

SKF Lubricants

Poor lubrication accounts for over 36% of premature bearing failures



Bearing grease selection chart

Grease	Description	Application examples	Temperature		Range ²⁾	Speed Range ²⁾	Load Range ²⁾	Base oil
			L TTL ¹⁾ °C (°F)	H TPL ¹⁾ °C (°F)				
LGMT 2	General purpose industrial and automotive	Wheel bearings, conveyors, fans, small electric motors	−30 (−20)	120 (250)	M	M	L to M	Min
LGMT 3	General purpose industrial and automotive	Vertical shaft, outer ring rotation, wheel bearings	−30 (−20)	120 (250)	M	M	L to M	Min
LGEP 2	Extreme pressure	Heavy industrial applications, vibrating screens	−20 (−5)	110 (230)	M	L to M	H	Min
LGNL 2	General purpose, high load	Heavy duty, conveyors, vibrating machinery	−30 (−20)	110 (230)	M	L to M	H	Min
LGNL 3	General purpose, high load	Vertical shaft, vibrating screens	−30 (−20)	130 (265)	M	M	H	Min
LGWA 2	Extreme pressure, wide temperature range	Wheel bearings, fans, electric motors	−30 (−20)	140 (285) ³⁾	M to H	L to M	L to H	Min
LGGB 2	Biodegradable, low toxicity	Agriculture, construction, water treatment	−40 (−40)	90 (195)	L to M	L to M	M to H	Ester
LGLT 2	Low temperature, extremely high speed	Machine tool spindles, printing cylinders	−50 (−60)	110 (230)	L to M	M to EH	L	PAO
LGWM 1	Extreme pressure, low temperature	Wind turbine main shaft, heavy duty applications	−30 (−20)	110 (230)	L to M	L to M	H	Min
LGEP 1	Extreme pressure, high viscosity	Wind turbine main shaft, heavy duty applications	−20 (−5)	120 (250)	M	VL to M	H to VH	Min
LGWM 2	High load, wide temperature	Wind turbine main shaft, heavy duty off road or marine applications	−40 (−40)	110 (230)	L to M	L to M	L to H	PAO/Min
LGEM 2	High viscosity with solid lubricants	Jaw crushers, construction machinery, vibrating machinery	−20 (−5)	120 (250)	M	L to M	H to VH	Min
LGEV 2	Extremely high viscosity with solid lubricants	Rotary kilns, high pressure grinding rolls, trunnions, rocker arms	−10 (15)	120 (250)	M	VL to L	H to VH	Min
LGHB 2	High load, high temperature	Classifiers, work rolls and continuous casters, vibrating screens	−20 (−5)	150 (300)	M to H	VL to M	L to VH	Min
LGHC 2	High load, water resistant, high temperature	Classifiers, work rolls and continuous casters, vibrating screens	−20 (−5)	140 (285)	M to H	VL to M	L to VH	Min
LGHP 2	High performance, high temperature	Electric motors, high temperature fans	−40 (−40)	150 (300)	M to H	M to H	L to M	Min
LGHQ 2	Electric motor grease	Electric motors, fans	−30 (−20)	160 (320)	M to H	M to H	L to M	Min
LGET 2	Extreme temperature, extreme condition	Ovens, textile dryers, vacuum pumps	−40 (−40)	260 (500)	VH	L to M	H to VH	PFPE
LGFG 2	General purpose, food grade	Conveyors, wrapping machines, bottling machines	−30 (−20)	140 (285)	M	L to H	L to H	Min
LGFQ 2	High load, food grade	Pellet presses, mixers, centralized lubrication systems	−40 (−40)	130 (265)	L to H	VL to M	L to VH	PAO/Min
LGED 2	High temperature, food grade	Baking, vacuum pumps	−30 (−20)	240 (465)	VH	L to M	H to VH	PFPE

¹⁾ L TTL = low temperature torque limit, HTPL = high temperature performance limit for details, refer to The SKF traffic light concept for grease temperature performance on page 9

²⁾ Refer to Temperature, Speed, and Load ranges for grease selection on page 4

³⁾ LGWA 2 can withstand peak temperatures of 220 °C (430 °F)

