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31 July 2018

**NOTICE**  
AC/112(NFLWG)(EAPC)N(2018)0013 (NAVAL)

**PETROLEUM COMMITTEE (PC)**  
**NATO FUELS AND LUBRICANTS WORKING GROUP (NFLWG)**  
**NAVAL FUELS AND LUBRICANTS WORKING PARTY (NAVAL FLWP)**

**STUDY DRAFT 1 OF AFLP 1425 EDITION B - GUIDE SPECIFICATION (MINIMUM  
QUALITY STANDARDS) FOR LUBRICATING OIL, GEAR LIGHT SERVICE  
(O-240 AND O-253)**

**Note by the Staff Officer**

1. Please find attached at Enclosure 1 a copy of Study Draft 1 of AFLP-1425 Edition B – Guide Specification (Minimum Quality Standards) for Lubricating Oil, Gear Light Service (O-240 and O-253) which has been prepared by the Canadian Custodian.
2. Nations, Strategic Commands and other NATO bodies are invited to review the attached Study Drafts and to send their comments to the Canadian Custodian, Ms. Lesley Onu ([Lesley.Onu@forces.gc.ca](mailto:Lesley.Onu@forces.gc.ca)), copy Staff Officer ([van-exem.philippe@hq.nato.int](mailto:van-exem.philippe@hq.nato.int)) no later than Friday, 31 August 2018.

(Signed) P. VAN EXEM

1 Enclosure

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Original: English  
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Releasable to Australia and New Zealand ENCLOSURE 1

AC/112(NFLWG)(EAPC)N(2018)0013 (NAVAL)

# **NATO STANDARD**

## **AFLP-1425**

# **GUIDE SPECIFICATION (MINIMUM QUALITY STANDARDS) FOR LUBRICATING OIL, GEAR LIGHT SERVICE (O-240 AND O-253)**

**Edition B  
Study Draft 1  
July 2018**



**NORTH ATLANTIC TREATY ORGANIZATION**

**ALLIED FUELS AND LUBRICANTS PUBLICATION**

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**NATO LETTER OF PROMULGATION**

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SERVICE: NATO CODE NUMBER O-240 AND NATO CODE NUMBER  
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<b>SECTION 1      GENERAL</b>
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0101. This Guide Specification represents the minimum quality acceptable under NATO Code Numbers O-240 and O-253.

0102. Nations' specifications shall comply with these minimum requirements before the subjects of these specifications are accepted as standardized products under NATO Code Numbers O-240 and O-253.

0103. In order to promote product development, any nation's specifications may include additional tests of improved quality requirements to those in the Guide Specification.

0104. This Guide Specification shall be subject to review with the object of improving product quality as required by operational use.

0105. The requirements of this Guide Specification are largely based on the requirements of International Standard ISO 8068 (First edition, 1987-06-01) Petroleum products and lubricants – Petroleum lubricating oils for turbines (categories ISO-L-TSA and ISO-L-TGA) – Specifications. Products described in the second edition of this ISO standard, ISO 8068 (Second edition 2006-09-15) Lubricants, industrial oils and related products (class L) – Family T (Turbines) – Specification for lubricating oils for turbines, products L-TSA and L-TGA, have been determined not to meet the requirements of the navies.

0106. Both O-240 and O-253 as described by this AFLP are mineral oil based products.

0107. The grade of oil described was originally created as a steam turbine oil as well as a light service gear oil. Due to the diminishing use of steam turbines in military assets, it is now almost solely used as light service gear oil.

0108. STANAG 1135, Annex C, lists under NATO Code Number O-240 national specifications which have been agreed as interchangeable for that NATO Code Number, and lists under NATO Code Number O-253 national specifications which have been agreed as interchangeable for that NATO Code Number. NATO Code O-240 products are considered to be acceptable substitutes for products approved under NATO Code O-253, and vice versa.

0109. The quality standards contained in this document are to be used by Member Nations (MNs) in the preparation and maintenance of their individual procurement specifications and standards. An MN's individual procurement document may be more stringent depending upon its equipment. This AFLP is not designed to be used in the direct procurement of products.

