

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN

G. Seitenova

TECHNOLOGY OF HYDROCARBON PROCESSING

Textbook

Almaty, 2016

UDC 622 (075.8) LBC 33x73 S 44

Approved by the Ministry of Education and Science, Republican scientific and practical center «Textbook»

Reviewers:

E.D. Ivanchina – Doctor of Technical sciences, Professor of National research Tomsk Polytechnic University;

A.H. Mustafin – Candidate of Technical sciences, Professor of the Department "Mechanics and oil and gas business" Pavlodar State University S. Toraighyrov;

A. Kolpek – Candidate of Chemistry sciences, Professor of the Department of Chemistry, Chemical Technology and Ecology / Kazakh University of Technology and Business.

Seitenova G.

S44 Technology of hydrocarbon processing: Textbook. - Almaty: 2016.

ISBN 978-601-7529-84-0

The textbook "Technology of hydrocarbon processing" was developed on the basis of a model education curriculum and designed for students of the specialty "Chemical technology of organic substances", as well as for undergraduates studying the refinery processes, students of refresher courses, scientific and engineering workers of petrochemical and oil and gas industry.

The textbook deals with development of Kazakhstan oil industry, the classification of the oils, the theoretical foundations and basic technology processes applied in modern oil refineries, the current state and actual problems of oil refining. Apparatus equipment of technological installations was displayed providing information about how they work. The characteristics of Kazakh oil refineries and running normative documents, applicable to the industry, are shown.

UDC 622 (075.8) LBC 33x73

ISBN 978-601-7529-84-0

© G. Seitenova, 2016 © Association of higher educational institutions of Kazakhstan, 2016

CONTENT

PREFACE	7
1 DEVELOPMENT OF KAZAKHSTAN OIL INDUSTRY	11
1.1 At the streams of oil industry	11
1.2 Reclamation and development of the Ural-Emba region	14
1.2.1 Years of experiments	19
1.2.2 Qualitatively new stage	21
1.3 Birth of new oil producing area.	23
1.3.1 This is how big Mangyshlak oil began	.27
1.3.2 Further strengthening of Kazakhstan resource base	32
2 OIL PROCESSING PRODUCTS	36
2.1 Low-boiling products	37
2.2 Gasoline	.41
2.3 Gasoline specifications	.45
2.3 Gasoline specifications 2.4 Distillate fuels	.47
2.5 Jet and turbine fuels	.47
2.6 Automotive diesel fuels	.48
2.7 Railroad diesel fuels	.49
2.8 Heating oils	.50
2.9 Residual fuel oils	.51
3 DEFINITION AND CLASSIFICATION OF OILS	
4 OIL DISTILLATION	
4.1 Oil fractions	
4.2 Methods of oil distillation	
4.3 Cut points.	.60
4.4 Classification of rectification columns and contact devices	
4.5 Temperature schedule adjustment of the column	
4.6 Distillation with water vapour	.63
4.7 Industrial units of primary crude oil processing	.64
4.7.1 Electric desalting and dehydration of oil	.64
4.7.2 Atmospheric distillation	.71
4.7.3 Vacuum distillation of masut	.78
4.7.4 Stabilization and gasoline rerun distillation	
5 CATALYTIC PROCESSES	
5.1 Oil processing catalysts and application peculiarities	. 86
5.2 Catalytic cracking catalysts	.89
5.3 Catalyst regeneration	
5.4 Catalytic cracking	98
5.5 Catalytic C-alkylation of isobutene by olefins	11
5.6. Catalytic O – alkylation of methanol with	
isobutylene (MTBE production)	11

G. Seitenova

TECHNOLOGY OF HYDROCARBON PROCESSING

Textbook

Format 60×90^{1/16}. Offset paper. Font type "Times New Roman". Volume – 15,5 p.p. Edition – 600 pcs.

Order №48
The printing house "BookPrint" LLP.
Tel.: 386-58-80. 5
sd.bookprint@mail.ru