व्यापक परिचालन मसौदा

प्रलेख प्रेषण संज्ञापन				
संदर्भ	दिनांक			
पीसीडी 25 (14904)(सी	<b>24 10 201</b> 9			

तकनीक समीति पी सी डी 25 प्रेषती लुब्रिकंट्स तकनीक समीति, पी सी डी 25 के समस्त सदस्य। पीसीडी 25 की सभी उपस मतियाँ पैट्रोलयम, कोयला एवं संबंधत उत्पाद वभाग परिषद) पी सी डी सी (के सदस्य। रूच रखने वाले सभी निकाय। महोदय महोदया,

कृप्या आपके अवलोकन हेत् निम्न ल खत मसौदा संलग्न है :

क्र	मसौदा संख्या	वषय
संख्या		
1	पी सी डी 25 (14904) सी	सभी मौसम एंटी - वयर हाइड्रो लक तेल- व शष्ट

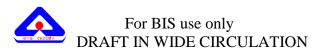
कृपया इस मसौदा का अवलोकन कर अपनी सम्मतियाँ यह बताते हुए भेजे क यदि अंतत यह मानक मसोदा राष्ट्रीय मानक के रूप में प्रका शत हो जाये तो इस पर अमल करने में आपके व्यवसाय अथवा कारोबार में क्या कठिनाईया आ सकती हैं। सम्मतियाँ भेजने क अंतिम ति थ : 24 December 2019

सम्मतियाँ कृपया संलग्न प्रारूप में अधोहस्ताक्षरी को भेजे धन्यवाद,

भवदीय

वी के डयूंडी वैज्ञानिक जी एवं प्रमुख)पी सी डी)

प्रति उपरि ल खत मेल : pcd@bis.gov.in, pcd25@bis.gov.in



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### DOCUMENT DESPATCH ADVICE

REF:	DATE		
<b>Doc: PCD 25(14904)C</b>	24 10 2019		

# **Technical Committee: Lubricants and Related Products Sectional Committee, PCD** 25

To

- i) All members of Lubricants and Related Products Sectional Committee, PCD 25 & its Subcommittees
- ii) All interested members of PCDC
- iii) All others interested.

Dear Sir,

Please find enclosed the following document:

Doc: No.	Title
PCD 25(14904 )C	All weather antiwear hydraulic oils — Specification

Kindly examine this draft and forward your views stating any difficulty which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

### Last date for comments is: 24 December 2019

In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case of comments of technical in nature are received then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional committee for further necessary action if so desired by the Chairman, Sectional Committee.

Comments if any, may please be made in the format as given overleaf and mailed to the undersigned at the above address. The document is also hosted on BIS website www.bis.gov.in

Thanking you,

Signature:

Name : V.K. Diundi
Designation : Sc-G & Head (PCD)

Email: pcd@bis.org.in; pcd25@bis.org.in

Encl: As above.

Doc. No.: PCD 25(14904) C

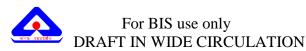


### FORMAT FOR SENDING COMMENTS ON BIS DOCUMENTS

(Please use A4 size sheet of paper only and type within fields indicated. Comments on each clauses/sub-clauses/table/fig. etc to be started in a fresh box. Information in Column 5 should include reasons for the comments and suggestions for modified wording of the clauses should be typed in Column 6 when the existing text is found not acceptable. Adherence to this format facilitates Secretariat's work)

TITLE: All weather antiwear hydraulic oils — Specification	
LAST DATE OF COMMENTS: 24 December 2019	
NAME OF THE COMMENTATOR/ORGANIZATION:	

S1.	Clause/Sub-clause/	Commentator/	Type of Comments	Justification	Proposed
No.	Para/Table/Fig. No.	Organization/	(General/Editorial/	011	Change
	commented	Abbreviation	Technical)		
(1)	(2)	(3)	(4)	(5)	(6)



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<u>Doc.No: PCD25(14904)C</u> <u>October 2019</u>

