



شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امورتدوین استانداردها

IGS

Iranian Gas Standards

مشخصات فنی خرید

روغن هیدرولیک - نوع HV یا HVLP

Hydraulic Oil : HV (HVLP) Type



ابلاغ مصوبه هیأت مدیره

مدیر محترم پژوهش و فناوری و رئیس شورای استاندارد

باسلام،

به استحضار می‌رساند در جلسه ۱۴۲۳ مورخ ۱۳۸۹/۷/۲۵ هیأت مدیره، نامه شماره ک/۹۴۵۳۶/۰۰۰/۹ مورخ ۸۹/۷/۱۷ آن مدیریت در مورد استانداردها با مشخصات ذیل که توسط کمیته های تخصصی تدوین و بازرنگری استاندارد تهیه و در شورای استاندارد به تصویب رسیده است، مطرح و تأیید گردید.

IGS-M-CH-023(1)	۱ مشخصات استاندارد ماده دی اتانول آمین برای استفاده در سیستم شیرین سازی گاز طبیعی
IGS-M-CH-046-1(0)	۲ روغن هیدرولیک - نوع HM یا HLP
IGS-M-CH-046-2(0)	۳ روغن هیدرولیک - نوع HV یا HVLP
IGS-O-SF-06(0)	۴ اقدامات و ملاحظات بهداشتی، ایمنی و زیست محیطی (HSE) برای ماده بودارکننده گاز طبیعی (odorant)
IGS-C-TP-23(0)	۵ پوشش اپوکسی درون لوله های خطوط انتقال گاز طبیعی

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FOREWORD

This standard specification is intended to be mainly used by NIGC and contractors and has been prepared on interpretation recognized standards , technical documents , knowledge , backgrounds and experiences in gas industries at national and international levels .

Iranian gas standards (IGS) are prepared , reviewed and amended by technical standard committees within NIGC Standardization division and submitted to the NIGC's "STANDARDS COUNCIL" for approval .

IGS Standards are subject to revision , amendment or withdrawal , if required , thus the latest edition of IGS shall be checked/inquired by NIGC users .

This standard must not be modified or altered by the end users within NIGC and her contractors . Any deviation from normative references and / or well known manufacturers specifications must be reported to Standardization division .

Any comments from concerned parties on NIGC distributed IGS are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS :

Throughout this standard the following definitions , where applicable , should be followed :

- 1- "STANDARDIZATION DIV." has been organized to deal with all aspects of industrial standards in NIGC . Therefore , all queries for clarification or amendments are requested to be directed to mentioned div.
- 2- "COMPANY" : refers to national Iranian gas company .
- 3- "SUPPLIER" : refers to a firm who will supply the service , equipment or material to IGS specification whether as the prime producer or manufacturer or a trading firm .
- 4- "SHALL " : is used where a provision is mandatory .
- 5- "SHOULD" : is used where a provision is advised only .
- 6- "MAY" : is used where a provision is completely discretionary .

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1. SCOPE

This standard specification covers the minimum requirements for mineral oils with rust and oxidation inhibitors plus anti-wear characteristics used in hydraulic systems in two grades of differing viscosity ranges . Oils shall be refined petroleum oils , formulated to provide rust protection and oxidation stability and may contain selective inhibitors as needed and as required to comply with the requirements of this standard specification .

This type of hydraulic oils with improved viscosity/temperature properties , use for general hydraulic systems where equipment is intended to operate over a wide range of ambient temperature .

Note : The choice of oil and its viscosity grade should comply with the hydraulic system manufacturer's recommendations .

2. REFERENCES

2.1 Normative References

Throughout this standard specification the following standards are referred to . The editions of these standards that are in effect at the time of issue of this standard specification (2010) shall, to the extent specified herein , form part of this standard specification . The applicability of changes in standards that occur after the date of this standard specification shall be mutually agreed upon by the purchaser and the supplier .

