suppliers	4-77
Old World Industries	4-27	BASF	4-80
PEMEX	4-28	BP Chemicals	4-80
Shell Chemicals.....	4-28	Clariant	4-83
North American Supply for Ethylene Glycols.....	4-29	INEOS	4-83
North American Demand for Ethylene Glycols.....	4-29	Dow Chemical	4-83
North American Demand for Monoethylene Glycol	4-29	Shell Chemical.....	4-84
Polyethylene Terephthalate Solid State Resins	4-34	Petkim.....	4-84
Polyester Fibers	4-42	LukeOil.....	4-84
Antifreeze	4-43	Petrobrazi.....	4-85
Polyester Film	4-52	European Demand for Ethylene Glycols.....	4-85
Industrial Coolants, Aircraft & Runaway Deicers.....	4-54	Demand for Ethylene Glycols, Western Europe.....	4-85
PET Engineering Resins.....	4-57	Western European Demand for Monoethylene Glycol	4-88
Other Applications	4-59	Polyethylene Terephthalate Solid State Resins.....	4-88
Surface Coatings	4-59	Polyester Fibers	4-93
Unsaturated Polyester Resins.....	4-59	Antifreeze	4-93
Heat Transfer Fluids & Industrial Coolants	4-59	Polyester Film.....	4-96
Hydraulic Fluids.....	4-61	Deicing Fluids	4-96
Surfactant & Emulsifiers.....	4-61	PET Engineering Resins	4-96
Others.....	4-61	Other Applications.....	4-96
North American Demand for Diethylene Glycol.....	4-61	Western European Demand for Diethylene Glycol.....	4-98
		Unsaturated Polyester Resins	4-98
		Polyester Polyols	4-98
		Antifreeze	4-98



CHAPTER 4: ETHYLENE GLYCOLS (CONT'D)

Solvents.....	4-98
Morpholine.....	4-101
Natural Gas Dehydration.....	4-101
Others.....	4-101
Western European Demand for Triethylene Glycol.....	4-101
Natural Gas Dehydration.....	4-101
Solvents.....	4-104
Plasticizers.....	4-104
Polyurethanes.....	4-104
Humectants.....	4-104
Others.....	4-104
Eastern European demand for Ethylene Glycols.....	4-104
Asia/Pacific Supply & Demand for Ethylene Glycols.....	4-106
Asia/Pacific Supply for Ethylene Glycols.....	4-106
Asia/Pacific Demand for Ethylene Glycols.....	4-106
Japanese Supply & Demand for Ethylene Glycols.....	4-106
Japanese Suppliers.....	4-106
Mitsubishi Chemical.....	4-106
Mitsui Chemicals.....	4-110
Nippon Shokubai.....	4-110
Japanese Supply.....	4-111
Japanese Demand for Ethylene Glycols.....	4-111
Japanese Demand for Monoethylene Glycol.....	4-111
Polyester Fibers.....	4-115
Antifreeze.....	4-115
Polyethylene Terephthalate Solid State Resins.....	4-115
Polyester Film.....	4-115
Deicing Fluids.....	4-115
PET Engineering Resins.....	4-118
Other Applications.....	4-118
Japanese Demand for Diethylene Glycol.....	4-118
Japanese Demand for Triethylene Glycol.....	4-121
Chinese Supply & Demand for Ethylene Glycols.....	4-121
Rest of Asia Supply & Demand for Ethylene Glycols.....	4-126
Honam Petrochemical.....	4-126
Hyundai Petrochemical.....	4-126

GT Petrochem.....	4-129
Samsung General.....	4-129
Shell Chemicals.....	4-129
Reliance Industries.....	4-130
Rest of Asia Supply for Ethylene Glycols.....	4-130
Rest of Asia Demand for Ethylene Glycols.....	4-130
Rest of World Supply & Demand for Ethylene Glycols.....	4-133
Rest of World Suppliers.....	4-133
SABIC.....	4-133
Oxiteno.....	4-133
Pralca.....	4-135
South American Supply for Ethylene Glycols.....	4-135
South American Demand for Ethylene Glycols.....	4-135
Middle East/Africa Supply for Ethylene Glycols.....	4-135
Middle East/Africa Demand for Ethylene Glycols.....	4-138
Pricing of Ethylene Glycols.....	4-138
Tetraethylene Glycol.....	4-138
Polyalkylene Glycols.....	4-142
Introduction.....	4-142
Manufacturing Process.....	4-146
Supply of Polyalkylene Glycols.....	4-147
North America.....	4-147
Western Europe.....	4-149
Japan.....	4-149
Applications of Polyalkylene Glycols.....	4-149
Surfactants.....	4-149
Cosmetics.....	4-150
Pharmaceuticals.....	4-150
Oil & Gas Chemicals.....	4-150
Lubricants.....	4-151
Functional Fluids.....	4-151
Intermaterial Competition.....	4-151
Demand and Future Trends.....	4-152
Strategic Analysis.....	4-160
Status of the Ethylene Glycols Industry.....	4-160
Growth Driver Tree Analysis.....	4-160
North American Markets.....	4-160
European Markets.....	4-162
Japanese Markets.....	4-162



CHAPTER 4: ETHYLENE GLYCOLS (CONT'D)

Future Supply Demand Balance.....	4-162
Value Chain Analysis.....	4-167
Strategic Options.....	4-167
Conclusions.....	4-167