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SECTION 2

NATO GUIDE SPECIFICATION FOR LUBRICATING OIL, GEAR LIGHT SERVICE: NATO CODE NUMBER O-240 AND NATO CODE NUMBER O-253 (ISO VG 68)

SPÉCIFICATION GUIDE DE L'OTAN POUR L'HUILE LUBRIFIANTE, ENGRENAGES SERVICE LÉGER: CODE OTAN O-240 ET CODE OTAN O-253 (ISO VG 68)

Ser	Property/Attribut	Unit/Unité	Requirement/ Exigence	Test Method/ Méthode d'essai
(a)	(b)	(c)	(d)	(e)
1	Composition/composition		Additives intended to improve anti-wear or load-carrying properties are prohibited./ Les additifs anti-usure ou d'extrême-pression sont interdits.	
2	Kinematic viscosity <sup>1)</sup> / viscosité cinématique <sup>1)</sup> <b>O-240</b> at/à 40°C  at/à 100°C  <b>O-253</b> at/à 40°C  at/à 100°C	mm <sup>2</sup> /sec	72 min. 90 max. 8.0 min.  61.2 min. 74.8 max. not specified/ non-spécifiée	ISO 3104
3	Viscosity index/ indice de viscosité	--	90 min.	ISO 2909
4	Pour point/ point d'écoulement	°C	-6 max.	ISO 3016
5	Flash point/ point d'éclair <sup>2)</sup> --1 <sup>st</sup> method/première méthode: COC --2 <sup>nd</sup> method/deuxième méthode : PM	°C	186 min.  170 min.	ISO 2592  ISO 2719

Ser	Property/Attribut	Unit/Unité	Requirement/ Exigence	Test Method/ Méthode d'essai
(a)	(b)	(c)	(d)	(e)
6	Foaming/ caractéristiques de moussage Sequence/séquence I 24°C Sequence/séquence II 93.5°C Sequence/séquence III 24°C	ml ml ml	450/nil max 50/nil max 450/nil max	ISO 6247
7	Air release at/ désaération d'air à 50°C.	minutes	10 max	ISO 9120
8	Water separability /séparation d'eau <sup>2)</sup> , --1 <sup>st</sup> method/première méthode -- 2 <sup>nd</sup> method Time at 54°C to reach 3 mL emulsion/ deuxième méthode temps pour atteindre 3 mL d'émulsion à 54°C	s minutes	360 max 30 max	DIN 51 589 Part 1 ISO 6614
9	Rust-preventing properties after 24 h/ Pouvoir de protection contre la rouille après 24 h	--	pass/ accepté	ISO 7120 Procedure B/ Procédure B
10	Corrosiveness to copper, 3h at 100°C/ corrosion lame de cuivre à 100°C pour 3h	--	1 max.	ISO 2160
11	Oxidation stability/ stabilité à l'oxydation <sup>2)</sup> 1 <sup>st</sup> method/première méthode Total acidity and/ acidité totale et Sludge/ sédiments.  2 <sup>nd</sup> method/ deuxième méthode Time to total acid number of 2.0 / temps nécessaire pour atteindre un indice d'acide total de 2.0 Sludge/ sédiments Acid number at/ indice d'acide à 1000 h	mg/KOH/g  % (m/m)  h  mg mg/KOH/g	1.8 max.  0.40 max.  1500 min.  200 max. 0.3 max.	ISO 7624      ISO 4263

12	FZG Load-carrying capacity/capacité de charge Failure load stage/ étape de la charge de rupture	--	6 min.	CEC L-07-A-95
13	4-Ball wear prevention after 60 mins at 40 kg load/ prévention de l'usure après 60 mins à 40 kg de capacité Mean wear scar diameter/ diamètre de cicatrice d'usure moyenne	mm	0.60 max.	IP 239
14	4-Ball extreme pressure properties/ propriétés à pression extrême Weld load/ capacité de soudure	kg	120 min.	IP 239

1. The viscosity range of the lubricating oil covered by NATO Code O-240 is not a viscosity grade specified by ISO 3448.

Le grade de viscosité de l'huile lubrifiante code OTAN O-240 n'est pas un grade de viscosité spécifié par la norme ISO 3448.

2. For this property, test method may be selected from the two alternatives listed based on national practice.

Pour cette caractéristique, la méthode d'essai peut être choisie en fonction des pratiques de chaque nation.

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