



SLOVENSKI STANDARD

SIST EN 3021:2017

01-oktober-2017

Aeronavtika - Suha maziva iz molibdenovega disulfida brez grafita in halogena - Tehnična specifikacija

Aerospace series - Molybdenum disulphide dry film lubricants graphite and halogen free - Technical specification

Luft- und Raumfahrt - Trockenschmierstofffilme aus Molybdänsulfid-Basis, graphitfrei und halogenfrei - Technische Lieferbedingungen

Série aérospatiale - Lubrifiants à base de bisulfure de molybdène, sans graphite et sans halogène - Spécification technique

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Ta slovenski standard je istoveten z: **EN 3021:2017**

ICS:

75.100

Maziva

Lubricants, industrial oils and related products

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 3021

July 2017

ICS 75.100

English Version

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Molybdänsulfid-Basis, graphitfrei und halogenfrei -
Technische Lieferbedingungen

This European Standard was approved by CEN on 17 April 2017.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 3021:2017) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

The requirements of this specification concern graphite and halogen free molybdenum disulphide dry film lubricants for fastener and other parts subjected to sliding and wear. Graphite and halogenated substances may have corrosive effects on the substrate.

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1 Scope

This standard specifies the qualification and test requirements for graphite and halogen free molybdenum disulphide dry film lubricant.

Test requirements and testing of fretting, corrosion, wear and friction properties of relevant lubricants are not part of this standard. Refer to relevant standards in normative references.

All testing defined in this standard has to be certified by the manufacturer of the lubricant.

In order to achieve uniform coatings with defined thickness and best adhesion properties, spray application in combination with heat curing is recommended.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2491, *Aerospace series — Molybdenum disulphide dry lubricants — Coating methods*

EN 2497, *Aerospace series — Dry abrasive blasting of titanium and titanium alloys*

EN 3026, *Aerospace series — Test method for dry film lubricants — Corrosion test on steel specimens*

EN 3027, *Aerospace series — Test method for dry film lubricants — Salt spray test*

EN 3030, *Aerospace series — Test method for dry film lubricants — Solids content*

EN 3840, *Aerospace series — Paints and varnishes — Technical specification*

EN 3847, *Aerospace series — Paints and varnishes — Determination of sedimentation rating¹⁾*

EN 4160, *Aerospace series — Paints and varnishes — Determination of the effect of thermal exposure*

EN 10204, *Metallic products — Types of inspection documents*

EN ISO 1513, *Paints and varnishes — Examination and preparation of test samples (ISO 1513:2010)*

EN ISO 1519, *Paints and varnishes — Bend test (cylindrical mandrel) (ISO 1519:2011)*

EN ISO 1523, *Determination of flash point — Closed cup equilibrium method (ISO 1523:2002)*

EN ISO 1524, *Paints, varnishes and printing inks — Determination of fineness of grind (ISO 1524:2013)*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409:2013)*

EN ISO 2431, *Paints and varnishes — Determination of flow time by use of flow cups (ISO 2431:2011)*

EN ISO 2808, *Paints and varnishes — Determination of film thickness (ISO 2808:2007)*

¹⁾ Published as ASD-STAN Prestandard at the date of publication of this standard. <http://www.asd-stan.org/>

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EN ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pyknometer method (ISO 2811-1:2011)*

EN ISO 2811-2, *Paints and varnishes — Determination of density — Part 2: Immersed body (plummet) method (ISO 2811-2:2011)*

EN ISO 2811-3, *Paints and varnishes — Determination of density — Part 3: Oscillation method (ISO 2811-3:2011)*

EN ISO 2811-4, *Paints and varnishes — Determination of density — Part 4: Pressure cup method (ISO 2811-4:2011)*

EN ISO 2812-1, *Paints and varnishes — Determination of resistance to liquids — Part 1: Immersion in liquids other than water (ISO 2812-1:2007)*

EN ISO 2812-2, *Paints and varnishes — Determination of resistance to liquids — Part 2: water immersion method (ISO 2812-2:2007)*

EN ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method (ISO 3675:1998)*

EN ISO 4618, *Paints and varnishes — Terms and definitions (ISO 4618:2014)*

EN ISO 4628-2, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering (ISO 4628-2:2003)*

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EN ISO 6270-1, *Paints and varnishes — Determination of resistance to humidity — Part 1: Continuous condensation (ISO 6270-1:1998)*

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EN ISO 8504-2, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 2: Abrasive blast-cleaning (ISO 8504-2:2000)*

EN ISO 9117-1, *Paints and varnishes — Drying tests — Part 1: Determination of through-dry state and through-dry time (ISO 9117-1:2009)*

EN ISO 9117-6, *Paints and varnishes — Drying tests — Part 6: Print-free test (ISO 9117-6:2012)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2012)*

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 8080, *Aerospace — Anodic treatment of titanium and titanium alloys — Sulfuric acid process*

ISO 11075, *Aircraft — De-icing/anti-icing fluids — ISO type I*

ISO 11078, *Aircraft — De-icing/anti-icing fluids — ISO types II, III and IV*

3 Terms and definitions

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

3.1

dry lubricant batch

dry lubricant quantity of known composition (MoS₂ containing resin) prepared as one mixture using the same equipment

3.2

runs

sags

local irregularities in the film or coat thickness caused by the downward movement of a coating material during drying in a vertical or an inclined position

Note 1 to entry: Small sags may be called runs, tears or droplets; large sags may be called curtains.

[SOURCE: EN ISO 4618, definition 2.220]

3.3

blister

convex deformation in a film, arising from local detachment of one or more of the constituent coats

[SOURCE: EN ISO 4618, definition 2.30]

3.4

porosity

fine holes or pores within the coating

3.5

wrinkling

development of ripples in a film of coating material during drying

[SOURCE: EN ISO 4618, definition 2.277]

3.6

pinholing

presence of small holes in the film resembling those made by a pin

[SOURCE: EN ISO 4618, definition 2.196]

4 Composition

4.1 General

The components shall be free from substances which may have a harmful effect on the substrate (e.g. corrosion, stress corrosion) and other substances, e.g.: halogenated substances, graphite, metal powders or concentration of substances which have a harmful effect on environment and or health.

4.2 Type A, room temperature curing

Suitable for applications on e.g. aluminium alloys, fibre reinforced plastics.

4.3 Type B, heat curing

Suitable for applications on e.g. titanium, steels, nickel refractory alloys.

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