



BSI Standards Publication

Resistance of metallic materials to liquid biogenic and alternative fuels and their blends

National foreword

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English Version

Resistance of metallic materials to liquid biogenic and alternative fuels and their blends

Résistance des matériaux métalliques aux biocombustibles liquides, aux combustibles liquides alternatifs et à leurs mélanges

Beständigkeit metallischer Werkstoffe gegenüber flüssigen biogenen und alternativen Brennstoffen und deren Blends

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European foreword

This document (CEN/TR 17144:2017) has been prepared by Technical Committee CEN/TC 47 “Atomizing oil burners and their components - Function - Safety - Testing”, the secretariat of which is held by DIN.

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Introduction

Both the limited range and scope of crude oil and other fossil energy sources, as well as the impact on the climate resulting from the anthropogenic output of greenhouse gases, have led to a politically induced initiation of the restructuring of energy usage.

In addition to increasing actual efficiency in the technical utilization of fossil energy sources, the focus is on the development and expansion of renewable energies. The integration of regenerative resources in sustainable heat generation can reduce the output of greenhouse gases such as CO₂, as well as the need for fossil energy sources. As a bio-component of blends, fatty acid methyl ester (FAME) is currently used. As a result of the chemical/physical properties, as well as evaporation and combustion characteristics, experience shows that an admixture is possible up to 30 % (V/V) FAME [22, 23]. Due to the possible interactions of the blends with components and in particular with non-ferrous metals such as copper/brass, the manufacturers of consuming units and devices have approved their products only to a limited extent for such an admixture. By contrast, the manufacturers of tanks and components in the fuel piping consider their products to also be suitable for blends with higher admixtures.

However, with regard to the increasing market penetration of blends as a liquid fuel with biogenic or alternative admixtures, requirements for the materials used should be defined and stipulated as standard. There is, therefore, the need to prove the resistance of the materials used against these fuels.

1 Scope

This Technical Report includes application-relevant metallic materials of supply systems for liquid fuels and their blends with regard to corrosive or service life reducing influences. Assessment of the specialist literature showed possible interactions with biogenic and alternative fuels and motor fuels as well as their blends with mineral oil and motor fuels. The results of this assessment are given in this CEN/TR.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1

material

raw, semi-finished or finished substance of given characteristics from which processing into a component or part is undertaken

[SOURCE: EN 16603-10-03:2014, 3.1.12, modified: deletion of "(gaseous, liquid, solid)"]

3.2

corrosion

physicochemical interaction between a metal and its environment that results in changes in the properties of the metal, and which may lead to significant impairment of the function of the metal, the environment, or the technical system, of which these form a part

[SOURCE: EN ISO 8044:2015, 2.1, modified: deletion of the note]

3.3

liquid fuel

fuel which consists of mineral fuel based fractions and which remains in its liquid state under standard temperature and pressure conditions

[SOURCE: EN 13878:2003, 3.2.1, modified: added mineral fuel based fractions]

3.4

liquid biogenic fuel

liquid fuel which consists 100 % (V/V) of biogenic contents

3.5

liquid alternative fuel

liquid fuel which consists 100 % (V/V) of contents that is not contained in conventional mineral fuel based liquid fuels

3.6

blend

liquid fuel consisting of mineral fuel based fractions and admixtures of liquid biogenic and/or liquid alternative fuels