CHAPTER 5: ETHANOLAMINES

Introduction.....	5-1
Manufacturing Technologies.....	5-2
Manufacturing Cost Economics.....	5-3
Global Supply & Demand.....	5-6
Supply of Ethanolamines.....	5-6
Demand of Ethanolamines.....	5-6
North American Supply for Ethanolamines.....	5-6
North American Suppliers.....	5-6
Dow Chemical.....	5-11
Ineos llc.....	5-11
Equistar.....	5-12
Hunstman.....	5-12
North American Demand for Ethanolamines.....	5-13
Glyphosate.....	5-17
Surfactants.....	5-18
Liquid Detergents.....	5-21
Bath & Facial.....	5-23
Shampoos.....	5-26
Industrial Cleaners.....	5-26
Gas Purification.....	5-27
Cement.....	5-35
Textiles.....	5-38
Ethyleneamines.....	5-40
Chelating Agents.....	5-40
Polyamides.....	5-41
Others.....	5-41
European Suppliers.....	5-44
BASF.....	5-44
BP Chemicals.....	5-48

Sasol Limited (Condea Group).....	5-48
European Demand for Ethanolamines.....	5-48
Glyphosate.....	5-48
Surfactants.....	5-48
Ethylenediamines.....	5-49
Japanese Supply & Demand for Ethylene Glycols.....	5-49
Japanese Supply.....	5-49
Japanese Suppliers.....	5-49
Mitsui Chemicals.....	5-49
Nippon Shokubai.....	5-53
Japanese Demand for Ethanolamines.....	5-53
Glyphosate.....	5-53
Taurine.....	5-53
Surfactants.....	5-54
Chinese Supply & Demand for Ethanolamines.....	5-54
Chinese Supply for Ethanolamines.....	5-54
Chinese Demand for Ethanolamines.....	5-56
Surfactants.....	5-56
Pharmaceuticals.....	5-56
Glyphosate.....	5-56
Rest of World Supply & Demand for Ethanolamines.....	5-59
Rest of World Suppliers.....	5-59
South America.....	5-59
Republic of Korea.....	5-59
India.....	5-59
Pricing of Ethanolamines.....	5-59
Strategic Analysis.....	5-64
Status of the Ethanolamines.....	5-64
Growth Driver Tree Analysis.....	5-65
North American Markets.....	5-65
European Markets.....	5-65
Japanese Markets.....	5-65
Chinese Markets.....	5-65
Conclusions.....	5-69

CHAPTER 6: E-SERIES GLYCOL ETHERS

Introduction.....	6-1
-------------------	-----



CHAPTER 6: E-SERIES GLYCOL ETHERS (CONT'D)

Typical Manufacturing Process	6-3
Manufacturing Cost Economics	6-3
Global Supply & Demand	6-6
Supply of EO based Glycol Ethers	6-6
Demand of EO based Glycol Ethers	6-6
Suppliers of EO based Glycol Ethers	6-12
North American Supply for EO based Glycol Ethers	6-12
North American Suppliers	6-12
Dow Chemical Company	6-18
Eastman Chemical Company	6-18
Equistar	6-19
Shell Chemicals	6-20
Olin	6-20
Canada	6-20
Mexico	6-20
North American Demand for EO based Glycol Ethers	6-21
E-series Butyl Glycol Ethers	6-28
EB Demand and Trends	6-28
DB Demand and Trends	6-30
TB Demand and Trends	6-35
E-series Methyl Glycol Ethers	6-35
EM Demand and Trends	6-35
DM Demand and Trends	6-35
TM Demand and Trends	6-38
E-series Ethyl Glycol Ethers	6-38
EE Demand and Trends	6-38
DE Demand and Trends	6-41
TE Demand and Trends	6-46
Other E-series Glycol Ethers	6-46
E-series Glycol Ethers End Use Profiles	6-46
Solvent Uses – Paint & Coatings	6-46
Solvent Uses – Cleaning Application	6-52
Solvent Uses – Printing Inks	6-54
Non-Solvent Uses – Jet Fuel Anti-icing	6-57
Non-Solvent Uses – Brake Fluids	6-61
Other Uses	6-66
Chemical Intermediates	6-66
Textile	6-68
Agriculture	6-68
Personal Care Products	6-68
European Suppliers	6-68
BP Chemicals	6-69
Ineos	6-71
Shell Chemicals	6-71
Clariant	6-71
Dow Chemical Company	6-72
Sasol Limited (Condea Group)	6-73
BASF	6-73
Others	6-73
European Demand for EO based Glycol Ethers	6-73
E-series Butyl Glycol Ethers	6-74
E-series Methyl Glycol Ethers	6-74
E-series Ethyl Glycol Ethers	6-81
European Demand for Glycol Ethers by application	6-81
Coatings	6-81
Hydraulic Fluids	6-86
Cleaning Application	6-86
Jet Fuel Additives	6-86
Printing Inks	6-86
Pesticides	6-86
Japanese Supply & Demand for Glycol Ethers	6-86
Japanese Suppliers	6-86
Yokkaichi Chemical	6-88
Mitsui Chemicals	6-88
Nippon Shokubai	6-88
Japanese Demand for EO based Glycol Ethers by type	6-89
Japanese Demand for Glycol Ethers by Application	6-96
Industrial Coatings	6-96
Brake Fluids	6-96
Industrial Cleaning	6-96
Hydraulic Fluids	6-96
Electronics	6-96
Export	6-96
Rest of World Supply & Demand for Glycol Ethers	6-97



CHAPTER 6: E-SERIES GLYCOL ETHERS (CONT'D)

