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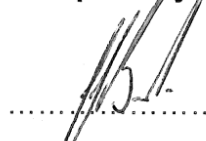
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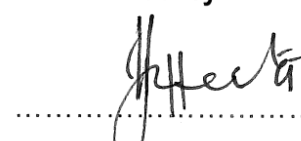


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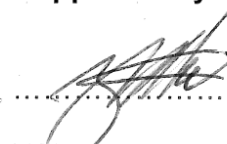


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## CONTROLLED DISCLOSURE

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## **1. INTRODUCTION**

This standard replaces Eskom specification GSP 36-838. The test methods and performance limits have been revised to align these requirements to the latest SANS standards.

## **2. SUPPORTING CLAUSES**

### **2.1 SCOPE**

#### **2.1.1 Purpose**

The lubricants defined by this specification are high quality mineral oil based general purpose greases formulated typically with lithium, lithium complex or lithium 12 hydroxystearate type soap thickeners and containing additives to improve extreme pressure and/or anti-wear properties, oxidation stability and anti-corrosion properties. Alternative, compatible soap thickeners or gelling agents may be used to meet the required performance levels.

#### **2.1.2 Applicability**

This document shall apply throughout Eskom Holdings Limited Divisions. These greases are primarily intended for general purpose lubrication of plain and anti-friction bearings requiring the use of extreme pressure and/or anti-wear additives. They may be used in applications where the operating temperatures do not exceed 150°C.

### **2.2 NORMATIVE/INFORMATIVE REFERENCES**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

#### **2.2.1 Normative**

- [1] ASTM D95, *Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation.*
- [2] ASTM D217-94, *Standard Test Methods for Cone penetration of Lubricating Grease.*
- [3] ASTM D445-94, *Standard Test Method for Kinematic Viscosity of Transparent and Opaque liquids.*
- [4] ASTM D566, *Standard Test Method for Dropping Point of lubricating Grease.*
- [5] ASTM D942-90, *Standard Test Method for Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method.*
- [6] ASTM D1264-93, *Standard Test Method for Determining Water Washout Characteristics of Lubricating Greases.*
- [7] ASTM D1742-94, *Standard Test Method for Oil Separation from Lubricating Grease during Storage.*
- [8] ASTM D1743-94, *Standard Test Method for Determining Corrosion Preventative Properties of Lubricating greases.*
- [9] ASTM D1831, *Standard Test Method for Roll Stability of lubricating Grease.*
- [10] ASTM D2265, *Standard Test Method for Dropping Point of lubricating Grease over Wide temperature Range.*
- [11] ASTM D2266-91, *Standard Test Method for Wear Preventative Characteristics of Lubricating Grease (Four-Ball Method).*

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- [12] ASTM D2509-93, *Standard Test Method for Measurement of Load-Carrying Capacity of Lubricating Grease (Timken Method)*.
- [13] ASTM D2596-93, *Standard Test Method for Measurement of Extreme-Pressure Properties of lubricating Grease (Four-Ball Method)*.
- [14] ASTM D4048-91, *Standard Test Method for Detection of Copper Corrosion from Lubricating Grease*.
- [15] ASTM 4290, *Standard Test Method for Leakage tendencies of Automotive Wheel Bearing Grease under accelerated conditions*.
- [16] IP 50, *Determination of cone penetration of lubricating grease*.
- [17] IP 74, *Test method for water in petroleum products and bituminous materials by distillation*.
- [18] IP 112, *Test method for detection of copper corrosion from lubricating grease*.
- [19] IP 132, *Petroleum Products – Lubricating grease – determination of dropping point*.

### 2.2.2 Informative

- [20] SANS 1851, *Standard Specification for Greases*.

## 2.3 DEFINITIONS

Definition	Description
	None supplied

### 2.3.1 Disclosure Classification

**Controlled Disclosure:** Controlled Disclosure to External Parties (either enforced by law, or discretionary).

## 2.4 ABBREVIATIONS

Abbreviation	Description
ASTM	American Society for Testing of Materials.
NLGI	National Lubricating Grease Institute.
IP	Institute of Petroleum.
SANS	South African National Standard.

## 2.5 ROLES AND RESPONSIBILITIES

None

## 2.6 PROCESS FOR MONITORING

None

## 2.7 RELATED/SUPPORTING DOCUMENTS

None

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### **3. REQUIREMENTS**

#### **3.1 TECHNICAL DATA**

Technical data sheets shall be supplied for all lubricants. All information listed in Appendix A table 1 shall be provided.

#### **3.2 MATERIAL SAFETY DATA SHEETS (MSDS)**

Material Safety Data Sheets shall be supplied for each lubricant.

#### **3.3 BRANDED LUBRICANTS**

Only branded lubricants meeting this performance standard will be considered.