### **Draft** Indian Standard

### ALL WEATHER ANTIWEAR HYDRAULIC OILS — SPECIFICATION

**ICS No** 75.120

Last date for comments 24 December 2019

*Draft provided by IOC(R&D)* 

### **FOREWORD**

(Formal Clauses will be added later)

This draft standard applies to the hydraulic oils to be used in hydrostatic drive systems, in which high thermal stresses occur, and corrosion is expected due to the ingress of moisture. Such oils additionally contain antiwear additives and are being recommended for pumps or hydraulic motors, due to their design or operating conditions. The all weather antiwear hydraulic oils require minimum viscosity temperature dependence suitable for extended temperature range applications. This draft standard covers ISO VG 15, ISO VG 32, ISO VG 46, ISO VG 68 & ISO VG 100.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2: 1960 'Rules for rounding off numerical values ( revised )'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

### 1. SCOPE

This draft standard prescribes the requirements, methods of sampling and their test methods of all weather antiwear hydraulic oils.

### 2 REFERENCES

The following Indian standards contain provisions which through reference in this text constitute the provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
1447	Methods of sampling of petroleum & its products : Part 3 Method
(Part 3): 1992	of sampling of semi-solid & solid petroleum products
1448	Methods of test for petroleum and its products:
[P:1/ Sec 1]:	Determination of acid number by Potentiometric titration (second
2002	revision)
[P:1/ Sec 2]:	Determination of base number by Potentiometric titration (second
2002	revision)



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[P:2]: 2007/	Petroleum products and lubricants – Neutralization number -				
ISO 6619:1988	Potentiometric titration method (second revision)				
[P 25 / Sec 1]:	Transparent and opaque liquids Section 1 Determination of				
2018/ ISO 3104 :	kinematic viscosity and calculation of dynamic viscosity (second				
1994	revision)				
[P:56]: 2013/	Calculation of Viscosity Index from Kinematic Viscosity (third				
ISO 2909: 2002	revision)				
[P:67]: 1982	Foaming characteristics of lubricating oils (first revision)				
[ P 69]: 2013/	Determination Flash and Fire Points - Cleveland Open Cup				
ISO 2592 : 2000	Method (first revision)				
[P:91]: 2019/	Methods of test for petroleum and its products: Part 91 Emulsion				
ISO 6614:1994	characteristics of petroleum oils and synthetic fluids				
[P:96]: 2019/	Methods of Test for Petroleum and its Products - Part 96 : Rust-				
ISO 7120:1987	preventing Characteristics of Steam-turbine Oil in the Presence of				
	Water				
[P:102]: 1981	Methods of test for petroleum and its products: Part 102				
	Determination of air release value				
[P:106] :1981	Methods of test for petroleum and its products: Part 106				
	Determination of oxidation characteristics of inhibited steam-turbine				
	oils				
3400(P:6):2018/	Rubber, vulcanized or thermoplastic — Determination of the effect				
ISO 1817:2015	of liquids				

### 3. GRADES

The product shall be available in five different viscosity grades namely, VG 15, VG 32, VG 46, VG 68 and VG 100.

# **4 REQUIREMENTS:**

### 4.1 General

The material shall be made from refined mineral base stocks of high viscosity index and shall contain suitable polymer and additives to meet the performance requirements.

**4.2** The material shall also comply with the requirements given in Table 1 when tested according to the methods given in 'P' series of IS 1448 and annexes, in col 6 of Table 1.

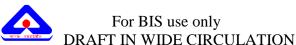
### **5 PACKING AND MARKING**

**5.1 Packing** – The material shall be packed in containers of metal or any other suitable material as agreed between the purchaser and supplier.

### 5.2 Marking

Material shall be marked with the following information:

a) Name and type of material;



- b) Manufacturer's name, initials or trade-mark, if any;
- c) Net mass of material;
- d) Identification in code or otherwise to enable the lot of consignment or manufacture to be traced back from records; and
- e) Any other statutory requirements.