ASTM D 92 (2005) "Test method for flash and fire points by cleveland open cup tester"

ASTM D 97 (2002) "Test method for pour point of petroleum products"

ASTM D 130 (2000) "Test method for detection of copper corrosion from petroleum products by the copper strip tarnish test"

ASTM D 445 (2006) "Test method for kinematic viscosity of transparent and opaque liquids (the calculation of dynamic viscosity)"

ASTM D 664 (2006) "Test method for acid number of petroleum products by potentiometric titration"

ASTM D 665A (2002) "Test method for rust – preventing characteristics of inhibited mineral oil in the presence of water"

ASTM D 892 (2006) "Test method for foaming characteristics of lubricating oils"

ASTM D 943 (2002) "Test method for oxidation characteristics of inhibited mineral oils"

ASTM D 1298 (1999) "Test method for density , relative density (specific gravity) , or API gravity of crude petroleum and liquid petroleum products by hydrometer method"

ASTM D 1401 (2002) "Test method for water separability of petroleum oils and synthetic fluids"

ASTM D 1744 (2000) "Test method for determination of water in liquid petroleum products by Karl Fischer reagent"

ASTM D 2270 (2004) "Practice for calculating viscosity index from kinematic viscosity at 40 and 100 °C"

ASTM D 2422 (2002) "Classification of industrial fluid lubricants by viscosity system"

ASTM D 3427 (2006) "Test method for air release properties of petroleum oils"

ASTM D 6304 (2007) "Test method for determination of water in petroleum products , lubricating oils , and additives by coulometric Karl Fischer titration"

ISO 3170 (1999) "Petroleum liquids – manual sampling"

ISO 6743-4 (2002) "Lubricants , industrial oils and related product (class L) – Classification – Part 4 : Family H (Hydraulic system)"

3. DEFINITION

Type HV (HVLP) hydraulic oils

A refined mineral base oil with rust and oxidation inhibitors and anti-wear characteristics plus improved viscosity temperature properties where equipment is intended to operate over a wide range of ambient temperature .

4. REQUIREMENTS

4.1 Characteristics

Oil shall be complied with the requirements given in Table 1 when tested in accordance with the specified methods .

4.2 Sampling

Sampling shall be carried out in accordance with ISO 3170 .

4.3 Appearance

The appearance of oil shall be clear , bright and free of any visible particulate matter , under normal visible light at ambient temperature .

4.4 Interchangeability

Interchangeability of type of used oil with another type of oil shall be approved with the hydraulic system manufacturer .

4.5 Compatibility

Compatibility tests may be needed to determine the feasibility of mixing unused oils of different type , with oil in service . The main characteristics of the mixture should not be less favourable than those of the worst individual oil . Reference to the oil manufacturer/supplier is recommended if any doubts concerning compatibility arise .

5. INSPECTION AND TESTING

5.1 The manufacturer shall set up and maintain such quality and inspection system to ensure the products comply with all aspects of the requirements of this standard specification .

5.2 The manufacturer shall be responsible for carrying out all the tests and quality assurances required by this standard specification and shall maintain complete records of all such tests and qualifications . Such records shall be available for review by the purchaser or its nominated inspector . These documents and test results shall be traceable with regard to the batch numbers .

5.3 The manufacturer shall furnish to the purchaser a certificate of quality stating that each batch has been sampled , tested , and qualified in accordance with this standard specification and has been found to meet the specified requirements .

5.4 The purchaser or its nominated inspector reserves the right to inspect a part or whole of the products during manufacturing and prior to packing and could witness any inspections and tests in accordance with this standard specification .

5.5 Purchaser's inspector reserves the right to have access to the production line at any time during manufacturing .

5.6 The manufacturer shall provide all facilities necessary for carrying out all inspections and tests as required by this standard specification .

5.7 Random sampling proportional to the quantity of each batch and frequency of inspections and tests as required by this standard specification shall be at the discretion of the inspector.

5.8 If a sample rejected in any inspection or test , re – sampling shall be carried out , in case of any rejection in new sampling , all products represented by such sampling shall be rejected .

5.9 Inspection or tests that carried out by the purchaser's inspector , in no way relieves the manufacturer/supplier of his responsibilities and liabilities under the conditions , terms and inspection of this standard specification .