	Thickener	NLGI grade	Base oil viscosity		Vertical shaft	Oscillating movements	Severe vibrations	Rust protection	Water resistance	Frequent start-up	
			40 °C mm ² /s	100 °C mm ² /s							
Wide range of applications	Li	2	110	10	●	●	+	+	+	●	
	Li	3	125	12	++	●	++	+	+	●	
	Li	2	200	16	●	●	+	+	+	++	
	Ca Anh	2	220	14	●	●	+	+	++	++	
	Ca _x	3	105	10	++	●	++	+	++	+	
	Lix	2	250	17	●	—	+	+	+	+	
Low temperatures	Li-Ca	2	110	18	●	+	—	●	+	+	
	Li	2	17	3.8	●	—	--	—	+	●	
	Li	1	200	16	--	+	—	+	+	++	
	Li-Ca	1	400	25	--	+	—	+	+	++	
	CaSx	1-2	80	10	●	++	+	++	++	++	
	Li-Ca	2	500	32	+	●	+	+	+	++	High loads
	Li-Ca	2	1300	49	●	●	+	+	+	++	
	CaSx	2	425	28	●	++	+	++	++	++	
	CaSx	2	450	31	●	++	+	++	++	++	High temperatures
High temperatures	PU	2-3	96	10.5	+	—	--	++	++	●	
	PU	2	110	12	●	—	--	+	++	+	
	PTFE	2	400	38	●	—	●	—	+	●	
Food grade	CaSx	2	150	16	●	++	+	+	++	+	
	CaSx	1-2	320	30	●	++	●	+	++	++	
	PTFE	2	460	42	●	—	●	—	+	●	

++ = Very suitable

+ = Recommended

● = Suitable

— = Not recommended

— — = Not suitable

Bearing grease selection chart

Bearing operating parameters

Temperature range			Load range		Load ratio
L = Low	< 50 °C	< 120 °F	VH = Very high		C/P < 2
M = Medium	50 to 100 °C	120 to 210 °F	H = High		C/P ~ 4
H = High	> 100 °C	> 210 °F	M = Medium		C/P ~ 8
EH = Extremely high	> 150 °C	> 300 °F	L = Low		C/P ≥ 15
Speed range		Speed factor			
		Ball bearings		Spherical roller, tapered roller, CARB toroidal roller bearings	Cylindrical roller bearings
VL = Very low		n d _m < 100 000		n d _m < 30 000	n d _m < 30 000
L = Low		n d _m < 300 000		n d _m < 75 000	n d _m < 75 000
M = Medium		n d _m < 500 000		n d _m ≤ 210 000	n d _m ≤ 270 000
H = High		n d _m ≤ 700 000		n d _m > 210 000	n d _m > 270 000
VH = Very high		n d _m > 700 000			
EH = Extremely high				n = rotational speed, r/min x 0.5 (d+D), mm	

Available pack sizes															
	Grease packagings								Automatic lubricators (cartridges/refills)						
	35 g tube	200 g tube	420 ml cartridge	0.5 kg can	1 kg can	5 kg can	18 kg pail	50 kg drum	180 kg drum	LAGD series		TLSD series		TLMR series	
	60 ml	125 ml	125 ml	250 ml	120 ml	380 ml									
LGMT 2	•	•	•		•	•	•	•	•						
LGMT 3			•	•	•	•	•	•	•						•
LGEP 2			•		•	•	•	•	•						•
LGNL 2			•			•	•		•						
LGNL 3					•		•		•						
LGWA 2		•	•		•	•	•	•	•	•	•	•	•	•	•
LGGB 2			•			•	•					•			
LGLT 2			•		•		•								
LGWM 1			•			•	•	•	•						•
LGEP 1							•								
LGWM 2			•			•	•	•	•			•			•
LGEM 2			•			•	•		•	•	•	•	•		
LGEV 2	•		•			•	•	•	•						•
LGHB 2			•			•	•	•	•	•	•	•	•		•
LGHC 2			•				•	•	•						
LGHP 2			•		•	•	•	•	•						
LGHQ 2			•		•	•	•			•	•	•	•		•
LGET 2	• *				•										
LGFG 2			•		•		•		•	•	•	•	•	•	•
LGFQ 2			•				•					•	•	•	
LGED 2					•										