Rest of World Suppliers	6-97
Oxiteno.....	6-97
Shell Chemicals.....	6-97
National Organic Chemical	6-102
Rest of World Demand	6-102
South America.....	6-102
South Korea.....	6-102
Thailand.....	6-103
Taiwan.....	6-103
China	6-103
Pricing of EO based Glycol Ethers	6-103
Environmental Aspects.....	6-103
Strategic Analysis	6-105
Status of the EO based Glycol Ethers.....	6-105
Issues Facing Formulators.....	6-105
Growth Driver Tree Analysis	6-107
North American Markets	6-107
European Markets	6-107
Japan	6-110
Suppliers Market vs. Technology Analysis.....	6-110
Glycol Ethers Suppliers' Mkt. Positioning	6-110
Glycol Ethers Suppliers' Tech Positioning	6-112
Future Trends	6-112
Conclusions.....	6-115

LIST OF EXHIBITS

CHAPTER 1 EXECUTIVE SUMMARY

1-1 Global Capacity & Demand for EO by Region	1-3
1-2 Demand & Forecast for Ethylene Oxide, Global.....	1-4
1-3 North American Capacity for Ethylene Oxide	1-5
1-4 North American Demand for EO by Application.....	1-7
1-5 North American Demand & Forecast for Ethylene Oxide	1-8
1-6 European Capacities for Ethylene Oxide.....	1-9

1-7 Western European Demand for EO by Application.....	1-11
1-8 Demand & Forecast for Ethylene Oxide, Western Europe	1-12
1-9 Japanese Capacities for Ethylene Oxide	1-13
1-10 Japanese Demand for Ethylene Oxide by Application	1-14
1-11 Demand & Forecast for Ethylene Oxide, Japan.....	1-15
1-12 Chinese Capacity for Ethylene Oxide.....	1-17
1-13 Chinese Demand for Ethylene Oxide by Application.....	1-18
1-14 Demand & Forecast for Ethylene Oxide, China	1-19
1-15 Rest of Asia Capacity for Ethylene Oxide	1-20
1-16 Rest of Asian Demand for Ethylene Oxide.....	1-21
1-17 Rest of World Capacity for Ethylene Oxide	1-23
1-18 South American Demand for EO by Application	1-24
1-19 Middle East/African Demand for EO by Application	1-25
1-20 Future Supply/Demand balance for EO, Global	1-26
1-21 Growth Driver Tree Analysis for Ethylene Oxide, Global	1-27
1-22 Global Capacity & Demand for Ethylene Glycols.....	1-29
1-23 Global Demand & Forecast for MEG, Global	1-30
1-24 Global Demand & Forecast for Diethylene glycol, Global.....	1-32
1-25 Global Demand & Forecast for Triethylene glycol, Global.....	1-33
1-26 North American Capacity for Ethylene glycol, by type.....	1-34
1-27 North American Capacity for Monoethylene glycol.....	1-35
1-28 North American demand for Ethylene glycol by type	1-36
1-29 North American Demand for MEG, by application.....	1-37
1-30 North American Demand for DEG, by application	1-38
1-31 North American Demand for TEG, by application.....	1-40
1-32 European Capacity for Monoethylene glycol	1-41
1-33 European Demand for Ethylene glycols by region	1-42
1-34 Western European Demand for Ethylene glycols by type	1-43
1-35 Western European Demand for MEG by application	1-44
1-36 Demand & Forecast for MEG, Western Europe.....	1-45
1-37 Demand for DEG, by application, Western Europe.....	1-46
1-38 Demand for TEG, by application, Western Europe.....	1-47
1-39 Japanese Capacity for Ethylene glycol, by type	1-49
1-40 Japanese Capacity for Ethylene glycols.....	1-50
1-41 Japanese Demand for Ethylene glycol, by type	1-51
1-42 Demand for Monoethylene glycol, by applications, Japan	1-52
1-43 Demand & Forecast for Monoethylene glycol, Japan.....	1-53
1-44 Demand for Diethylene glycol, by applications, Japan	1-54
1-45 Demand for Triethylene glycol, by applications, Japan.....	1-55



CHAPTER 1 EXECUTIVE SUMMARY (CONT'D)

1-46	Rest of Asia capacities for ethylene glycol	1-56
1-47	Chinese Demand for ethylene glycol by application	1-57
1-48	Rest of the Asia Demand for ethylene glycol by type	1-58
1-49	Rest of the World Capacities for ethylene glycol.....	1-59
1-50	South American Demand for ethylene glycols, by type	1-61
1-51	Middle Eastern/African Demand for ethylene glycols	1-62
1-52	Demand for tetra ethylene glycols, by Region	1-63
1-53	North American Demand for PAGs, by type	1-64
1-54	North American Demand for PAGs, by applications	1-65
1-55	Growth Driver Tree for Ethylene Glycols, North America.....	1-67
1-56	Global Capacity & Demand for Ethylene Glycols	1-68
1-57	Global Capacity & Demand for Ethanolamines, by type	1-69
1-58	Global Ethanolamines Demand, by Region	1-70
1-59	North American Capacity for Ethanolamines	1-71
1-60	North American Consumption for Ethanolamines, by type	1-72
1-61	North American Demand for Ethanolamines, by app	1-73
1-62	Projected Demand and Growth for Ethanolamines, NA.....	1-75
1-63	European Capacity for Ethanolamines	1-76
1-64	European Demand for Ethanolamines, by application	1-77
1-65	Future Demand and Growth for Ethanolamines, Europe	1-78
1-66	Japanese Capacity for Ethanolamines	1-79
1-67	Japanese Demand for Ethanolamines, by application	1-80
1-68	Future Demand and Growth for Ethanolamines, Japan.....	1-81
1-69	Chinese Capacity for Ethanolamines.....	1-82
1-70	Chinese Demand for Ethanolamines, by application.....	1-83
1-71	Rest of the World Capacity for Ethanolamines	1-85
1-72	Rest of World Demand for Ethanolamines, by application	1-86
1-73	Growth Driver Tree for Ethanolamines, North America.....	1-87
1-74	Global Capacity for E-Series Glycol Ethers, by Region	1-89
1-75	Global Demand & Forecast for glycol ethers, Global	1-90
1-76	North American Capacity for E-series glycol ethers.....	1-91
1-77	Global Demand for E-series glycol ethers, by type.....	1-92
1-78	North American Demand for butyl glycol ethers	1-93
1-79	North American Demand for methyl glycol ethers	1-94
1-80	North American Demand for Ethyl glycol ethers.....	1-95

