

DIN 51623:2020-11 (E)

Fuels for vegetable oil compatible combustion engines - Fuel from vegetable oil - Requirements and test methods

| Contents | Page |
|---|------|
| Foreword | 4 |
| Introduction | 5 |
| 1 Scope | 6 |
| 2 Normative references | 6 |
| 3 Terms and definitions..... | 7 |
| 4 Product designation and marking | 8 |
| 5 Product treatment and sampling | 8 |
| 6 Requirements and testing | 8 |
| 6.1 General requirements | 8 |
| 6.2 Requirements for additives | 8 |
| 6.3 Particularities of the requirements for winter capability | 9 |
| 6.4 Particularities of the requirements for the wax content..... | 9 |
| 6.5 Particularities of the requirements for ignition quality..... | 9 |
| 6.6 Information on density/temperature conversion..... | 10 |
| 6.7 Precision and cases of dispute | 11 |
| Annex A (informative) Information on precision data | 12 |
| Annex B (normative) Appearance of the liquid fuel after cooling and heating | 13 |
| B.1 Scope | 13 |
| B.2 Preparation and composition of the sample | 13 |
| B.3 Procedure | 13 |
| Annex C (normative) Adaptation of the test method according to DIN EN 15195:2007-08 for the purposes of vegetable oil fuel | 14 |
| Annex D (informative) Verification of the oil identity..... | 15 |
| D.1 General information..... | 15 |
| D.2 Methods of testing the fatty acid distribution..... | 15 |
| D.3 Sterol analysis | 16 |
| Annex E (informative) Calculation of fuel properties using structural parameters..... | 17 |
| E.1 General information..... | 17 |
| E.2 Calculation of AC and ADB | 17 |
| E.3 Calculation of fuel properties..... | 17 |
| Annex F (informative) Further information on properties and test methods | 19 |
| F.1 General | 19 |
| F.2 Typical measured values for the viscosity of various vegetable oils in the temperature range from 20 °C to 60 °C | 19 |
| F.3 Typical characteristic values for the DCN of vegetable oil fuel | 19 |
| Annex G (informative) Index to describe the viscosity-temperature behaviour of vegetable oil fuel..... | 21 |
| G.1 General..... | 21 |
| G.2 Definition of the index | 21 |
| G.3 Determination of ϑ_{150} and v_{50} | 22 |
| G.4 Ways to use the index..... | 23 |

| | | |
|--|---|----|
| G.4.1 | Calculation of the viscosity-temperature behaviour on the basis of the index..... | 23 |
| G.4.2 | Determining the cold start temperature of an engine..... | 23 |
| G.5 | Examples of suitable applications..... | 24 |
| Annex H (informative) Calorific values of various vegetable oils | | 27 |
| Bibliography | | 28 |

Figures

| | |
|--|----|
| Figure G.1 — Viscosity-temperature curve for type 6P25 vegetable oil | 25 |
|--|----|

Tables

| | |
|---|----|
| Table 1 — Generally applicable requirements, test methods and limit values for vegetable oil fuel..... | 10 |
| Table C.1 — Requirements deviating from the specifications of DIN EN 15195:2007-08 for their application to vegetable oil fuel | 14 |
| Table D.1 — Examples of typical fatty acid distributions in some vegetable oils | 15 |
| Table D.2 — Examples of typical sterol compositions in some vegetable oils as in DIN EN ISO 12228 [9] or DGF standard method F-III 1 (98) [10] | 16 |
| Table F.1 — Dynamic viscosity η as a function of the temperature | 19 |
| Table F.2 — Derived Cetane Number (DCN) | 20 |
| Table G.1 — Table of values..... | 26 |
| Table H.1 — Calorific values of vegetable oils [14]..... | 27 |