* 50 g syringe

Technical data

Bearing greases

	LGMT 2	LGMT 3	LGEP 2	LGNL 2	LGNL 3	LGWA 2
DIN 51825 code	K2K-30	K3K-30	KP2G-20	K2KP-30	KP3K-30	KP2N-30
NLGI consistency class	2	3	2	2	3	2
Thickener	Lithium	Lithium	Lithium	Calcium anhydrous	Calcium complex	Lithium complex
Colour	Red brown	Amber	Light brown	Yellow brown	Amber	Amber
Base oil type	Mineral	Mineral	Mineral	Mineral	Mineral	Mineral
Operating temperature range	–30 to +120 °C (–20 to +250 °F)	–30 to +120 °C (–20 to +250 °F)	–20 to +110 °C (–5 to +230 °F)	–30 to +110 °C (–20 to +230 °F)	–30 to +130 °C (–22 to 266 °F)	–30 to +140 °C (–20 to +285 °F)
Dropping point (min), ISO 2176	180 °C (355 °F)	180 °C (355 °F)	180 °C (355 °F)	140 °C (284 °F)	>190 °C (374 °F)	250 °C (480 °F)
Base oil viscosity, DIN 51562 40 °C, mm ² /s 100 °C, mm ² /s	110 10	125 12	200 18	220 14	105 10	250 17
Penetration DIN ISO 2137 Worked, 60 strokes, 10 ^{–1} mm Prolonged (max.), 100 000 strokes, 10 ^{–1} mm	265–295 +50	220–250 280	265–295 +50	265–295 +50 max.	220–250 +50 (max. 280)	265–295 +50
Mechanical stability Roll stability, ASTM D 1831 (max.) 50 hrs at 80 °C, 10 ^{–1} mm V2F test, 144 hrs	+50 M	295 M	+50 M	+70 M	+50 (max. 280) M	+50 M
Corrosion protection, Emscor ISO 11007, Distilled water ISO 11007 modified, Water washout ISO 11007 modified, 0.5% NaCl	0–0 0–0 –	0–0 0–0 –	0–0 0–0 –	0–0 0–0 –	0–0 0–0 –	0–0 0–0 –
Water resistance (max.) DIN 51 817/1, 3 hrs at 90 °C	1	1	1	1	2 max.	1
Oil separation DIN 51 817, 40 °C, %	1–6	1–3	2–5	1–5	1–3	1–5
Lubrication ability R2F, test B at 120 °C	Pass	Pass	Pass	Pass	Pass Pass at 140 °C (284 °F)	Pass at 140 °C (284 °F)
Copper corrosion (max.) DIN 51811 / ASTM D4048, 24 hrs at 100 °C	2 max. at 110 °C (230 °F)	2 max. at 130 °C (265 °F)	2 max. at 110 °C (230 °F)	2 max.	2 max. at 130 °C (266 °F)	2 max.
Grease life (min) R0F test L ₅₀ life, 10 000 r/min, hrs at °C	1 000 at 100 °C (212 °F)	1 000 at 130 °C (265 °F)	1 000 at 110 °C (230 °F)	1 000 at 110 °C (230 °F)	1 000 min. at 130 °C (266 °F)	1 000 at 130 °C (265 °F)
EP performance 4 ball - Wear scar (max.) DIN 51 350, 1 400 N, mm 4 ball - Weld load (min.) DIN 51350/4, N	– –	– –	1.4 2 800	1.8 max. 2 800	2 max. 2 800 min.	1.8 2 600
These characteristics represent typical values.						