1-81	European Capacity for E-series glycol ethers.....	1-96
1-82	European Demand for E-series glycol ethers, by type.....	1-97
1-83	European Demand for butyl glycol ethers, by application.....	1-98
1-84	European Demand for methyl glycol ethers, by app.....	1-100
1-85	European Demand for ethyl glycol ethers, by application.....	1-101
1-86	Japanese Capacity for E-series glycol ethers.....	1-102
1-87	Japanese Demand for E-series glycol ethers, by type.....	1-103
1-88	Japanese Demand for glycol ethers, by application.....	1-104
1-89	Rest of the World Capacity for glycol ethers, by Region	1-105
1-90	Rest of the World Demand for glycol ethers, by type	1-106
1-91	Growth Driver Tree: glycol ethers, North America.....	1-107

CHAPTER 2: INTRODUCTION

2-1	Chemical Market Resources, Inc Research Methodology	2-4
2-2	Abbreviations Used in this Study	2-6

CHAPTER 3: ETHYLENE OXIDE

3-1	Properties of Ethylene Oxide.....	3-2
3-2	Flow Diagram of Ethylene Oxide Manufacturing Process	3-6
3-3	Manufacturing Economics of Ethylene Oxide.....	3-8
3-4	Global Capacity & Demand of Ethylene Oxide, by Region	3-9
3-5	Global Demand & Forecast for EO, by Region.....	3-10
3-6	Global Capacity for Ethylene Oxide.....	3-12
3-7	Global Demand for Ethylene Oxide	3-13
3-8	Major Global Suppliers of Ethylene Oxide	3-14
3-9	North American Capacity of Ethylene Oxide.....	3-16
3-10	Integration of Raw Material Suppliers, North America.....	3-17
3-11	North American demand for EO, by application	3-23
3-12	Demand & Forecast for Ethylene Oxide, North America.....	3-24
3-13	Demand for EO in glycols manufacture, North America	3-26
3-14	Demand for ethylene glycols by type, North America	3-27
3-15	Demand for Monoethylene glycol, by application, NA.....	3-28
3-16	North American Capacity for Monoethylene glycol.....	3-30
3-17	Demand for Diethylene glycol, by application, NA	3-31
3-18	North American Capacity for Diethylene glycol	3-32
3-19	Demand for Triethylene glycol, by application, NA	3-33



CHAPTER 3: ETHYLENE OXIDE (CONT'D)

3-20	North American Capacity for Triethylene glycol.....	3-35
3-21	Multi-attribute analysis for Glycols in Antifreeze.....	3-36
3-22	Process Flow for Surfactants manufacture.....	3-38
3-23	Multi-attribute analysis: Primary surfactants in Detergents.....	3-40
3-24	North American demand for surfactant by type.....	3-41
3-25	Demand for EO based surfactants, North America.....	3-42
3-26	Multi-attribute analysis: Ethanolamines in gas apps.....	3-44
3-27	Demand for ethanolamines by apps, North America.....	3-45
3-28	Demand for ethanolamines by type, North America.....	3-46
3-29	North American Capacity for ethanolamines.....	3-47
3-30	Multi-attribute Chart: Glycol ethers in Paints & Coatings.....	3-49
3-31	North American demand for Glycol Ethers by type.....	3-51
3-32	North American demand for Butyl Glycol Ethers.....	3-52
3-33	North American demand for Methyl Glycol Ethers.....	3-53
3-34	North American demand for Ethyl Glycol Ethers.....	3-54
3-35	North American Capacity for Glycol Ethers.....	3-55
3-36	European Capacities for Ethylene Oxide.....	3-58
3-37	Integration of Raw Material Suppliers, Western Europe.....	3-59
3-38	Western European demand for EO, by application.....	3-63
3-39	Eastern European demand for EO by application.....	3-65
3-40	Demand & Forecast for Ethylene Oxide, Western Europe.....	3-66
3-41	Demand & Forecast for Ethylene Oxide, Eastern Europe.....	3-67
3-42	Demand for ethylene glycols by type, Western Europe.....	3-68
3-43	Demand for MEG, by application, Western Europe.....	3-69
3-44	European Capacity for Monoethylene glycol.....	3-70
3-45	Demand for DEG, by application, Western Europe.....	3-72
3-46	European Capacity for Diethylene glycol.....	3-73
3-47	Demand for TEG, by application, Western Europe.....	3-74
3-48	European Capacity for Triethylene glycol.....	3-75
3-49	Demand for Alcohol Ether Sulfates, Western Europe.....	3-76
3-50	Demand for Alcohol Ethoxylates, Western Europe.....	3-77
3-51	Demand for ethanolamines, Western Europe.....	3-79
3-52	European Capacity for ethanolamines.....	3-80
3-53	European demand for E-Series Glycol Ethers by type.....	3-81
3-54	European demand for Butyl Glycol Ethers by Application.....	3-82
3-55	European demand for Methyl Glycol Ethers by App.....	3-83
3-56	European demand for Ethyl Glycol Ethers by Application.....	3-84
3-57	European Capacity for Glycol Ethers.....	3-85
3-58	Asia/Pacific Capacity for Ethylene Oxide, by Region.....	3-87
3-59	Asia/Pacific Demand for Ethylene Oxide, by Region.....	3-88
3-60	Japanese Capacity for Ethylene Oxide.....	3-90
3-61	Integration of Raw Material Suppliers, Japan.....	3-91
3-62	Japanese demand for Ethylene Oxide, by application.....	3-93
3-63	Demand & Forecast for Ethylene Oxide, Japan.....	3-94
3-64	Japanese Demand for ethylene glycols by type, Type.....	3-96
3-65	Demand for Monoethylene glycol, by application, Japan.....	3-97
3-66	Demand for Diethylene glycol, by application, Japan.....	3-98
3-67	Demand for Triethylene glycol, by application, Japan.....	3-99
3-68	Japanese Capacity for MEG, DEG and TEG.....	3-100
3-69	Demand for Alcohol Ether Sulfates, by application, Japan.....	3-101
3-70	Demand for ethanolamines by application, Japan.....	3-103
3-71	Japanese Capacity for ethanolamines.....	3-104
3-72	Japanese demand for E-Series Glycol Ethers by type.....	3-105
3-73	Japanese demand for Glycol Ethers by applications.....	3-106
3-74	Japanese Capacity for E-Series Glycol Ethers.....	3-107
3-75	Chinese Capacity for Ethylene Oxide.....	3-109
3-76	Chinese demand for Ethylene Oxide, by application.....	3-110
3-77	Demand & Forecast for Ethylene Oxide, China.....	3-111
3-78	Demand for Monoethylene glycol, by application, China.....	3-112
3-79	Chinese Capacity for Monoethylene glycol.....	3-113
3-80	Demand for ethanolamines by application, China.....	3-114
3-81	Chinese Capacity for ethanolamines.....	3-116
3-82	Rest of Asia Capacity for Ethylene Oxide.....	3-117
3-83	Demand for Ethylene Oxide by Application, Rest of Asia.....	3-120
3-84	Rest of Asia Demand for ethylene glycols by type, Type.....	3-121
3-85	Rest of Asia capacity for Monoethylene glycol.....	3-122
3-86	Rest of Asia capacity for Ethylene glycol.....	3-123
3-87	Demand for EO by Application, South America.....	3-126
3-88	Demand for EO by Application, Middle East/Africa.....	3-127
3-89	South American Demand for ethylene glycols by type.....	3-128
3-90	Middle East/African demand for ethylene glycols by type.....	3-129
3-91	Rest of World capacity for Monoethylene glycol.....	3-130
3-92	Pricing of Ethylene Oxide.....	3-131
3-93	Industry Structure of Ethylene Oxide, North America.....	3-134



