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QUALITY IMPROVEMENT OF HEAVY DISTILLATE FOR
LUBRICATING BASE OIL BY HYDROTREATMENT

Miss Sasiwimol Boonthrong

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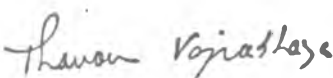
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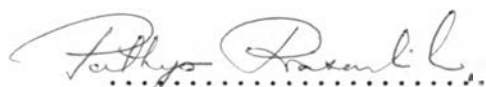
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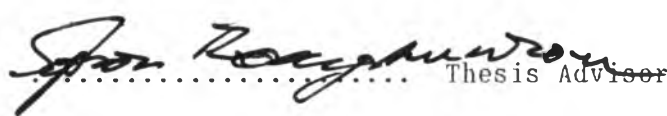
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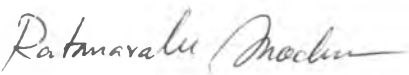
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ศศิวิมล บุญทรง : การปรับปรุงคุณภาพส่วนกลั่นหนักเพื่อใช้เป็นน้ำมันหล่อลื่นพื้นฐานโดยกระบวนการบำบัดด้วยไฮโดรเจน (QUALITY IMPROVEMENT OF HEAVY DISTILLATE FOR LUBRICATING BASE OIL BY HYDROTREATMENT) อ.ที่ปรึกษา: รศ.ดร.โสภณ เรืองสำราญ , นางรัตนาวลี อินโชนานนท์, 112 หน้า, ISBN 974-583-106-9

การปรับปรุงคุณภาพส่วนกลั่นหนักที่ผ่านการแยกไขด้วยเมทิล เอทิล คีโตน โดยใช้อัตราส่วนของตัวทำละลายต่อน้ำมันเท่ากับ 3 : 1 ที่อุณหภูมิ -15°C และผ่านการฟอกสีด้วยกรดซัลฟูริกเข้มข้น 10% โดยปริมาตรของน้ำมันกับ ฟลูเออร์ เอิร์ท 30% โดยน้ำหนักของน้ำมันโดยผ่านกระบวนการบำบัดด้วยไฮโดรเจน ตัวเร่งปฏิกิริยาที่ใช้ประกอบด้วย โมลิบดีนัมไดออกไซด์ 10% นิกเกิลออกไซด์ 5% บนตัวรองรับอลูมินา พบว่าสภาวะที่เหมาะสมในการทำปฏิกิริยาประกอบด้วยปริมาณของตัวเร่งปฏิกิริยาเท่ากับ 4% โดยน้ำหนักของน้ำมันที่อุณหภูมิ 350 °C ภายใต้ความดันย่อยของไฮโดรเจนเท่ากับ 529 psig เป็นเวลา 2.5 ชั่วโมง

จากการบำบัดด้วยไฮโดรเจนดังกล่าวมีผลต่อการปรับปรุงคุณภาพเกี่ยวกับน้ำมันในแง่ของการลดปริมาณซัลเฟอร์ เพิ่มค่าดัชนีความหนืดและเพิ่มความเสถียรต่อการถูกออกซิไดซ์ ผลิตภัณฑ์น้ำมันที่ได้สามารถนำมาใช้เป็นน้ำมันหล่อลื่นพื้นฐาน

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The quality improvement of heavy distillate, after dewaxing by methyl ethyl ketone with the solvent/oil ratio 3:1 at the temperature of -15°C and bleaching with concentrated sulfuric acid 10% by volume of oil and fuller's earth 30% by weight of oil, was then subjected to hydrotreatment. The catalyst contained 10% molybdenum trioxide and 5% nickel oxide supported on alumina. The optimum operating conditions included 4% catalyst concentration by weight of oil at 350°C under hydrogen gas with partial pressure of 529 psig for 2.5 hours.

This catalytic hydrotreatment gave improved hydrotreated oils by reducing sulfur content and increasing viscosity index as well as oxidation stability. This oil product could be used as lubricating base oil.