Technical data

SKF Bearing greases

	LGGB 2	LGLT 2	LGWM 1	LGEP 1	LGWM 2	LGEM 2
DIN 51825 code	ISO 12924 ISO-L-XD(L)CEB 2	KHC2G-50	KP1G-30	KP1K-20	KP2G-40	KPF2K-20
NLGI consistency class	2	2	1	1	1–2	2
Thickener	Lithium/ calcium	Lithium	Lithium	Lithium- Calcium	Calcium sulphonate complex	Lithium/ calcium
Colour	Light brown	Beige	Brown	Beige	Light brown	Black
Base oil type	Ester	PAO	Mineral	Mineral	Mineral/PAO	Mineral
Operating temperature range	–40 to +90 °C (–40 to +195 °F)	–50 to +110 °C (–60 to +230 °F)	–30 to +110 °C (–20 to +230 °F)	–20 to +120 °C (–4 to +240 °F)	–40 to +110 °C (–40 to +230 °F)	–20 to +120 °C (–5 to +250 °F)
Dropping point (min), ISO 2176	165 °C (330 °F)	180 °C (355 °F)	170 °C (340 °F)	170 °C (340 °F)	300 °C (570 °F)	180 °C (355 °F)
Base oil viscosity, DIN 51562 40 °C, mm ² /s 100 °C, mm ² /s	110 18	17 3.8	200 15	400 25	80 10	500 32
Penetration DIN ISO 2137 Worked, 60 strokes, 10 ^{–1} mm Prolonged (max.), 100 000 strokes, 10 ^{–1} mm	265–295 +50	265–295 +50	310–340 +50	310–340 +50	280–310 +30	265–295 +50
Mechanical stability Roll stability, ASTM D 1831 (max.) 50 hrs at 80 °C, 10 ^{–1} mm V2F test, 144 hrs	+70 –	– –	– –	+50 –	+30 –	+50 M
Corrosion protection, Emcor ISO 11007, Distilled water ISO 11007 modified, Water washout ISO 11007 modified, 0.5% NaCl	0–0 0–0 0–0	0–1 – –	0–0 0–0 0–0	0–0 0–0 0–0 (1% NaCl)	0–0 0–0 0–0	0–0 0–0 2–2
Water resistance (max.) DIN 51 807/1, 3 hrs at 90 °C	1	1	1	1	1	1
Oil separation DIN 51 817, 40 °C, %	1–3	1–5	8–13	1–5	1–3 at 60 °C (140 °F)	1–5
Lubrication ability R2F, test B at 120 °C	Pass at 90 °C (195 °F)	–	Pass at 100 °C (210 °F)	Pass at 80 °C (176 °F)	Pass	Pass
Copper corrosion (max.) DIN 51811 / ASTM D4048, 24 hrs at 100 °C	2 max.	1 max.	2 max.	1 max. at 120 °C (250 °F)	2 max.	2 max.
Grease life (min) ROF test L ₅₀ life, 10 000 r/min, hrs at °C	1000 at 90 °C (195 °F)	1 000 at 100 °C (210 °F) and 20 000 r/min.	1000 at 110 °C (230 °F)	1000 at 100 °C (210 °F)	1000 at 110 °C (230 °F)	1000 at 100 °C (210 °F)
EP performance 4 ball - Wear scar (max.) DIN 51 350, 1 400 N, mm 4 ball - Weld load (min.) DIN 51350/4, N	1.8 2 600	– 2 000 min.	1.8 2 800	1.8 3 400	2 4 000	1.2 3 400
These characteristics represent typical values.						

