

TABLE OF CONTENTS

BASIC ANALYSIS

| | |
|--|----|
| About This Report..... | 1 |
| Executive Summary..... | 3 |
| About Propylene..... | 6 |
| Introduction..... | 6 |
| Commercial Forms & Applications..... | 7 |
| Polymer Grade Propylene Production Pathways..... | 8 |
| Process Overview..... | 9 |
| Product(s) Generated..... | 9 |
| Process Inputs..... | 9 |
| Technology Maturity Assessment..... | 10 |
| Highlights & Remarks..... | 12 |
| Industrial Site..... | 13 |
| Introduction..... | 13 |
| Process Unit Description..... | 15 |
| Site Infrastructure Description..... | 19 |
| Key Process Input and Output Figures..... | 23 |
| Labor Requirements..... | 23 |
| Capital Investment..... | 24 |
| Fixed Capital..... | 25 |
| Working Capital..... | 27 |
| Additional Capital Requirements..... | 28 |
| Total Capital Investment..... | 29 |
| Operating Costs..... | 30 |
| Operating Variable Costs..... | 32 |

| | |
|--|-----|
| Operating Fixed Costs..... | 33 |
| Depreciation..... | 33 |
| Total Operating Cost..... | 33 |
| Product Value Analysis..... | 35 |
| Corporate Overhead..... | 36 |
| Return on Capital Employed (ROCE)..... | 36 |
| Process Economics Summary..... | 37 |
| Product Value Composition..... | 37 |
| Economic Datasheet..... | 37 |
| Economic Remarks..... | 39 |
| References..... | 40 |
| Analysis Methodology..... | 41 |
| APPENDIX A - ABOUT INTRATEC..... | A-1 |
| APPENDIX B - TERMS & CONDITIONS..... | B-1 |
| APPENDIX C - REPORT SHARING TERMS..... | C-1 |

LIST OF TABLES

| | |
|---|----|
| Economic Analysis Summary..... | 5 |
| Process Technology Maturity Scale..... | 11 |
| Raw Materials Consumption..... | 23 |
| Labor Requirements..... | 23 |
| Plant Cost Estimate Accuracy Range (USD Million)..... | 26 |
| Owner's Cost Summary..... | 26 |
| Fixed Capital Summary..... | 27 |
| Working Capital Breakdown..... | 27 |
| Additional Capital Requirements Breakdown..... | 28 |
| Operating Variable Costs Breakdown..... | 32 |
| Operating Fixed Costs Breakdown..... | 33 |
| Operating Cost Summary..... | 33 |
| Corporate Overhead Costs Breakdown..... | 36 |
| Propylene Production from Butenes - Economic Datasheet..... | 38 |
| Process Contingency Factor Estimation Methodology..... | 46 |
| Project Contingency Factor Estimation Methodology..... | 47 |
| Fixed Capital Estimate Accuracy Range..... | 51 |
| Maintenance Cost Estimation Methodology..... | 54 |
| Marketing & Advertising Cost Estimation Methodology..... | 56 |
| Research & Development Cost Estimation Methodology..... | 56 |
| Expected ROCE Factor Estimation Methodology..... | 57 |

LIST OF FIGURES

| | |
|--|----|
| Polymer Grade Propylene Production Pathways Diagram..... | 8 |
| Industrial Site Configuration..... | 14 |
| Block Flow Diagram - Manufacturing Process..... | 16 |
| Plant Cost Summary (USD Million)..... | 25 |
| Capital Investment Summary (USD Million)..... | 29 |
| Operating Cost Breakdown (USD/mt)..... | 34 |
| Product Value Composition (USD/mt)..... | 37 |
| Production Cost Report Development Methodology..... | 42 |