CHAPTER 3: ETHYLENE OXIDE (CONT'D)

3-94 Growth Driver Tree Analysis, Global	3-136
3-95 Growth Driver Tree Analysis	3-137
3-96 Future Capacity for Ethylene Oxide	3-139
3-97 Future Global Capacity & Demand for EO by Region.....	3-140
3-98 Future Supply & Demand for Ethylene Oxide by Region.....	3-141
3-99 Value in End Use Analysis.....	3-142
3-100 Market Attractiveness Analysis for EO, North America.....	3-143

CHAPTER 4: ETHYLENE GLYCOL

4-1 Properties of MEG, DEG, and TEG	4-2
4-2 Manufacturing Cost Economics	4-4
4-3 Global Capacity & Demand for Ethylene Glycols	4-6
4-4 Global Demand for MEG	4-7
4-5 Global Demand for DEG.....	4-9
4-6 Global Demand for TEG	4-10
4-7 Global Capacity for Ethylene Glycols by Type.....	4-11
4-8 Global Capacity for Monoethylene Glycol	4-12
4-9 Global Capacity for Diethylene Glycol	4-13
4-10 Global Capacity for Triethylene Glycol	4-15
4-11 Global Demand for Ethylene Glycols by Type	4-16
4-12 Global Demand for Monoethylene Glycol	4-17
4-13 Global Demand for Diethylene Glycol.....	4-18
4-14 Global Demand for Triethylene Glycol.....	4-19
4-15 Major Global Suppliers of Ethylene Glycols	4-20
4-16 North America Capacity for Monoethylene Glycol	4-22
4-17 North America Capacity for Diethylene Glycol.....	4-23
4-18 North America Capacity for Triethylene Glycol	4-24
4-19 North American Capacity for Ethylene Glycols by Type.....	4-30
4-20 North American Demand for Ethylene Glycols by Type	4-31
4-21 Market Shares of North American Suppliers	4-32
4-22 Demand for Monoethylene Glycol by Application	4-33
4-23 Demand & Forecast for MEG, North America	4-35
4-24 Demand for PET solid state resins, North America	4-37
4-25 Multi-attribute Analysis for PET: Packaging Bottles	4-39

CHAPTER 4: ETHYLENE GLYCOL (CONT'D)

