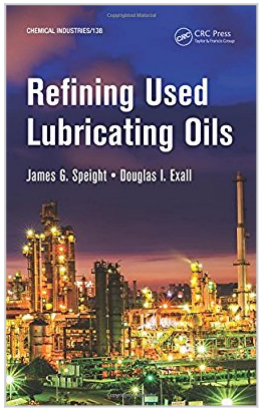

Refining Used Lubricating Oils (Chemical Industries)

By James Speight, Douglas I. Exall

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Used lubricating oil is a valuable resource. However, it must be re-refined mainly due to the accumulation of physical and chemical contaminants in the oil during service. **Refining Used Lubricating Oils** describes the properties of used lubricating oils and presents ways these materials can be re-refined and converted into useful lubricants as well as other products. It provides an up-to-date review of most of the processes for used lubricating oil refining that have been proposed or implemented in different parts of the world, and addresses feasibility and criteria for selecting a particular process.

The book begins with an overview of lubricating oil manufacturing, both petroleum-based and synthetic-based. It reviews the types and properties of lubricating oils and discusses the characteristics and potential of used lubricating oils. The authors describe the basic steps of used oil treatment including dehydration, distillation or solvent extraction, and finishing. They explore the combustion of used oil for use as fuel, covering chemistry and equipment, fuel oil properties, and combustion emissions.

The book considers alternative processing options such as refinery processing and re-refining. It also reviews the major refining processes that have been suggested over the years for used oil. These include acid/clay, simple distillation, combinations of distillation and hydrogenation, solvent extraction, filtration, and coking processes. The book addresses economic, life cycle assessment, and other criteria for evaluating the attractiveness of an oil recycling project, examining various costs and presenting an economic evaluation method using an Excel spreadsheet that can be downloaded from the publisher’s website. The book concludes with a chapter offering insights on how to choose the most suitable process technology.

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Refining Used Lubricating Oils (Chemical Industries) By James Speight, Douglas I. Exall Bibliography

- Sales Rank: #2980116 in Books
- Published on: 2014-04-07
- Original language: English
- Number of items: 1
- Dimensions: .80" h x 6.30" w x 9.30" l, .0 pounds
- Binding: Hardcover
- 466 pages

Editorial Review

About the Author

James G. Speight earned a BSc and a PhD in chemistry from the University of Manchester, England. Since 1998, he has been employed at CD&W Inc. as a consultant/author/lecturer on energy and environmental issues. Dr. Speight has more than 40 years of experience in areas associated with the properties and recovery of reservoir fluids. His work has also focused on the environmental effects and remediation technologies related to fossil fuel and synthetic fuel processing. Dr. Speight is the author of more than 400 publications, reports, and presentations and has taught more than 70 courses. He is the author and coauthor of more than 50 books and bibliographies related to fossil fuels, synthetic fuels, biofuels, fuel processing, and environmental issues. He is also the recipient of several awards.

Douglas I. Exall, P.Eng., is an engineering consultant in oil and gas production and processing technologies. He received his PhD in chemical engineering from the University of Natal in South Africa. He has published journal articles, industrial R&D reports, conference papers, and patents, and has experience teaching in most areas of chemical engineering. Dr. Exall has worked as a research manager in the oil and gas industry and research organizations in Canada, and as a professor or adjunct professor at universities in several countries. His consulting work has included reviewing options for the re-refining of lubricating oils, the available processes and technologies, and their economic viability.

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