### **5.2.1** BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

### 6 SAMPLING

- **6.1** Representative samples of the material shall be drawn as prescribed in IS 1447[P:3].
- **6.2 Number of Tests** All characteristics given in the specification shall be tested on the composite sample.
- **6.3 Criteria of Conformity** The lot shall be declared as conforming to the requirements of the specification if all the test results on the composite sample meet the relevant specification requirements of this standard.

**Table 1 Requirements for All weather Antiwear hydraulic oils** (Clause 4.2)

S. No.	Characteristics	VG 15	VG 32	VG 46	VG 68	VG 100	Method of test, ref to [P: ] of IS 1448/ DIN/
	ISO VG class	15	32	46	68	100	DIIV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	Appearance	Clear	Clear	Clear	Clear	Clear	Visual
ii)	Kinetic viscosity, mm <sup>2</sup> /s, at 40°C	13.5 – 16.5	28.8 – 35.2	41.4 – 50.6	61.2 – 74.8	90 – 110	P 25
iii)	Kinetic viscosity, mm <sup>2</sup> /s, at 100°C	Report	Report	Report	Report	Report	P 25
iv)	Kinetic viscosity, mm <sup>2</sup> /s, at - 20°C	Report	Report	Report	Report	Report	P 25
v)	Kinetic viscosity, mm <sup>2</sup> /s, at 0°C, cSt	Report	Report	Report	Report	Report	P 25
vi)	Viscosity index, Min	140	140	140	140	130	P 56
vii)	Pour point, °C, Max	(-) 39	(-) 39	(-) 33	(-) 24	(-) 24	P 10
viii)	Flash Point, °C (COC), Min	140	180	200	200	210	P 69
ix)	Rust test, Method B	Shall pass the test	P 96				
x)	Copper strip corrosion for 3 hours at 100°C	Not worse than 1	P 15				



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xi)	Foam test, Foam tendency / stability after 10 minutes settling						P 67
	time, foam, ml/ml Seq I at 24 °C	150/Nil 75/Nil	150/Nil 75/Nil	150/Nil 75/Nil	150/Nil 75/Nil	150/Nil 75/Nil	
	Seq II at 93 °C Seq III at 24 °C after 93 °C	150/Nil	150/Nil	150/Nil	150/Nil	150/Nil	
xii)	Emulsion characteristics at 54°C / 82°C, Max	40-37-3 (20)	40-37- 3(25)	40-37- 3(25)	40-37-3 (25)	40-37- 3(30)	P 91
xiii)	Air release Value at 50°C, in minutes, <i>Max</i>	5	5	10	10	14	P 102
xiv)		Report	Report	Report	Report	Report	P 2
	(or)						
	a) Acid number	Report	Report	Report	Report	Report	P:1/Sec-1
	b) Base number	Report	Report	Report	Report	Report	P:1/Sec-2
xv)	Aging behavior (Increase in neutralization number after 1000 hrs.), mg KOH/gm, Max	2.0	2.0	2.0	2.0	2.0	P 106
xvi)							IS 3400(P:6)
	a) % change in volume b) Change in shore	0 to 15	0 to 12	0 to 12	0 to 10	0 to 10	
	Hardness	0 to (-)8	0 to (-)7	0 to (-)7	0 to (-)6	0 to (-)6	
xvii)	Shear stability test, viscosity loss after 250 cycles, percent change in KV at 100°C	Report	Report	Report	Report	Report	ISO 20844
xviii)	Pump wear test, (Vickers 104C for 250						ASTM D 7043
	hours test), <i>Max</i> a) Loss of mass of rings, mg		120	120	120	120	
	b) Loss of mass of vanes, mg		30	30	30	30	
xix)	FZG Niemen EP test, damage load stage, <i>Min</i>		10	10	10	10	ISO 14635-1
xx)	Density at 15°C, gm/ml	Report	Report	Report	Report	Report	P 16