LGEV 2	LGHB 2	LGHC 2	LGHP 2	LGHQ 2	LGET 2	LGFG 2	LG FQ 2	LGED 2
KPF2K-10	KP2N-20	KP2N-20	K2N-40	K2P-30	KFK2U-40	KP2N-30	KP1/2K-40	KFK2U-30
2	2	2	2–3	2	2	2	1-2	2
Lithium/ calcium	Calcium sulphonate complex	Complex calcium sulphonate	Polyurea	Polyurea	PTFE	Calcium sulphonate complex	Calcium sulphonate complex	PTFE
Black	Brown	Brown-beige	Blue	Blue	White	Brown	Pale Brown	White
Mineral	Mineral	Mineral	Mineral	Mineral	PFPE	Mineral	PAO/Mineral	PFPE
–10 to +120 °C (15 to 250 °F)	–20 to +150 °C (–5 to +300 °F)	–20 to +140 °C (–5 to +284 °F)	–40 to +150 °C (–40 to +300 °F)	–30 to +160 °C (–2 to +320 °F)	–40 to +260 °C (–40 to +500 °F)	–30 to +140 °C (–2 to +284 °F)	–40 to +130 °C (–40 to +266 °F)	–30 to +240 °C (–2 to +464 °F)
180 °C (355 °F)	300 °C (570 °F)	300 °C (570 °F)	240 °C (465 °F)	260 °C (500 °F)	300 °C (570 °F)	280 °C (536 °F)	300 °C (570 °F)	300 °C (570 °F)
1 300 49	425 28	450 31	96 10.5	110 12	400 38	150 16	320 30	460 42
265–295 +50	265–295 –20 to +50	265–295 +30	245–275 365 max.	265–295 385 max.	265–295 –	265–295 +50 max.	265–295 +30 max.	265–295 30 max.
+50 M	–20 to +50 M	+30 –	365 max. –	385 max. –	+30 max. at 130 °C (265 °F) –	+50 max. –	+30 max –	– –
0–0 0–0 2–2	0–0 0–0 0–0	0–0 – 0–1	0–0 0–0 0–0	0–0 0–1 2–2	1–1 – –	0–0 0–0 0–0	0–0 – 0–0	0–0 – –
1	1	1	1	1	0	1 max.	1 max.	1 max.
1–5	1–3 at 60 °C (140 °F)	1–3 at 60 °C (140 °F)	3 max.	1-3	1-3	1-5	1–3	1-3
Pass, 100 °C (210 °F)	Pass at 140 °C (284 °F)	Pass at 140 °C (284 °F)	Pass at 100 °C (210 °F)	Pass at 100 °C (210 °F)	–	Pass	Pass	–
1 max	2 max. at 150 °C (302 °F)	2 max.	1 max. at 150 °C (300 °F)	2 max.	1 max. at 150 °C (300 °F)	1 max.	2 max.	1 max.
1000 at 100 °C (210 °F)	1 000 at 130 °C (265 °F)	1000 at 110 °C (230 °F)	1 000 at 150 °C (300 °F)	1 000 at 160 °C (302 °F)	1 000 at 220 °C (428 °F)	1 000 at 120 °C (248 °F)	1000 at 120 °C (248 °F)	1 000 at 200 °C (392 °F)
1.2 3 000	2 4 000	1.4 4 000	– –	1 2600	– 8 000 min.	1 max 4000 min.	1.5 max. 3 400 min	– 8 000 min.

Food grade lubricants

Grease	Description	Application examples	Base oil	Temperature range ¹⁾	
				LTTL	HTPL
LGFG 2	General purpose food grade grease	Conveyor bearings Wrapping machines Bottling machines	White mineral oil	−30 °C (−22 °F)	+140 °C (+284 °F)
LGFQ 2	High load, water resistant and wide temperature food grade grease	Pellet presses Mills Mixers	PAO/White mineral oil	−40 °C (−40 °F)	+130 °C (+265 °F)
LGED 2	High temperature & harsh environment bearing grease	Bakery/brick oven equipment Glass industry Vacuum pumps	PFPE	−30 °C (−22 °F)	+240 °C (+464 °F)
LFFM 100	Food grade chain oil	General chain lubrication as in confectionery industries and fruit and vegetable processing. Even in the presence of moisture.	PAO	−30 °C (−22 °F)	+130 °C (+265 °F)
LFFT 220	Food grade chain oil	High temperature applications as bakery ovens	Ester	0 °C (32 °F)	+250 °C (482 °F)
LDTs 1	Food grade dry film lubricant	Conveyors in bottling lines using PET, carton, glass or can packages	Mineral/PTFE	−5 °C (25 °F)	+60 °C (140 °F)

These characteristics represent typical values.

