

ICS 21.200
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 19936.3-2025

**Gears - FZG test procedures - Part 3: FZG test method A/2.8/50
for relative scuffing load-carrying capacity and wear
characteristics of semifluid gear greases**

齿轮 FZG试验程序 第3部分：半流体齿轮润滑脂的相对胶合承载能力和磨损特性F
ZG试验方法A/2.8/50

(English Translation)

Issued on: December 2, 2025

Implemented on: December 2, 2025

Issued by: State Administration for Market Regulation

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 3 of GB/T 19936 "Gear FZG Test Procedure". GB/T 19936 has already published the following parts.

---Part 1: Relative Collateral Bearing Capacity of Oils - FZG Test Method A/8.3/90;

---Part 2: Relative Adhesion Load Capacity of High Extreme Pressure Oils - FZG Step Loading Test A10/16.6R/120;

---Part 3: Relative scuffing capacity and wear characteristics of semi-fluid gear greases FZG test method A/2.8/50.

This document is equivalent to ISO 14635-3:2023 "Gears - FZG test procedures - Part 3: Relative fluidity of semi-fluid gear greases".

Glue bearing capacity and wear characteristics FZG test method A/2.8/50.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Gear Standardization (SAC/TC52).

Introduction

Types of gear damage affected by lubricants include scuffing, low-speed wear, surface contact fatigue (pitting), and micropitting fatigue.

To ensure the load-bearing capacity of the gear system, the selection and characteristic parameters of the lubricant must be carefully considered during the design phase. GB/T 19936 "Gears" the FZG test procedure describes a method for determining the relevant characteristic parameters of the lubricant (these parameters will be substituted into the calculation of the gear's load-carrying capacity).

GB/T 19936 consists of three parts.

---Part 1: Relative Collateral Bearing Capacity of Oils (FZG1) Test Method A/8.3/90. The purpose is to describe the use of Type A test...

The FZG test method under the conditions of gears, pitch circle velocity of 8.3 m/s, and initial oil temperature of 90°C was used to test the relative galling resistance of the oil.

Load capacity. This method is mainly applied to lubricating oils for industrial gears and

marine gears.

1) FZG is the Gear Research Center of the Technical University of Munich, Germany.

---Part 2: Relative Adhesion Load Capacity of High Extreme Pressure Oils FZG Stepped Loading Test A10/16.6R/120. The purpose is to describe...

The FZG test was conducted using an A10 type test gear, a pitch circle velocity of 16.6 m/s (reverse rotation), and an initial oil temperature of 120°C.

This method is used to test the relative adhesion carrying capacity of high extreme pressure oils. It is primarily applied to automotive transmission system lubricants.

---Part 3: Relative scuffing capacity and wear characteristics of semi-fluid gear greases, FZG test method A/2.8/50.

The description focuses on a closed gear transmission device, using a type A test gear, a pitch circle velocity of 2.8 m/s, and an initial temperature of 50°C.

The FZG test method under oil temperature conditions was used to test the relative adhesive load-bearing capacity and wear characteristics of semi-fluid grease.

The characteristic values of lubricants can be used to calculate gear load-carrying capacity. Currently, ISO is researching other FZG test procedures aimed at determining...

The micropitting and pitting load-bearing capacity of gears under low-speed wear conditions may be added as another part to the ISO 14635 series standards in the future.

Accurate.

The consistency grades established by the Institute.

Gear FZG Test Procedure Part 3: Relative Scratching of Semi-fluid Gear Greases

Load-bearing capacity and wear characteristics FZG test method A/2.8/50 Warning.

Because the FZG test is conducted under high speed and high stress conditions, special attention must be paid to the qualification training and safety of operators.

Protect.

1 Scope

This document describes a test method based on the FZG power flow closed-loop test machine, which determines the semi-fluidity by examining the surface scuffing damage of the gears.

The relative load-bearing capacity of gear grease.

This document is applicable to evaluating the potential scuffing capacity of NLGI's 0-000 grade semi-fluid gear greases for gears, and is typically used for...

High-stress gear devices with closed gear transmissions. This method is limited to using adequately filled grease in the test gearbox of the FZG testing machine.

Note: This method is technically equivalent to DIN Fachbericht 74.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO 1328-1:1995) Standard for cylindrical gears - Part 1: Definitions and permissible values of deviations on the same side of the tooth surface.

2) It was withdrawn and replaced by ISO 1328-1:2013.

Note: GB/T 10095.1-2022 Cylindrical gears - ISO tooth surface tolerance classification system - Part 1: Definition and permissible values of tooth surface deviations (ISO 1328-1:

2013, IDT)

ISO 6743-6 Lubricants and related products (Class L) Classification Part 6: Group C (Gears) Note. GB/T 7631.7-2025 Classification of Lubricants, Industrial Oils and Related Products (Class L) Part 7: Group C (Gears) (ISO 6743-6.

2018, IDT)

ISO 12925-1 Lubricants, industrial lubricants and related products (Class L) Group C (gears) Part 1: Lubricants for use in closed gear systems Note. GB 5903-2011 Industrial enclosed gear oils [ISO 12925-1:1996(2001), ANSI/AGMA9005-E02, NEQ] Note. GB/T 33362-2016 Conversion of Hardness Values for Metallic Materials (ISO 18265:2013, IDT) ISO 21920-2 Product Geometry Specification (GPS) Surface Texture. Profile Part 2: Terms, Definitions and Surface Texture Parameters