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AN INDUSTRY STANDARD FOR FLUID POWER

Recommended practice – Hydraulic fluid power – Use of environmentally acceptable fluids

Descriptors: hydraulic fluid power environmentally acceptable fluids systems

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NATIONAL FLUID POWER ASSOCIATION, INC.

6737 W. Washington St. / Milwaukee, WI 53214 USA

PHONE: +1 414 778 3344 / FAX: +1 414 778 3361 / E-mail: nfpa@nfpa.com

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Foreword

This Foreword is not part of National Fluid Power Association (NFPA) *Recommended practice – Hydraulic fluid power – Use of environmentally acceptable fluids*, NFPA/T2.13.14-2007.

At the 19 August 2003 joint meeting of NFPA/T2.13 and NFPA/T3.19, Mr. Michael and Ms. Marougy circulated draft no. 1 of NFPA/T2.13.14-200x. The group agreed that the document should encompass vegetable oils only and suggested several changes to the document draft.

Mr. Michael and Ms. Marougy prepared draft no. 2 of NFPA/T2.13.14-200x, for discussion at the next NFPA/T2.13 Fluids Technology Committee meeting, and forwarded it to Ms. Wetzel at Headquarters. Ms. Wetzel reformatted and proofed draft no. 2 and circulated it, along with the third version of the TSP (Title, Scope and Purpose), as an attachment to the agenda for the 26 July 2004 NFPA/T2.13 teleconference meeting.

The document underwent third and fourth drafts, and then draft no. 5 was circulated to NFPA/T2.13 on 4 May 2005, for discussion at a teleconference meeting on 12 May 2005.

At the teleconference meeting on 12 May 2005, a motion was made to circulate the document for general review with corrections. An updated Draft no. 6 was circulated for general review on 31 August 2005. Two comments were received from the general review, and incorporated into Draft no. 7, which was circulated for final ballot on 19 October 2006 and closed on 5 December 2006. The NFPA ballot resulted in one approval vote, zero disapprovals and two abstentions. No comments were received.

At the 14 December 2006 joint teleconference meeting of NFPA/T2.13 and NFPA/T3.19, a motion was approved to ask the NFPA Technical Board for approval to publish the document. At its 12 April 2007 meeting, the Technical Board approved a motion to publish the document.

Project Group Members who developed this standard:

Thelma Marougy
Project Co-Chair and
Fluids Technology Committee Vice Chair
Eaton Corporation

Paul W. Michael
Project Co-Chair and
Fluids Technology Committee Chair
Milwaukee School of Engineering

Paul Schacht
Bosch Rexroth Corp.

Carrie Tatman Schwartz
Industry/National Standards Development
Manager
National Fluid Power Association

Jenna Wetzel*
Standards Development Coordinator
National Fluid Power Association

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* No longer affiliated with organization.

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Due to concern about the ultimate fate of hydraulic fluids that may enter the environment during normal use, environmentally acceptable fluids (classified as HE in ISO 6743-4) are increasingly employed in hydraulic applications. Environmentally acceptable fluids possess enhanced biodegradability and aquatic toxicity properties relative to petroleum oil based fluids. For the purposes of this document, the environmental behavior requirements and specifications for environmentally acceptable fluids are defined in ISO 15380.

In general, hydraulic equipment is designed for use with petroleum oils. When such systems are converted to use environmentally acceptable fluids, it is necessary to re-evaluate the design features, operational techniques, maintenance procedures, and life expectancy of components. This practice presents general recommendations for the use of environmentally acceptable fluids. Since environmentally acceptable fluids differ widely in physical properties as well as their performance capabilities, always consult fluid and hydraulic component suppliers for specific recommendations.

Recommended practice – Hydraulic fluid power – Use of environmentally acceptable fluids

1 Scope

1.1 This recommended practice provides a general educational publication covering the following aspects of each of the general types of environmentally acceptable fluids used in hydraulic fluid power systems:

- a) product description;
- b) biodegradability and toxicity;
- c) operating temperatures;
- d) foaming and aeration;
- e) corrosive properties;
- f) effects on protective coatings;
- g) wear resistant characteristics;
- h) viscosity control;
- i) fluid stability;
- j) safety in exposure to fluid;
- k) spills;
- l) contamination;
- m) effects on strainers and filters;
- n) effects on elastomers;
- o) piping and accessory precautions;
- p) changing fluids in a system.