¹⁾ LTTL = Low Temperature Torque Limit
HTPL = High Temperature Performance Limit

Lubricants for non rolling bearing applications

Grease	Description	Application examples	Thickener/Base oil	Temperature range ¹⁾	
				LTL	HTPL
LMCG 1	Grid and gear coupling grease	Grid and gear couplings Flexible heavy duty grid and gear coupling	Polyethylene / mineral	0 °C (32 °F)	120 °C (248 °F)
LGTE 2	Biodegradable grease for total loss applications	Marine and wire rope applications Construction as well as forestry and agricultural equipment. Ecolabel certified.	Anhydrous calcium / ester	−40 °C (−40 °F)	+100 °C (+212 °F)
LGCC 2	General purpose, lubrication systems grease	Plain bearings and sliding guides in off-road and construction machinery	Anhydrous calcium / mineral	−50 °C (−58 °F)	+100 °C (+212 °F)
LGLS 0	Wide temperature lubrication systems grease	Plain bearings and chassis sliding surfaces Centralized lubrication systems	Anhydrous calcium / mineral	−40 °C (−40 °F)	+100 °C (+212 °F)
LGLS 2	High viscosity lubrication systems grease	Slow plain bearings, joints, wire ropes Lubrication systems under medium to high ambient temperatures	Anhydrous calcium / mineral	−20 °C (−4 °F)	+120 °C (+248 °F)
LHMT 68	Medium temperature chain oil	Ideal for medium temperatures and dusty environments	Mineral	−20 °C (−4 °F)	+100 °C (212 °F)
LHHT 250	High temperature chain oil	Ideal for high load and/or high temperature conditions	Ester	−0 °C (32 °F)	+250 °C (482 °F)

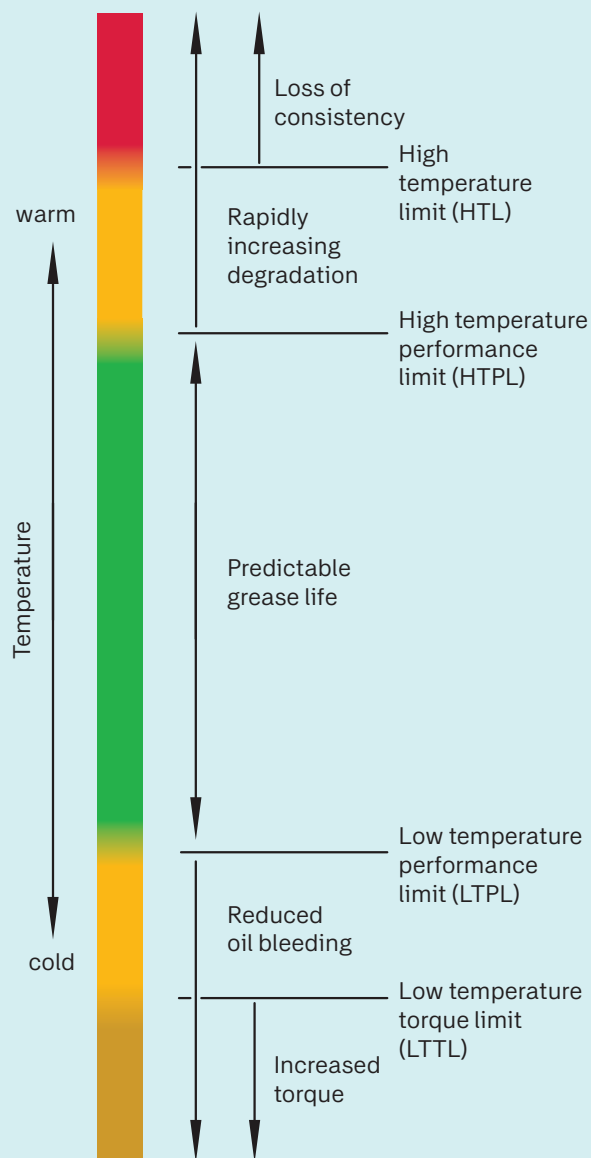
These characteristics represent typical values.