4-26 North America solid-state resin Capacity	4-40
4-27 Industry Structure for PET bottle grade Resins	4-41
4-28 Demand for Polyester Fibers, North America	4-44
4-29 Multi-attribute Analysis for Polyester Fibers	4-45
4-30 Industry Structure for Polyester Fibers	4-46
4-31 Multi-attribute Analysis for Antifreeze Applications	4-49
4-32 Industry Structure for Antifreeze	4-51
4-33 Demand for Polyester Films, North America	4-53
4-34 Multi-attribute Analysis for Polyester Films	4-55
4-35 Industry Structure for Polyester Films.....	4-56
4-36 Multi-attribute Analysis for PET Engineering Resins	4-58
4-37 Demand for Other Applications of MEG, North America.....	4-60
4-38 Demand for DEG by Application, North America	4-63
4-39 Demand & Forecast for DEG, North America	4-64
4-40 Multi-attribute Analysis: Chain Extenders	4-66
4-41 Manufacture of Unsaturated Polyester Resins	4-68
4-42 Demand for TEG by Application, North America.....	4-72
4-43 Demand & Forecast for TEG, North America.....	4-73
4-44 Multi-attribute Analysis in Natural Gas Dehydration.....	4-75
4-45 Industry Structure for DEG, & TEG.....	4-78
4-46 European Capacity for Monoethylene Glycol	4-79
4-47 European Capacity for Diethylene Glycol.....	4-81
4-48 European Capacity for Triethylene Glycol	4-82
4-49 Demand for Ethylene Glycols by Region, Europe.....	4-86
4-50 Demand for Ethylene Glycols by Type, Western Europe.....	4-87
4-51 Market Shares of Suppliers, Western Europe	4-89
4-52 Demand for MEG by Application, Western Europe.....	4-90
4-53 Demand & Forecast for MEG, Western Europe	4-91
4-54 Demand for PET Solid-state Resins, Western Europe.....	4-92
4-55 Western Europe PET solid-state resin Capacity	4-94
4-56 Demand for Polyester Fibers, Western Europe.....	4-95
4-57 Demand for Polyester Films, Western Europe	4-97
4-58 Demand for DEG by Application, Western Europe	4-99
4-59 Demand & Forecast for DEG, Western Europe.....	4-100
4-60 Demand for TEG by Application, Western Europe.....	4-102
4-61 Demand & Forecast for TEG, Western Europe	4-103



CHAPTER 4: ETHYLENE GLYCOL (CONT'D)

4-62	Eastern Europe Demand for Ethylene Glycols by Type.....	4-105
4-63	Asia/Pacific Capacity for Ethylene Glycols by Type.....	4-107
4-64	Asia/Pacific Demand for Ethylene Glycols by Type.....	4-108
4-65	Japanese Capacity for Ethylene Glycols	4-109
4-66	Japanese Capacity for Ethylene Glycols by Type	4-112
4-67	Japanese Demand for Ethylene Glycols by Type.....	4-113
4-68	Demand for Monoethylene Glycol by Application, Japan	4-114
4-69	Demand & Forecast for Monoethylene Glycol, Japan	4-116
4-70	Demand for Polyester Films, Japan.....	4-117
4-71	Demand for Diethylene Glycol by Application, Japan.....	4-119
4-72	Demand & Forecast for Diethylene Glycol, Japan.....	4-120
4-73	Demand for Triethylene Glycol by Application, Japan.....	4-122
4-74	Demand & Forecast for Triethylene Glycol, Japan	4-123
4-75	Chinese Capacity for Ethylene Glycol	4-124
4-76	Chinese Demand for MEG by application	4-125
4-77	Demand & Forecast for Monoethylene Glycol, China.....	4-127
4-78	Rest of Asia Capacity for Ethylene Glycols.....	4-128
4-79	Rest of Asia Capacity for Ethylene Glycols by Type.....	4-131
4-80	Rest of Asia Demand for Ethylene Glycols by Type	4-132
4-81	Rest of World Capacity for Ethylene Glycols.....	4-134
4-82	South American Capacity for Ethylene Glycols by Type.....	4-136
4-83	South American Demand for Ethylene Glycols by Type	4-137
4-84	Middle East/Africa Capacity for Ethylene Glycols.....	4-138
4-85	Middle East/Africa Demand for Ethylene Glycols	4-140
4-86	Pricing of Ethylene Glycols	4-141
4-87	Demand for Tetraethylene Glycol by Region.....	4-143
4-88	Demand for Tetraethylene Glycol, North America	4-144
4-89	Demand & Forecast for Tetraethylene Glycol, Global.....	4-145
4-90	Manufacture of Polyethylene Glycols.....	4-147
4-91	Producers of Polyethylene Glycols	4-148
4-92	Demand of PAGs by Type, North America	4-153
4-93	Demand of Polyalkylene Glycols, North America	4-154
4-94	Demand & Forecast for PAGs, North America.....	4-155
4-95	Demand of PAGs by Type, Western Europe.....	4-156
4-96	Demand of PAGs by Application, Western Europe	4-157
4-97	Demand & Forecast for PAGs, Western Europe	4-158

CHAPTER 4: ETHYLENE GLYCOL (CONT'D)

4-98	Demand of Polyalkylene Glycols by Type, Japan	4-159
4-99	Growth Driver Tree Analysis, North America	4-161
4-100	Growth Driver Tree Analysis, Western Europe.....	4-163
4-101	Growth Driver Tree Analysis, Japan	4-164
4-102	Future Capacity for Ethylene Glycols	4-165
4-103	Future Global Capacity & Demand for Ethylene Glycols	4-166
4-104	Future Supply & Demand for Ethylene Glycol by Region	4-168
4-105	Per Capita Consumption for Ethylene Glycols by Region	4-169
4-106	Value In End Use Analysis: PET Bottles	4-170