ภาควิชา PETRO-POLYMER INTERPROGRAM

สาขาวิชา PETROCHEMISTRY

ปีการศึกษา 2535

ลายมือชื่อนิสิต ศศิวิมล บุณทรจง

ลายมือชื่ออาจารย์ที่ปรึกษา

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม

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CONTENTS

	Page
ABSTRACT IN THAI.....	iv
ABSTRACT IN ENGLISH.....	v
ACKNOWLEDGEMENTS.....	vi
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xiii
ABBREVIATIONS.....	xvi

CHAPTER

1. INTRODUCTION.....	1
2. THERORETICAL CONSIDERATIONS.....	3
2.1 Crude oil.....	3
2.1.1 Origin.....	3
2.1.2 Appearence and Composition.....	4
2.1.3 Refining Process.....	7
2.2 Fang Refinery.....	9
2.3 Lubricating Base Oil.....	11
2.3.1 Sources	11
2.3.2 Processing.....	11
2.3.3 Composition.....	17
2.3.4 Properties	18
2.3.4.1 Physical Properties.....	18
2.3.4.2 Chemical Properties.....	22
2.4 Properties and Structure Relationship.....	30

2.5 The Basic Function of Lubricant.....	33
2.6 Hydrotreating Process.....	35
2.6.1 Definition.....	35
2.6.2 Reaction.....	36
2.6.3 Hydrotreating of Lubricating Oil Stocks.....	37
3. EXPERIMENTATION.....	44
3.1 Materials.....	44
3.2 Apparatus.....	46
3.2.1 Apparatus for preparing catalyst by dry impregnation.....	46
3.2.2 Apparatus for calcination.....	47
3.2.3 Infrared Spectrophotometer.....	47
3.2.4 Inductively Coupled Plasma Emission Spectrometer.....	48
3.2.5 Hydrogenator.....	48
3.2.6 Viscosity.....	50
3.2.7 Pour Point.....	50
3.2.8 Color.....	50
3.2.9 % Sulfur.....	50
3.2.10 C ¹³ -NMR Nuclear Magnetic Resonance Spectrometer.....	50
3.2.11 Thermogravimetric Analyzer.....	51
3.3 Procedure.....	53
3.3.1 Dewaxing of heavy distillate by methyl ethyl ketone.....	53
3.3.2 Determination of the physical and	

chemical properties of dewaxed oil....	53
3.3.3 Acid-clay treating.....	54
3.3.4 Determination of the physical and chemical properties of acid-clay treated oil.....	55
3.3.5 Measuring pore volume of alumina support CS-303.....	55
3.3.6 Preparing catalyst containing 10% MoO ₃ and 5% NiO on alumina support.....	56
3.3.7 The amount of molybdenum trioxide and nickel oxide in the catalyst were analyzed by Inductively Coupled Plasma Emission Spectrometer.....	56
3.3.8 The catalyst activity was tested by hydrogenation of cyclohexene.....	57
3.3.9 Hydrotreating Process.....	57
3.3.10 Selecting a suitable operating conditions.....	58
3.3.8 Determination of the physical and chemical properties of hydrotreated oil.....	59
4. RESULTS AND DISCUSSION	62
5. CONCLUSION.....	99
REFERENCES.....	101
APPENDIX	104

A1	The method for calculating pore volume of alumina support CS-303.....	105
A2	The method for calculating the amount of ammonium molybdate and nickel nitrate hexahydrate for impregnation.....	105
VITA.....		112

LIST OF TABLES

TABLES	Page
2.1 Standard oxidation test.....	24
2.2 Lubricating oil properties of some typical hydrocarbon structures.....	32
3.1 Typical chemical properties of support type CS-303 from United Catalyst Inc.,.....	45
3.2 Typical physical properties of support type CS-303 from United Catalyst Inc.,.....	45
3.3 The various operating conditions for the experiment at a constant agitation 300 rpm.....	60
4.1 The physical and chemical properties of dewaxed oil.....	65
4.2 The physical and chemical properties of acid-clay treated oil.....	69
4.3 The percentages of molybdenum and nickel were analyzed by ICP.....	71
4.4 Hydrotreating of acid-clay treated oil at various reaction temperature, cat.conc. 3 % of oil, reaction time 2 hrs, hydrogen partial pressure 529 psig, agitation speed 300 rpm.....	75
4.5 Hydrotreating of acid-clay treated oil using different concentration of catalyst by weight of oil, reaction temperature 350 °C, reaction time 2 hrs, hydrogen partial pressure 529 psig,	