#### **3.4 LUBRICANT COMPATIBILITY**

Equivalent or comparable lubricants are lubricants of the same type and grade designed to meet the requirements of the same types of applications and of a similar performance standard.

The supplier shall ensure that the lubricant, when mixed in any proportion with other lubricants of the same grade and meeting the same performance requirements, is fully compatible with and equivalent to the current lubricant and the system to be lubricated. The resultant mixture shall meet the performance requirements of this specification.

The supplier shall notify Eskom of any significant formulation changes that may affect the lubricant performance and/or its compatibility with existing equipment and/or lubricants and describe the nature of the change.

#### **3.5 PACKAGING**

Only clean new drums shall be used to package Eskom lubricants.

Package sizing shall be in accordance with the relevant power station purchasing schedule.

Packaging shall be of such a nature as to ensure the lubricant's quality and condition are maintained during transportation and storage.

#### **3.6 INFORMATION**

All information required shall be clearly visible and legible on the container.

Packaging shall reflect the following information:

- a) The lubricant brand name and supplier name.
- b) The batch number and/or the date of manufacture.
- c) The quantity in kilograms.
- d) The lubricant type and NLGI consistency number applicable to the lubricant.

#### **3.7 STORAGE**

The lubricant packaging and condition shall be such that when stored, unopened, for a period of 12 months, under normal atmospheric conditions, the lubricant shall still meet the relevant performance standard and be suitable for use.

Adhesive labels shall be suitable for outdoor storage for a period of at least 2 years.

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### 3.8 TRANSPORTATION

All lubricants shall be transported in a manner that prevents damage to the packaging or its contents. All necessary precautions shall be taken to prevent leaks or spills.

### 3.9 LUBRICANT CLEANLINESS

All lubricating greases shall be homogenous, and free from lumps, abrasive particles and other impurities that may have a detrimental effect on the performance of the grease.

### 3.10 TESTS

Performance requirements for these greases are detailed in Appendix A table 1.

Lubricant code modifiers are detailed in Appendix A table 2.

## 4. RECORDS

5.1. Technical Data Sheets: Copies of latest technical datasheets showing compliance to this specification will be kept by Eskom's Technology Division.

5.2. Material Safety Data Sheets: Copies of Material Safety datasheets shall be kept by Eskom's Technology Division.

## 5. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
LF Barker	Chief Engineering Advisor
	Document Approved by TDAC ROD 27 February 2013
	Document Approved by SCOT Power Plant Technical Committee for update to extent Expiry date

## 6. REVISIONS

Date	Rev.	Compiler	Remarks
November 2012	0.1	J.J. Bester	Draft document for review created from 36-838
January 2013	1	J.J. Bester	Final for signature.
January 2016	2	J.J. Bester	No Changes Expiry Date Extension as Approved by Power Plant Technical Committee

## 7. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- 

## 8. ACKNOWLEDGEMENTS

None

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## APPENDIX A

Table 1: Performance requirements for EP general purpose greases

PROPERTY	TEST METHOD	REQUIREMENT		
Eskom Code		GPG-1**EP	GPG-2**EP	GPG-3**EP
NLGI GRADE		1	2	3
Thickener/soap/gelling agent type		Report		
Type of suspended solid lubricant/s		Report		
Suspended solid lubricant addition, % by mass.		Report		
Colour		Report		
Appearance		Report		
Normal Operating Temperature Range, °C		-20 to 150		
Drop point, °C.	ASTM D 2265, D 566/ IP 132	>260		
Worked Penetration @ 25°C, mm-1.	ASTM D 217/ IP 50	310-340	265-295	220-250
Oil Separation, % (m/m), max.	ASTM D 1742	6		
Oxidation Stability, 100h, kPa, max.	ASTM D 942	50		
Base Oil Viscosity, cSt @ 40°C	ASTM D 445	80-460		
Base Oil Viscosity, cSt @ 100°C	ASTM D 445	Report		
Timken OK load, kg, min.	ASTM D 2509	25		
Four Ball Weld Point, kg, min.	ASTM D 2596	200		
Four Ball Wear, Scar Diameter, mm.	ASTM D 2266	0.9		
Bearing Corrosion Test	ASTM D 1743	Pass		
Copper Corrosion at 100 °C.	ASTM D 4048/ (IP 112)	1		
Water Washout, % @ 79°C	ASTM D 1264	15		
Water Content, % (m/m), max.	ASTM D 95/ IP 74	0.5		
Wheel bearing leakage at 160°C, g, max.	ASTM D 4290	10		
Roll Stability, % change, max.	ASTM D 1831	10		

NOTE Use code modifier listed in table 2, relevant to type of soap thickener used.

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**Table 2: Lubricant codes for soap thickeners or gelling agents**

Thickener/gelling agent	Code modifier
Lithium	L
Lithium 12-Hydroxystearate	LH
Lithium calcium complex	LKX
Lithium complex	LX

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