1. Record Nr. UNINA9910462799003321

Autore	Bart Jan C. J
Titolo	Biolubricants : science and technology / / Jan C.J. Bart, Emanuele Gucciardi and Stefano Cavallaro
Pubbl/distr/stampa	Cambridge, UK : , : Woodhead Publishing Limited, , 2013
ISBN	0-85709-632-X
Descrizione fisica	1 online resource (944 p.)
Collana	Woodhead Publishing series in energy, , 2044-9364 ; ; number 46
Altri autori (Persone)	GucciardiEmanuele CavallaroStefano
Disciplina	621.89
Soggetti	Lubrication and lubricants Lubrication and lubricants - Environmental aspects Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Biolubricants: Science and technology; Copyright; Contents; Author contact details; About the authors; Woodhead Publishing Series in Energy; Preface; 1Renewable lubricants; 1.1 Introduction; 1.2 Scope; 1.3 Chapter overview; 1.4 Sources of further information and advice; 1.5 References; 2Principles of lubrication; 2.1 Introduction; 2.2 Purpose of lubrication; 2.3 Friction and lubrication conditions; 2.4 Sources of further information and advice; 2.5 References; 3Lubricants: properties and characteristics; 3.1 Introduction; 3.2 Lubricant base stocks 3.3 Classifications for oils and lubricating greases3.4 Eco designations for lubricants; 3.5 Environmentally acceptable lubricants; 3.6 Physicochemical properties of lubricants; 3.7 Sources of further information and advice; 3.8 References; 4The transition from reliance on fossil resources to biomass valorisation; 4.1 Introduction; 4.2 Biomass; 4.3 Transformation of biomass to bioproducts; 4.4 Biomass potentials and limitations; 4.5 Sources of further information and advice; 4.6 References; 5Renewable feedstocks for lubricant production; 5.1 Introduction 5.2 Natural vegetable oils and animal fats in lubrication5.3 Industrial oil-crop engineering; 5.4 Bio-based wax esters; 5.5 Plant polymeric carbohydrates; 5.6 Sources of further information and advice; 5.7 References; 6Chemical transformations of renewable lubricant

feedstocks; 6.1 Introduction; 6.2 Chemically modified fatty compounds in lubrication; 6.3 Branched-chain fatty acids (BCFAs) in lubrication; 6.4 Modified starch-based lubricants; 6.5 Sources of further information and advice; 6.6 References; 7Formulating lubricating oils; 7.1 Introduction; 7.2 Lubricant additive technology
7.3 Additive design for renewable lubricants7.4 Biolubricant formulations; 7.5 Sources of further information and advice; 7.6 References; 8Quality assurance of biolubricants; 8.1 Introduction; 8.2 Biolubricant quality requirements; 8.3 Biolubricant quality management; 8.4 Quality control of biolubricant feedstocks; 8.5 Standardised methods for testing lubricating fluids and greases; 8.6 Biolubricant process and product quality control; 8.7 Biolubricant analytical methodology; 8.8 Quality of in-service lubricants; 8.9 Sources of further information and advice; 8.10 References
9Legislation of relevance to lubricants9.1 Introduction; 9.2 Chemicals policy initiatives; 9.3 (Bio)lubricant regulations; 9.4 Ecolabels and international standards; 9.5 Sources of further information and advice; 9.6 References; 10Biolubricant product development; 10.1 Introduction; 10.2 Original equipment manufacturer (OEM) specifications for lubricants; 10.3 Biolubricant standardisation; 10.4 Performance tests for lubricants and lubricating greases; 10.5 Biolubricant research and technology development (RTD); 10.6 Sources of further information and advice; 10.7 References
11Environmental life-cycle assessment (LCA) of lubricants

Sommario/riassunto

Lubricants are essential in engineering, however more sustainable formulations are needed to avoid adverse effects on the ecosystem. Bio-based lubricant formulations present a promising solution. Biolubricants: Science and technology is a comprehensive, interdisciplinary and timely review of this important subject.Initial chapters address the principles of lubrication, before systematically reviewing fossil and bio-based feedstock resources for biodegradable lubricants. Further chapters describe catalytic, (bio) chemical functionalisation processes for transformation of feedstocks into