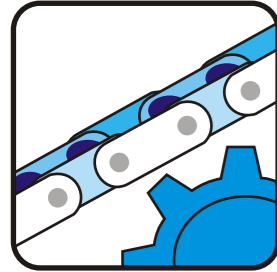


Assembly pastes



Multi-purpose workshop kit



TURMOFLUID® 40 B Spray
-40 °C up to +250 °C
High-temperature chain spray

- fully synthetic
- good creeping and adhesive properties
- low evaporation rate
- excellent wear and corrosion protection

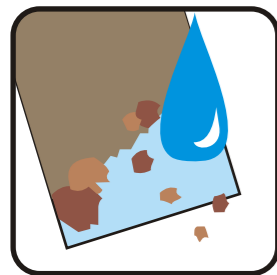
Application in chain bolts/chain sleeves, sliding guides, wire ropes and gear wheels.



TURMOPAST® TAS WT Spray
-30 °C up to +1400 °C
High-temperature and hot screw compound spray

- high temperature resistant
- reducing wear
- protects against corrosion
- prevents fretting corrosion

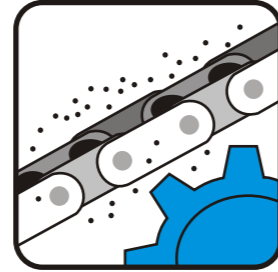
Application for assembly and non-destructive disassembly of screws, nuts, bolts, interference fits, outdoor lubrication points as well as parts subject to high surface pressure.



KORROQUICK Spray
with multiple effect

- displaces humidity
- penetrates easily
- facilitates the loosening of rusty screw fittings
- protects against corrosion

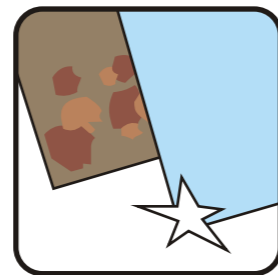
Application as a rust dissolving, anticorrosion and lubricant spray. Bright metal surfaces are protected against corrosion and movable machine parts are reliably lubricated.



TURMOFLUID® ED 13 Spray
-40 °C up to +150 °C
Lubricating and spray oil

- fully synthetic
- resistant to high pressure
- oxidation stable
- avoids dirt adherence
- adheres to metal
- water displacement

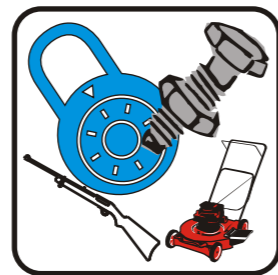
Application for all lubrication points in precision mechanical parts, measuring and control equipment as well as office machinery.



TURMOGREASE® NBI - Grease spray
-40 °C up to +180 °C
Light-coloured assembly spray

- resistant to hot and cold water
- extremely resistant to pressure
- good adhesion
- excellent corrosion protection

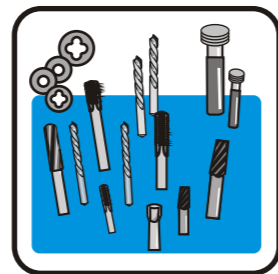
Application in the plastic industry for movable parts on plastic injection moulding machines.



4S-FLUID - Immediate, cleaning, lubricating, conservating
-50 °C up to +150 °C

- fully synthetic, silicone-free
- good EP-, creeping, adhesion and penetrating behaviour
- water displacement
- low frictional moment
- good cold insulator
- protects against corrosion

Application as an universal suitable special oil with PTFE-additives and long-term effect for every sticking, stinking and squeaking object. Forms a moisture-repellant protective film on metals, therefore increase of the electrical contact ability, free of environmental loading heavy metals.



DIACUT Spray
Fully synthetic special fluid for metal processing

- high cutting speeds
- constant dynamic viscosity under shear
- good oxidation stability
- excellent corrosion protection
- high wear protection

Application for cutting, milling and drilling of all FE-/NE-metals as well as exact fittings; even in case of vertical "head drilling", the fluid does not drop out.

Assembly pastes



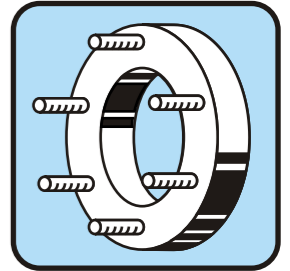
Multi-purpose workshop kit



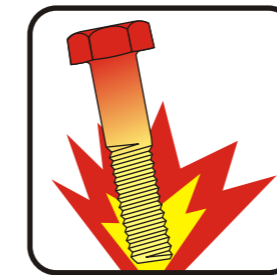
Time is money!

TURMOPAST® MA2
-35 °C up to +170 °C
White assembly paste

- non-contaminating
- good adhesion on metal
- resistant to water steam
- resistant to chemical influences
- effective against fretting and tribo-corrosion



Application for the assembly of interference and transition parts, bolts, profile and dovetail guides, spline shafts and slideways.