CHAPTER 5: ETHANOLAMINES

5-1	Manufacturing Process Flow sheet.....	5-1
5-2	Typical Properties of Ethanolamines	5-4
5-3	Manufacturing Cost Economics	5-5
5-4	Global Capacity and Demand of Ethanolamines	5-7
5-5	Global Supply for Ethanolamines, by Region	5-8
5-6	Global Demand for Ethanolamines by Type	5-9
5-7	North America Capacity for Ethanolamines.....	5-10
5-8	North American Demand for Ethanolamines by Type	5-14
5-9	North American Demand for Ethanolamines	5-15
5-10	Demand & Forecast for Ethanolamines, North America	5-16
5-11	Market Shares of Glyphosate Herbicide Suppliers	5-19
5-12	Industry Structure for Glyphosate Herbicide.....	5-20
5-13	Industry Structure for Surfactants.....	5-22
5-14	Demand for Surfactants by End-Use, North America	5-24
5-15	Multi-attribute Analysis for Secondary Surfactants.....	5-25
5-16	Alkanolamine-based Gas Cleaning Processes	5-26
5-17	Process Flow Diagram of MDEA Gas Cleaning Process	5-30
5-18	Multi-attribute Analysis in Acid-Gas Removal Systems.....	5-31
5-19	Selection Criteria of Amines	5-32
5-20	North American Demand in Metal Working Fluids	5-34
5-21	Multi-attribute Analysis for Corrosion Inhibitors.....	5-36
5-22	Industry Structure for Cement Additives.....	5-37
5-23	Multi-attribute Analysis for Cement Additives	5-39
5-24	North American Demand for Ethylenediamines	5-43



CHAPTER 5: ETHANOLAMINES (CONT'D)

5-25	European Capacity for Ethanolamines	5-45
5-26	European Demand for Ethanolamines by Application	5-46
5-27	Demand & Forecast for Ethanolamines, Europe	5-47
5-28	Japanese Capacity for Ethanolamines	5-50
5-29	Japanese Demand for Ethanolamines by Application	5-51
5-30	Demand & Forecast for Ethanolamines, Japan.....	5-52
5-31	Chinese Capacity for Ethanolamines.....	5-55
5-32	Chinese Demand for Ethanolamines by Application.....	5-57
5-33	Demand & Forecast for Ethanolamines, China	5-58
5-34	Rest of World Capacity for Ethanolamines	5-60
5-35	Rest of World Demand for Ethanolamines by Application.....	5-61
5-36	Demand & Forecast for Ethanolamines, Rest of World	5-62
5-37	Pricing of Ethanolamines, Global.....	5-63
5-38	Growth Driver Tree Analysis, North America	5-66
5-39	Growth Driver Tree Analysis, Europe.....	5-67
5-40	Growth Driver Tree Analysis, Japan	5-68
5-41	Growth Driver Tree Analysis, China.....	5-70
5-42	World Demand for Ethanolamines, by Region.....	5-71

CHAPTER 6: GLYCOL ETHERS

6-1	Properties of Selected EO based Glycol Ethers (GE).....	6-2
6-2	Typical Manufacturing Process Flow sheet.....	6-4
6-3	Manufacturing Cost Economics	6-5
6-4	Global Capacity and Demand of EO based GE by Type.....	6-7
6-5	Global Capacity for E&P Series Glycol Ethers, by Region	6-8
6-6	Major Global Suppliers for E&P Series Glycol Ethers	6-9
6-7	Global Demand and Forecast for Glycol Ethers by Region	6-10
6-8	Global Demand for EO based Glycol Ethers by Type.....	6-11
6-9	Global Demand for EO based Butyl Glycol Ethers.....	6-13
6-10	Global Demand for EO based Methyl Glycol Ethers	6-14
6-11	Global Demand for EO based Ethyl Glycol Ethers	6-15
6-12	Global Demand for EO based Other Glycol Ethers.....	6-16
6-13	North American Capacity for Glycol Ethers	6-17
6-14	Leading Global Supplier's Products for GE.....	6-22

CHAPTER 6: GLYCOL ETHERS (CONT'D)

6-15	North American Demand for EO based GE by Type	6-23
6-16	North American Demand for Butyl GE by App.	6-24
6-17	North American Demand for Methyl GE by Application.....	6-25
6-18	North American Demand for Ethyl GE by Application	6-26
6-19	Demand & Forecast for EO based GE, North America.....	6-27
6-20	North American Demand for Butyl GE by derivative	6-29
6-21	North American Demand for EB GE by Application	6-31
6-22	Demand & Forecast for EB GE, North America	6-32
6-23	North American Demand for DB GE by Application.....	6-33
6-24	Demand & Forecast for DB Glycol Ethers	6-34
6-25	North American Demand for Methyl GE by derivative	6-36
6-26	North American Demand for DM Glycol Ethers by Application	6-37
6-27	Demand & Forecast for DM Glycol Ethers, North America	6-39
6-28	North American Demand for Ethyl Glycol Ethers by derivative	6-40
6-29	North American Demand for EE Glycol Ethers by Application	6-42
6-30	Demand & Forecast for EE Glycol Ethers, North America.....	6-43
6-31	North American Demand for DE Glycol Ethers by Application	6-44
6-32	Demand & Forecast for DE Glycol Ethers, North America	6-45
6-33	North American Demand for Other GE by Derivative	6-47
6-34	Demand & Forecast for Other Glycol Ethers, North America.....	6-48
6-35	Multi-attribute Analysis for Paints & Coatings	6-51
6-36	Industry Structure for Paints & Coatings.....	6-53
6-37	Multi-attribute Analysis for Cleaning Applications.....	6-55
6-38	Industry Structure for Cleaning	6-56
6-39	Multi-attribute Analysis for Printing Inks.....	6-58
6-40	Industry Structure for Printing Inks	6-59
6-41	Industry Structure for Jet Fuel Additive	6-62
6-42	Multi-attribute Analysis in Brake Fluid Applications.....	6-65
6-43	Industry Structure for Brake Fluids	6-67
6-44	European Capacity for Glycol Ethers	6-70
6-45	European Demand for EO based Glycol Ethers by Type	6-75
6-46	European Demand for Glycol Ethers by Derivative	6-76
6-47	European Demand for Glycol Ethers by Application	6-77
6-48	European Demand for Butyl Glycol Ethers by Derivative	6-78
6-49	European Demand for Butyl Glycol Ethers by Application	6-79
6-50	European Demand for Methyl Glycol Ethers by Derivative.....	6-80



