



DPC: 24/30472120 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 30 April 2024

Origin: International

Latest date for receipt of comments: 18 June 2024

Project No. 2023/00734

Responsible committee: MCE/18/-/16 Hydraulic fluids

Interested committees:

Title: Draft BS ISO 20120 Lubricants — Determination of the Coefficient of Friction of Synchronizer Lubricated by Manual Transmission Fluids (MTF) — High-Frequency, Linear-Oscillation (SRV) Test Machine.

Please notify admin.start@bsigroup.com if you are aware of any keywords that might assist in clarifying or identifying the standard or of the content of this standard:

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

WARNING: THIS IS A DRAFT AND MUST NOT BE REGARDED OR USED AS A BRITISH STANDARD. THIS DRAFT IS NOT CURRENT BEYOND 18 June 2024

This draft is issued to allow comments from interested parties; all comments will be given consideration prior to publication. No acknowledgement will normally be sent. **See overleaf for information on the submission of comments.**

No copying is allowed, in any form, without prior written permission from BSI except as permitted under the Copyright, Designs and Patent Act 1988 or for circulation within a nominating organization for briefing purposes. Electronic circulation is limited to dissemination by e-mail within such an organization by committee members.

Further copies of this draft may be purchased from BSI Shop <http://shop.bsigroup.com> or from BSI Customer Services, Tel: +44(0) 20 8996 9001 or email cservices@bsigroup.com. British, International and foreign standards are also available from BSI Customer Services.

Information on the co-operating organizations represented on the committees referenced above may be obtained from <https://standardsdevelopment.bsigroup.com/>.

E-mail: admin.start@bsigroup.com

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
------------------	------------------------

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 20120

Lubricants — Determination of the Coefficient of Friction of Synchronizer Lubricated by Manual Transmission Fluids (MTF) — High- Frequency, Linear-Oscillation (SRV) Test Machine

*Lubrifiants - Détermination du coefficient de frottement des
synchroniseurs lubrifiés par les huiles de transmissions manuelles
- À l'aide d'un tribomètre linéaire oscillant haute fréquence (SRV)*

ICS: 75.100

ISO/TC 28

Secretariat: **NEN**

Voting begins on:
2024-04-25

Voting terminates on:
2024-07-18

This document is circulated as received from the committee secretariat.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENTS AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

Reference number
ISO/DIS 20120:2024(en)

Full document details: 24/30472120 DC

© ISO 2024

AVA Documents
Document Sharing Hub



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2024 – All rights reserved

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	3
5 Reagents	3
6 Apparatus	4
6.1 Translatory oscillation apparatus	4
7 Test pieces	5
7.1 Flat ring disk	5
7.2 Lower Test Disk	6
8 Preparation of Apparatus and Test Procedure	7
8.1 Installing the specimen holders and test specimen in the test chamber	7
8.2 Test conditions	7
8.2.1 Start conditions (thermostatic stabilization):	7
8.2.2 Cut-off criteria for friction	7
8.2.3 Test parameters:	8
8.2.4 Sample rates for result-relevant measurement channels:	8
8.3 Calibration and inspection	8
9 Expression of results	9
9.1 General	9
9.2 Reporting	9
10 Precision	9
10.1 General	9
10.2 Repeatability r	10
10.3 Reproducibility R	10
Annex A (informative) Additional figures	11
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28 Petroleum and related products, fuels and lubricants from natural or synthetic sources.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In recent years, with the rapid development of automobile industry and increase in engine power have greatly enlarged the test matrices in the market demand for manual transmission oil. Finally, all manual transmission fluids must be pass the corresponding synchronizer bench tests before receiving a homologation. Such bench tests have long durations with associated high costs. A tribometric test method helps to shorten the development time, save costs as well as efficiently deals with large and greatly enlarged the test matrices. It is seen complementary to bench tests in order to filter candidate materials and formulations of mechanical transmission fluids in order to filter useful from useless combinations prior final component and vehicle tests. This test method described in this document can be regarded as an evaluation tool. This test method is dedicated to a translatory oscillation apparatus, which is fully computer controlled. This procedure provides a test method to quickly determine the lubricating ability of fully-formulated gear lubricants used as mechanical transmission fluids (MTF) to display a specified frictional behaviour against materials used in synchronizers of mechanical gears in automotive vehicles. This tribometric test method has found to be complementary to bench tests (for example, test methods ASTM D5579 and CEC L-66-99) by using the present test conditions. The precision is high. This test method is a material and application oriented approach based on inputs from field experiences for characterizing the frictional behaviour using random, discrete and constant parameter combinations as seen in field experiences. Moreover, this test procedure screens and differentiates lubricants in a short test time at low costs by recording the coefficient of friction over test time (see [Figure A.2](#)). Users of this test method should determine whether results correlate with field performance or other applications prior to commercialization.

It is the responsibility of the operator to ensure that all local legislative and statutory requirements are met.

Reprinted with permission from ASTM D8227-20, copyright ASTM International. A copy of the complete standard may be obtained from www.astm.org.

References:

1. CN105067512 (B) 2019-01-22, filed on 2015-07-29, "Friction pair test piece", Assignee: China Petroleum&Chemical Corporation (SINOPEC); Inventors: Tian Zhongli, Zhang Hua, Zong Ming, Luo Yulan.
2. CN108387511 (B) 2020-10-09, filed on 2015-07-29, "Friction pair test piece for SRV simulation evaluation of friction performance of transmission gear oil synchronizer", Assignee: China Petroleum&Chemical Corporation (SINOPEC); Inventors: Tian Zhongli, Zhang Hua, Zong Ming, Luo Yulan.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

ISO takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ISO that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from the patent database available at www.iso.org/patents.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those in the patent database. ISO shall not be held responsible for identifying any or all such patent rights.