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IS 408 (1981): grease No. 0, graphited [PCD 3: Petroleum, Lubricants and their Related Products]



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“Knowledge is such a treasure which cannot be stolen”



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**IS : 408 - 1981**  
( Reaffirmed 1993 )

*Indian Standard*  
**SPECIFICATION FOR**  
**GREASE NO. 0, GRAPHITED**  
*( Second Revision )*

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**REAFFIRMED**

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**BUREAU OF INDIAN STANDARDS**  
**MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG**  
**NEW DELHI 110002**

# *Indian Standard*

## SPECIFICATION FOR GREASE NO. 0, GRAPHITED ( *Second Revision* )

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*Indian Standard*  
**SPECIFICATION FOR**  
**GREASE NO. 0, GRAPHITED**  
*( Second Revision )*

**0. FOREWORD**

**0.1** This Indian Standard ( Second Revision ) was adopted by the Indian Standards Institution on 28 August 1981, after the draft finalized by the Lubricants and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

**0.2** This Indian Standard was first published in 1952 and subsequently it was revised in 1973. This revision has been prepared as the result of a review of the standard by the *Ad-hoc* Study Group for Review of Printed Standards for Greases as well as Lubricants and Related Products Sectional Committee in the light of the present day requirements of this product.

**0.3** In this revision, additional requirements for drop point, oil separation on storage and graphite flake content have been incorporated in Table 1 in order to reflect the improved quality of the material now generally required by the defence authorities in the country.

**0.4** This standard contains 2.2(b) which permits use of any soap other than aluminium, provided, it is agreed to between the purchaser and the supplier.

**0.5** 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\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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**1. SCOPE**

**1.1** This standard prescribes the requirements and methods of sampling and test for grease No. 0, graphited, used for lubricating small arms and certain other equipment, as well as for rust proofing.

\*Rules for rounding off numerical values ( *continued* ).

## 2. REQUIREMENTS

**2.1 Description** — The material shall be smooth, dark grey, homogeneous and free from grit or other visible impurities, and shall not show any signs of breakdown, hardening or tendency of the constituents to separate. In addition, the material shall also be free from any objectionable odour.

**2.2 Composition** — The material shall be prepared from the following ingredients in such proportions as to comply with the requirements prescribed in Table 1:

- a) *Mineral Lubricating Oil* — The mineral lubricating oil extracted from the grease by Method 'A' prescribed in P : 59 of IS : 1448\* shall comply with the following requirements:

<i>Characteristic</i>	<i>Requirement</i>	<i>Method of Test, Ref to (P:) of IS : 1448*</i>
i) Kinematic viscosity in cSt at 40°C	41.4 to 50.6	P : 25
ii) Flash point, °C, Min	160	P : 69

- b) *Aluminium Soap*

NOTE — Any soap other than aluminium may also be used if agreed to between the purchaser and the supplier.

- c) *Graphite Flake* — 6-10 percent by mass (conforming to IS : 495-1967†).

**2.2.1 For Defence Purposes** — The proportion of the ingredients shall be as follows:

<i>Ingredient</i>	<i>( Percent by Mass )</i>	<i>Indian Standard</i>
Mineral oil	81 to 82	Same as given in 2.2(a)
Aluminium stearate	12	Conforming to IS : 494-1970‡
Graphite flake	6 to 7	Conforming to IS : 495-1967†

\*Methods of test for petroleum and its products.

†Specification for graphite flake for lubricants (*first revision*).

‡Specification for aluminium stearate for lubricants (*first revision*).



**2.3** The material shall also comply with the requirements prescribed in Table 1 when tested according to the methods prescribed under 'P' series of IS : 1448\* and appendices to this standard. Reference to relevant test methods is given in col 4 and 5 of Table 1.

**TABLE 1 REQUIREMENTS FOR GREASE NO. 0, GRAPHITED**

( Clauses 2.2 and 2.3 )

Sl. No.	CHARACTERISTIC	REQUIREMENTS	METHODS OF TEST, REF TO	
			Appendix	(P:) of IS : 1448*
(1)	(2)	(3)	(4)	(5)
i)	Moisture and volatile matter, percent by mass, <i>Max</i>	1.0	—	P: 61
ii)	Penetration of worked material at $25 \pm 0.5^\circ\text{C}$ ( 60 double strokes )	300.0 to 350.0	—	P: 60
iii)	Drop point, $^\circ\text{C}$ , <i>Min</i>	88	—	P: 52
iv)	Ash, percent by mass, <i>Max</i>	2.0	—	P: 4 ( Method B1 )
v)	Copper strip corrosion test, at $75^\circ\text{C}$ for 24 h	Negative	—	P: 51
vi)	Oil separation, at $25^\circ\text{C}$ for 168 h, percent by mass, <i>Max</i>	5	—	P: 85
vii)	Graphite flake content, percent by mass, <i>Min</i>	6	—	P: 58
viii)	Inorganic acidity	Shall pass the test	A	—
ix)	Resistance to breakdown or tendency of the constituents to separate	do	B	—

\*Methods of test for petroleum and its products.

**2.4 Keeping Quality ( Shelf Life )**— The keeping quality of the material shall be such that when stored in original sealed containers, under normal conditions, it shall retain the properties given in the specification for not less than one year from the date of delivery of the product.

\*Methods of test for petroleum and its products.

### **3. PACKING AND MARKING**

**3.1 Packing** — The material shall be packed in suitable, clean, dry, leakproof containers free from rust, as agreed to between the purchaser and the supplier.

**3.2 Marking** — The containers shall be marked with the name of the material; net mass in the container; name of the manufacturer and recognized trade-mark, if any; batch number or code number; year and country of manufacture.

#### **3.3 BIS Certification Marking**

The product may also be marked with Standard Mark.

**3.3.1.** The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

### **4. SAMPLING**

**4.1** Representative samples of the material shall be drawn as prescribed in IS : 1447-1966\*.

**4.2 Criteria for Conformity** — Tests for consistency and resistance to breakdown shall be done in individual samples and other tests on composite sample. The lot shall be declared satisfactory only if all individual and composite samples pass the prescribed tests.

## **A P P E N D I X A**

*[ Table 1, Item (viii) ]*

### **TEST FOR INORGANIC ACIDITY**

#### **A-1. REAGENT**

**A-1.1 Methyl Orange Indicator** — Dissolve 1 g of methyl orange in one litre of distilled water.

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\*Methods of sampling of petroleum and its products.

## **A-2. PROCEDURE**

**A-2.1** Weigh 50 g of the material, accurately to the nearest 1 g, into a separating funnel. Neutralize 100 ml of water, using methyl orange indicator. Heat this neutralized water to 70°C and then add it to the material in the funnel. Extract the mixture thoroughly by shaking. Allow to stand for the oil and aqueous layer to separate.

**A-2.1.1** The material shall be taken to have passed the test if the aqueous layer does not show acid reaction to methyl orange indicator.

## **A P P E N D I X B**

*[Table 1, Item (ix)]*

### **TEST FOR RESISTANCE TO BREAKDOWN**

#### **B-1. PROCEDURE**

**B-1.1** Mould 10 g of the material into the form of a cone on a small clock glass and maintain at 75°C for one hour and then examine.

**B-1.1.1** The material shall be taken to have passed the test if there is no separation of oil or other visible sign of breakdown.

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