Grease Compatibility Chart — Thickener Mixing, NLGI Grades and Changeover Procedure

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Which grease thickeners can be mixed and which must never meet, the NLGI consistency scale, base-oil compatibility, and the safe purge procedure when changing grease type in a bearing.

Thickener compatibility matrix

| Li | Li-complex | Ca-sulfonate | Polyurea | Clay (bentone) | Al-complex |

Lithium | — | C | C | I | I | I |

Lithium-complex | C | — | C | B | I | C |

Calcium-sulfonate | C | C | — | B | I | B |

Polyurea | I | B | B | — | I | I |

Clay (bentone) | I | I | I | I | — | I |

Aluminium-complex | I | C | B | I | I | — |

C = generally compatible · B = borderline, test or purge thoroughly · I = incompatible: the mixture softens or hardens and loses its oil. Matrices differ slightly between producers because additive packages matter as much as thickeners — when in doubt, treat the pair as incompatible. Base oils add a second layer: mineral and PAO mix; silicone and PFPE oils mix with nothing else.

NLGI consistency grades

NLGI | Worked penetration (0.1 mm) | Feel | Typical duty |

0 | 355–385 | semi-fluid | Central systems, gear couplings |

1 | 310–340 | very soft | Low temperature, high water wash |

2 | 265–295 | standard | The default bearing grease (e.g. SKF LGMT 2) |

3 | 220–250 | firm | Vertical shafts, high ambient |

Changing grease type safely

Same thickener and base oil? Top up normally.

Compatible pair (C): relubricate at half the usual interval twice, so the old grease is progressively displaced.

Borderline or incompatible (B/I): purge — grease through the bearing until fresh grease exits clean, or strip and wash the bearing and housing with solvent, dry, and repack 30–50 % free volume. Mark the housing with the new grease type.

Polyurea-filled electric-motor bearings deserve special care: most general lithium EP greases are incompatible with them — purge fully or replace the sealed bearing.

High-viscosity and special greases (e.g. SKF LGEM 2 for slow heavily-loaded bearings) follow the same matrix by their thickener family — the designation letter rarely says which, so check the datasheet line "thickener". Relubrication quantities and intervals per bearing size are in the bearing maker's tables; bearing dimensions themselves are in the bearing chart.

Frequently asked questions
Can I mix lithium and polyurea grease?No — lithium and conventional polyurea thickeners are incompatible: the blend softens and bleeds oil. Purge the bearing completely before changing between them.What does NLGI 2 mean?The standard consistency grade for rolling-bearing grease: worked penetration 265–295 tenths of a millimetre — firm enough to stay in the bearing, soft enough to flow to the contacts.Are lithium and lithium-complex greases compatible?Yes, generally — they share the thickener chemistry; follow the shortened-interval top-up routine so the old fill is displaced.How do I change to an incompatible grease?Purge the bearing until only fresh grease exits, or dismantle, wash and dry the bearing and housing, then repack 30–50 % of the free volume with the new grease and label the point.Do base oils affect compatibility too?Yes: mineral and PAO base oils mix, but silicone and PFPE-based greases are incompatible with everything outside their own family regardless of thickener.

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