6. DOCUMENTATION

The manufacturer/supplier shall provide original technical catalogues , technical specification, Material Safety Data Sheet (MSDS) and application procedure recommendation and guidelines .

The manufacturer/supplier shall provide ISO 9001 : 2008 "Certification" for "Design , Manufacturing and Quality control" issued by an internationally recognized body .

Petroleum-based oils and non-petroleum oils can have both immediate and long-term adverse effects on environment and can be dangerous or even deadly to wildlife .

The manufacturer/supplier shall provide standard methods regarding to disposal of used/unused residue hydraulic oils and containers which polluted by these substances . Presented disposal methods should comply with national and local legislations and standards regarding to protection of environment .

7. PACKAGING

7.1 The oil shall be suitably packed in approved containers in accordance with the requirements of the purchase order .

7.2 The containers shall be protected against all damage or defects which may occur during handling .

8. MARKING

8.1 Marking of Containers

Each container shall be legibly marked at least with the following information :

Name and trade mark of the manufacturer

Product designation (type and trade name)

IGS No.

Net weight

Handling

Storage

Date of manufacture

Date of expiry

Order No.

Batch No.

Manufacturer's address

HMIS (including Health , Fire , Reactivity , Personal Protection , Specified Hazard , etc.)

8.2 Instruction

Manufacturer/supplier shall provide complete sets of instruction for use and replacement of oil in service and refilling with an unused oil .

9. STORAGE LIFE

The oil shall meet the requirement of clause 4 after storage for 24 months of delivery date , in a tightly covered container at temperature between +5 to +35 °C .

Table 1 – Requirements for Type HV Mineral Oil Hydraulic Fluids

Item	Property	Unit	Limit		Test Method	Type of Test
	1) Physical :					
1	_ ISO_ viscosity grade	---	15	32	ASTM D 2422	Routine
2	_ Kinematic viscosity at 40 °C min max	cSt(mm ² /s) cSt(mm ² /s)	13.5 16.5	28.8 35.2	ASTM D 445	Routine
3	_ Viscosity index , min	---	140	140	ASTM D 2270	Routine
4	_ Flash point , min	°C	125	175	ASTM D 92	Type ¹⁾
5	_ Pour point , max	°C	-39	-30	ASTM D 97	Routine
6	_ Density at 15 °C , max	kg/m ³	855	870	ASTM D 1298	Type ¹⁾
	2) Chemical :					
7	_ Total acid number , max	mg KOH/g	2)	2)	ASTM D 664	Routine
	3) Performance :					
8	_ Water separability , at 54 °C , max	minutes	30	40	ASTM D 1401	Routine
9	_ Rust preventing characteristics	---	pass	pass	ASTM D 665A	Type ¹⁾
10	_ Copper corrosion , 3 h at 100 °C , max	---	2	2	ASTM D 130	Type ¹⁾
11	_ Foam characteristics : tendency/stability , sequence I , max sequence II , max sequence III , max	ml	150/0 75/0 150/0	150/0 75/0 150/0	ASTM D 892	Type ¹⁾
12	_ Air release , 50 °C , max	minutes	7	7	ASTM D 3427	Routine
13	_ Oxidation stability after 1000 hours : acid number , max	mg KOH/g	2.0	2.0	ASTM D 943	Type ¹⁾
14	_ Water content , max	% by mass or % (m/m)	0.1 0.05	0.1 0.05	ASTM D 6304 ASTM D 1744	Routine

1) For type test , a certificate shall be submitted from an independent laboratory .

2) This property is important for conditioning monitoring and shall be tested 200 hours after filling and every 500 hours and the result shall be evaluated with initial total acid number of unused oil . Oil shall be replaced when the result is increased more than 25% of initial value .

ANNEX A (INFORMATIVE)

The following Table shows equivalent symbols that used in DIN 51 502 and ISO 6743 – 4 to designate oils .

Table B2 : Comparison of symbols

Standard	Symbols				
DIN 51 502	HVLP 15	HVLP 32	HVLP 46	HVLP 68	HVLP 100
ISO 6743-4	HV 15	HV 32	HV 46	HV 68	HV 100