¹⁾ LTTL = Low Temperature Torque Limit
HTPL = High Temperature Performance Limit

Traffic light concept

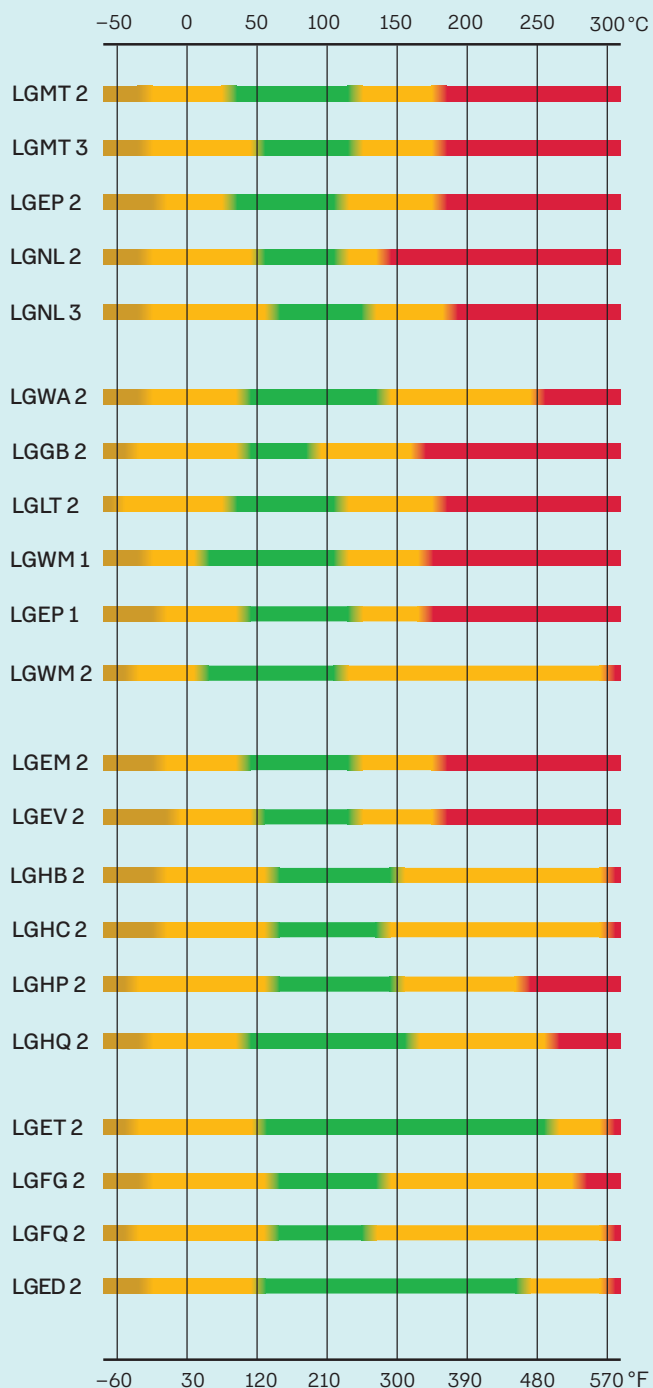
SKF Traffic light concept

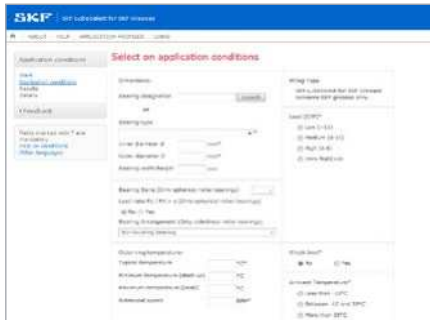
The temperature range over which a grease can be used depends mainly on the type of base oil, thickener, and additives, but also on the bearing type. The relevant temperature limits are illustrated schematically using traffic light colours. In the green zone, you can predict the grease life. The amber zones indicate temperature ranges where more careful considerations are required. At temperatures in the red zone, there is a risk of losing the required grease properties or bearing damage.



Operating temperature range of SKF greases

When evaluating the suitability of a grease for a certain temperature range, keep in mind that greases typically do not change their properties suddenly at a temperature limit. There is always a transition zone.





Advanced tool for grease selection and relubrication calculation

LubeSelect for SKF greases

Selecting a suitable grease for a particular bearing is a crucial step if the bearing is to meet design expectations in its application. SKF knowledge about bearing lubrication has been encapsulated into a computer program that can be consulted at skf.com/lubeselect

LubeSelect for SKF greases provides you a user friendly tool to select the right grease and suggest frequency and quantity, while taking into account the particular conditions of your application. General guidelines for typical greases for different applications are also available.



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