CHAPTER 6: GLYCOL ETHERS (CONT'D)

6-51	European Demand for Methyl Glycol Ethers by Application	6-82
6-52	European Demand for Ethyl Glycol Ethers by Derivative	6-83
6-53	European Demand for Ethyl Glycol Ethers by Application	6-84
6-54	Demand & Forecast for EO based Glycol Ethers, Europe	6-85
6-55	Japanese Capacity for Glycol Ethers	6-87
6-56	Japanese Demand for EO based Glycol Ethers by Type	6-90
6-57	Japanese Demand for Butyl Glycol Ethers by Derivative	6-91
6-58	Japanese Demand for Methyl Glycol Ethers by Derivative	6-92
6-59	Japanese Demand for Ethyl Glycol Ethers by Derivative	6-93
6-60	Japanese Demand for EO based Glycol Ethers by Application...	6-94
6-61	Demand & Forecast for EO based Glycol Ethers, Japan	6-95
6-62	Rest of World Capacity for EO based Glycol Ethers, by Region	6-98
6-63	Rest of World Capacity for EO based Glycol Ethers	6-99
6-64	Rest of World Demand for EO based Glycol Ethers by Type.....	6-100
6-65	Rest of World Demand for EO based Glycol Ethers by Region..	6-101
6-66	Pricing of EO based Glycol Ethers, Global	6-104
6-67	E-series Glycol Ethers Position on Industry Consumption Level	6-106
6-68	Growth Driver Tree Analysis, North America	6-108
6-69	Growth Driver Tree Analysis, Europe.....	6-109
6-70	Growth Driver Tree Analysis, Japan	6-111
6-71	Market and Technology Position Table, North America.....	6-113
6-72	Market and Technology Position Chart, North America.....	6-114



WORLDWIDE ETHYLENE OXIDE AND DERIVATIVES
Markets, Technologies and Trends
2002-2007

(PR211)

ORDER FORM

Mail order form/payment to:
Chemical Market Resources, Inc.
1120 NASA Road 1, Suite 340
Houston, TX 77058-3320
Email:CMRInfo@CMRHouTex.Com

Telephone Inquiries: 281-333-3313
Fax Inquiries: 281-333-3361
Wiring Instructions: Horizon Capital Bank
ADA No: 113023945
Acct: 78581

The report is issued and available for immediate delivery. The price of the complete study is \$12,000. Additional copies will be available for \$400 each. Individual chapters can also be purchased. Each individual chapter will include executive summary and strategic analysis. The price list for individual chapters is as follows:

CHAPTER 3: ETHYLENE OXIDE	US\$ 5,000
CHAPTER 4: ETHYLENE GLYCOLS	US\$ 5,000
CHAPTER 5: ETHANOLAMINES	US\$ 4,000
CHAPTER 6: GLYCOL ETHERS	US\$ 4,000

Subscribers agree to treat the contents of this report as confidential, not to be revealed to any person outside the subscriber organization, and to certify the report will be used solely by the officers and employees of the subscriber or majority owned subsidiaries (>51%).

.....

Authorized Signature	Date	
.....	
Company Name	Name/Designation	
.....	
Street Address		
.....		
City	State	Zip
.....
Telephone/Fax Numbers		
.....		

If you are ordering extra copies, please include the addresses where the copies are to be mailed (on an additional piece of paper), if different from your own.

ABOUT OUR COMPANY....

CHEMICAL MARKET RESOURCES, Inc., was founded in 1990 to focus on the areas of marketing research and strategic planning. Our global clientele is concentrated within the chemical, petrochemical, plastics and related industries.

Prior to joining CMR, Inc., our associates held responsible positions in the chemical and allied industries. Our team of professionals has strong technical backgrounds combined with hands-on business experience. Compilation of data, strategic analyses, writing and editing are entirely conducted in our state of the art facilities in-house, to assure quality control at each stage of development. Our strength is in providing our clients close interaction to maximize effectiveness. We provide in-depth analyses with actionable statements in a cost-effective and timely fashion.

Multiclient Studies

Plasticizers - North America, Europe and Asia 2000-2005 - Markets Technologies & Trends - Completed November 2001

North American Chemical Consumption Databases. Completed databases are: Caustic Soda and Potash Series, Isocyanates Series, Glycol Series and Phenol/Acetone Series

North American Unsaturated Polyesters 1994-2000 – Markets, Technologies and Inter-material Competition – Completed January 1994

North American Antifreeze Recycling Markets 1994-2000 – Markets, Technologies and Trends – Completed January 1994

Other Chemical Trends Analysis Studies include: Hydrogen Peroxide, Alpha Olefins, Propylene Oxide, Biocides, Oxo Alcohols, Polyalphaolefins, Bio Solvents, Carbon Dioxide, Heat Stabilizers, Acrylamides, Anti-microbial Agents, Activated Carbons and Helium.

Proprietary Studies

We have positioned numerous polyolefin and chemical products in the markets in North and Latin America, Europe, and Asia Pacific. We have conducted studies for most of the major chemical suppliers and end users - Call us for a list of proprietary studies.

***For fresh and innovative ideas on
Chemicals/Plastics Marketing Research***

Reach us at Tel: (281) 333-3313, Fax: (281) 333-3361

Website: www.CMRHouTex.com

Email: CMRInfo@CMRHouTex.Com