
**Lubricants, industrial oils and
related products (class L) — Family
T (Turbines) — Specification for
lubricating oils for turbines**

**AMENDMENT 1: Filterability tests
according to ISO 13357-1 and ISO 13357-
2 — Requirements related to the stage of
the test method**

*Lubrifiants, huiles industrielles et produits connexes (classe L) —
Famille T (Turbines) — Spécifications pour les huiles lubrifiantes
pour turbines*

*AMENDEMENT 1: Essais de filtrabilité selon les normes ISO 13357-1
et ISO 13357-2 — Exigences relatives au stade de la méthode d'essai*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

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
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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*, Subcommittee SC 4, *Classifications and specifications*.

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.

STANDARDSISO.COM : Click to view the full PDF of ISO 8068:2006/Amd 1:2019

Lubricants, industrial oils and related products (class L) — Family T (Turbines) — Specification for lubricating oils for turbines

AMENDMENT 1: Filterability tests according to ISO 13357-1 and ISO 13357-2 — Requirements related to the stage of the test method

Normative references

Replace the references to ISO 4259, ASTM D2272-02, and ASTM D2711-01a with the following:

ISO 4259 (all parts), *Petroleum and related products — Precision of measurement methods and results*

ASTM D 2272, *Standard Test Method for Oxidation Stability of Steam Turbine Oils by Rotating Pressure Vessel*

ASTM D 2711, *Standard Test Method for Demulsibility Characteristics of Lubricating Oils*

Delete the reference to DIN 51554-3.

5.10, Table 3 to Table 6

Replace the rows

Filterability (dry) (minimum)	%	85	85	85	ISO 13357-2
Filterability (wet)	%	pass			ISO 13357-1

With the following:

Filterability (dry) stage I (minimum) ^h	%	80	80	80	ISO 13357-2
Filterability (dry) stage II ⁱ	%	Report			ISO 13357-2
Filterability (wet) stage I (minimum) ^{h,j}	%	50			ISO 13357-1
Filterability (wet) stage II (minimum) ^{i,j}	%	50			ISO 13357-1

5.10, Table 3

Add the following footnotes to the table footer:

^h The stage I determination is based upon a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but only a poor stage II performance (see footnote i), are unlikely to give performance problems in use, unless extremely fine system filters are utilized.

ⁱ The stage II determination is based upon the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that this part of the procedure

is a more severe test, and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 µm) filtration present. Thus, it is suitable for use in critical turbine lubrication systems. A 60 % value is generally considered acceptable.

j Applies to TSA only.

5.10, Table 4

Add the following footnotes to the table footer:

h The stage I determination is based upon a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but only a poor stage II performance (see Footnote i), are unlikely to give performance problems in use, unless extremely fine system filters are utilized.

i The stage II determination is based upon the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that this part of the procedure is a more severe test, and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 µm) filtration present. Thus, it is suitable for use in critical turbine lubrication systems. A 60 % value is generally considered acceptable.

j Applies to TSE only.

In the column "Test method", replace the reference "ASTM D 2272-02" with "ASTM D 2272".

5.10, Table 5

Add the following footnotes to the table footer:

h The stage I determination is based upon a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but only a poor stage II performance (see Footnote i), are unlikely to give performance problems in use, unless extremely fine system filters are utilized.

i The stage II determination is based upon the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that this part of the procedure is a more severe test and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 µm) filtration present. Thus, it is suitable for use in critical turbine lubrication systems. A 60 % value is generally considered acceptable.

j Applies to TGSB only.

In the column "Test method", replace the reference "ASTM D 2272-02" with "ASTM D 2272".

5.10, Table 6

Add the following footnotes to the table footer:

h The stage I determination is based upon a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but only a poor stage II performance (see Footnote i), are unlikely to give performance problems in use, unless extremely fine system filters are utilized.

i The stage II determination is based upon the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that this part of the procedure is a more severe test, and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 µm) filtration present. Thus, it is suitable for use in critical turbine lubrication systems. A 60 % value is generally considered acceptable.

j Applies to TGSE only.

In the column "Test method", replace the reference "ASTM D 2272-02" with "ASTM D 2272".

5.10, Table 7

Replace the rows

Filterability (dry) (minimum)	%	80	80	ISO 13357-2
Filterability (wet)	%	pass		ISO 13357-1

With the following:

Filterability (dry) stage I (minimum) ^f	%	80	80	ISO 13357-2
Filterability (dry) stage II ^g	%	Report		ISO 13357-2
Filterability (wet) stage I (minimum) ^f	%	50		ISO 13357-1
Filterability (wet) stage II (minimum) ^g	%	50		ISO 13357-1

Add the following footnotes to the table footer:

^f The stage I determination is based upon a comparison of the mean flow rate of a fluid through a test membrane with its initial flow rate. Oils having good stage I filterability, but only a poor stage II performance (see footnote g), are unlikely to give performance problems in use, unless extremely fine system filters are utilized.

^g The stage II determination is based upon the ratio between the initial flow rate of fluid through the test membrane and the rate at the end of the test. It is considered that this part of the procedure is a more severe test, and is more sensitive to the presence of gels and fine silts in the oil. Silts and gels can be present in an oil when it is produced, or can be formed as an oil ages, especially when hot. An oil with good stage II filterability is unlikely to give filtration problems even in the most extreme conditions, and with fine (less than 5 µm) filtration present. Thus, it is suitable for use in critical turbine lubrication systems. A 60 % value is generally considered acceptable.

In the column "Test method", replace the reference "ASTM D 2272-02" with "ASTM D 2272".

5.10, Table 8

Replace the rows

Filterability (dry) (minimum)	%	80	80	not required	ISO 13357-2
Filterability (wet)	%	pass		not required	ISO 13357-1

With the following:

Filterability (dry) stage I (minimum)	%	80	80	not required	ISO 13357-2
Filterability (wet) stage I	%	pass		not required	ISO 13357-1

In the column “Test method”, replace the reference “ASTM D 2711-01a (Appendix X 2)” with “ASTM D 2711”.

In the column “Test method”, replace the reference “ASTM D 2893-04” with “ASTM D 2893”.

5.10, Table 9

Replace the rows

Filterability (dry) (minimum)	%	80	80	80	ISO 13357-2
Filterability (wet)	%	pass			ISO 13357-1

With the following:

Filterability (dry) stage I (minimum)	%	80	80	80	ISO 13357-2
Filterability (wet) stage I	%	pass			ISO 13357-1

5.10, Table 10

Replace the row

Filterability (dry) (minimum) ^d	%	80	80	80	ISO 13357-2
--	---	----	----	----	-------------

With the following:

Filterability (dry) stage I (minimum) ^d	%	80	80	80	ISO 13357-2
--	---	----	----	----	-------------

Delete the following row:

Oxidation stability Baader test 72 h at 110 °C Viscosity at 40 °C increase (maximum)	%	20	20	20	DIN 51554-3
---	---	----	----	----	-------------