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# Lubricants, industrial oils and related products (Class L) — Family C (gears) —

## Part 3: Specifications for greases for enclosed and open gear systems

*Lubrifiants, huiles industrielles et produits connexes (Classe L) —  
Famille C (engrenages) —*

*Partie 3: Spécifications des graisses pour engrenages sous carter et engrenages nus*



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CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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## Introduction

Lubricants for gear systems are used in diverse types of gear designs, ranging from simple parallel spur gears to bevel gears (straight or helical), worm gears and hypoid gears. Industrial gear systems, which are either of opened type or enclosed type, vary in size from small enclosed systems used in machine tools to very large systems used in mining, steel mills and cement plants.

Lubricants for these applications vary in composition from refined straight mineral oils to more complex blends, based on mineral oils, synthetic oils (e.g. poly  $\alpha$ -olefins, esters, poly-glycols) and additives friction modifying and/or extreme-pressure. Viscosity grades according to ISO 3448<sup>[5]</sup> vary, depending on the type of application and range, from the low viscosity ISO VG 32 to high viscosity ISO VG 1 500, even more for the very low velocities and very high loads. In exceptional cases, viscosity grades can be even higher. Temperature conditions to which the gear systems are exposed also vary considerably, not only due to the ambient conditions of operation, but also depending on the sliding between the gear teeth, on the size of the casings, on the presence on the circulating systems of heat exchangers, on the vicinity of sources of heat like in the cement industry or in the steel industry.

Greases can also be used for the splash lubrication of enclosed gears or for the application on open gear teeth.