TABLES

	agitation speed 300 rpm.....	81
4.6	Hydrotreating of acid-clay treated oil at various reaction time, reaction temperature 350 °C, cat.conc. 4 % of oil, hydrogen partial pressure 529 psig, agitation speed 300 rpm.....	87
4.7	Hydrotreating of acid-clay treated oil at different hydrogen partial pressure, reaction temperature 350 °C, cat. conc. 4 % of oil, reaction time 2.5 hrs, hydrogen partial pressure 529 psig, agitation speed 300 rpm.....	93
A1	Physical properties of lubricating base oil from various sources.....	107

LIST OF FIGURES

FIGURES	Page
2.1 Typical hydrocarbon configuration.....	5
2.2 Crude distillation unit.....	9
2.3 Lube seperating process.....	12
2.4 Lube processing.....	12
2.5 Crude oil composition-simplified.....	13
2.6 Lube distillation.....	14
2.7 Propane deasphalting.....	15
2.8 MEK/Toluene Dewaxing.....	16
2.9 Comparison between typical model curves for both TG thermal and thermooxidation stabilities.....	26
2.10 Infrared spectrum before and after oxidation for oil 1 and 2.....	27
2.11 ¹ H-NMR Spectrum of the lubricating base oil....	29
2.12 ¹³ C-NMR Spectrum of the lubricating base oil...	29
2.13 Concept of dynamic viscosity.....	34
2.14 Typical hydrocarbon hydrogenation reactions....	36
2.15 Effect of hydrocarbon structure on viscosity...	39
2.16 Reaction mechanism for bifunctional catalyst...	41
3.1 The apparatus for preparing catalyst by dry impregnation method.....	46
3.2 Calcinator.....	47
3.3 Bubble flow meter.....	48

FIGURES

3.4	Floor stand reactor.....	49
3.5	Reactor Fittings.....	52
4.1	The percents by weight of wax and oil seperated by dewaxing process.....	63
4.2	Wax and dewaxing oil.....	64
4.3	The percents by weight of sludge and bleached oil from acid-clay treated process.....	67
4.4	Acid-clayed treated oil.....	68
4.5	IR spectrum of cyclohexene.....	73
4.6	IR spectrum of cyclohexene after hydrogenation.....	73
4.7	Effect of temperature on color.....	76
4.8	Effect of temperature on VI.....	76
4.9	Effect of temperature on % Sulfur.....	77
4.10	Effect of temperature on % Carbon type.....	77
4.11	Effect of temperature on % oxidative compound..	78
4.12	Effect of catalyst concentration on color.....	82
4.13	Effect of catalyst concentration on VI.....	82
4.14	Effect of catalyst concentration on % Sulfur...	83
4.15	Effect of catalyst concentration on % Carbon type.....	83
4.16	Effect of catalyst concentration on % oxidative compound.....	84
4.17	Effect of time on color.....	88
4.18	Effect of time on VI.....	88

FIGURES

4.19	Effect of time on % Sulfur	89
4.20	Effect of time on % Carbon type.....	89
4.21	Effect of time on % oxidative compound.....	90
4.22	Effect of hydrogen partial pressure on color...	94
4.23	Effect of hydrogen partial pressure on VI.....	94
4.24	Effect of hydrogen partial pressure on % Sulfur	95
4.25	Effect of hydrogen partial pressure on % Carbon type	95
4.26	Effect of hydrogen partial pressure on % oxidative compound.....	96
A1	¹³ C-NMR spectrum of acid-clay treated oil.....	108
A2	¹³ C-NMR spectrum of hydrotreated oil.....	109
A3	Thermooxidation stability curve of acid-clay treated oil.....	110
A4	Thermooxidation stability curve of hydrotreated oil.....	111

ABBREVIATIONS

°C	=	Celcius Degree
°F	=	Farenheit Degree
VI	=	Viscosity Index
cSt	=	Centistoke Unit
TG	=	Thermal Gravimetry
% Ca	=	Percent of aromatic carbon
% Cp	=	Percent of paraffinic carbon
% Cn	=	Percent of naphthenic carbon
O.C.	=	Oxidative compound
rpm	=	round per minute
ppm	=	part per million
SN	=	Solvent Neutral
SUS	=	Saybolt Universal Seconds
ISO VG	=	International standard organization viscosity grade