TURMOPAST® TAS - line (C, WT, FM, AL)
High-temperature pastes to +1400 °C - unleaded-

- white, silver or copper-coloured
- easy to apply
- low friction coefficient
- evaporates without residues
- prevents "burning-in"
- easy "breakaway movements"

- combination of solid lubricants in a synthetic carrier oil
- prevents fretting (tribo) corrosion

Application for screw-type connections, low-speed bearings, cam disks, spindles, return rollers, large-link chains; separating and lubricating agent for forging and hot moulding operations.



TURMOPAST® TAS-LMI
-40 °C up to +1200 °C
H1 lubricating and separating paste

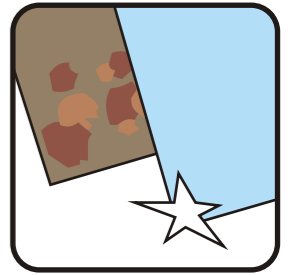
- white, metal-free
- with NSF/H1-registration
- low friction coefficient
- long lubricating intervals
- prevents "burning-in"
- reducing wear

- protects against tribo-corrosion
- invariable lubricating and parting properties, even at high contact pressure

Application for low-speed bearings, excenter, cam disks, spindles and chains as well as a lubricating agent in hot-shaping (die-forging, hot extrusion, hot rolling and hot bending of steel and non-ferrous metals). Against the seizing of bolts, hinges and screw-type connections.

TURMOPAST® NBI 2 white
-30 °C up to +150 °C
Assembly paste against tribo-corrosion

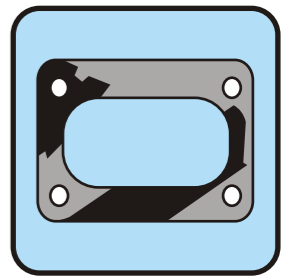
- beige complex soap grease
- high content of white solid lubricants
- resistant to water, alkaline and chemicals
- prevents fretting and tribo-corrosion



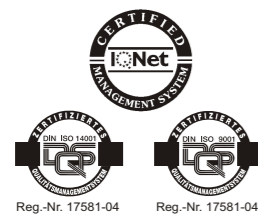
Application for lathe chucks as well as low-speed rolling and sliding bearings, especially in a humid environment; as an assembly paste for clean assembly works.

TURMSILON® MV -line
Transparent silicone paste

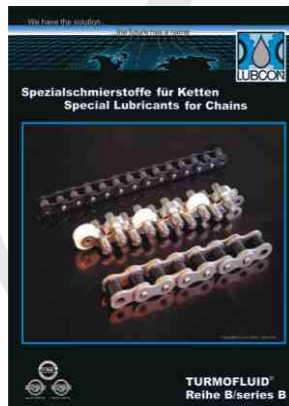
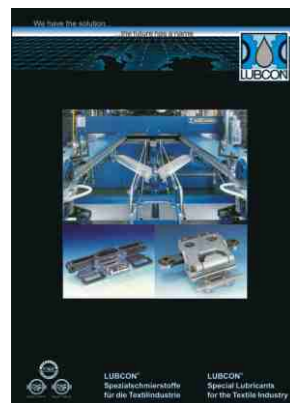
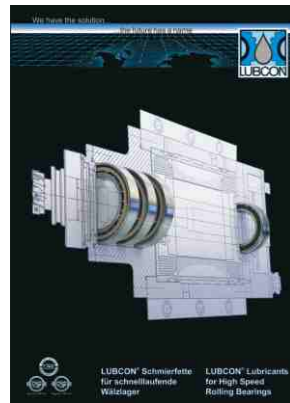
- water and steam resistant
- remains very soft at low temperatures
- prevents "freezing"
- high dielectric strength prevents voltage arcing in insulators and switches
- prevents wear in plastic parts of household appliances and phone equipment



Application for sealing elements (glass taps) in pharmaceutical and food processing industries as well as door seals in aerial cableways and rail vehicles.



LUBRICANTS · LUBRICATION ENGINEERING
High-performance and special lubricants
High and low temperature lubricants
Silicone lubricants
Solid lubricants: Powder, pastes, suspensions, gliding lacquers
Surface technology



Whatever you need - from the consultation on tribologic questions to the setting into operation of the lubricant **LUBCON** is the partner at your side worldwide.

And that is not yet all ...

The **TOTAL LUBE MANAGEMENT** enables you to work even more efficiently and more economically as before.

This performance spectrum includes

- **ELABORATION** of lubricant charts for your company
- **DELIVERY** of the lubricants determined in the lubricant chart
- **LUBRICATION** of the individual plant installations with the lubricants listed in the lubricant chart
- **DOCUMENTATION** of the lubrication processes
- **CONCEPTION** of the lubricating systems for oils and greases
- **SETTING INTO OPERATION** of the lubricating systems
- **PROCUREMENT** of production means, e. g. grease guns, grease nipples, lubricant supply systems, etc.
- **FILLING** of small series of rolling bearings with the greases indicated by you

Did you know that **LUBCON lubricants** are applied for your safety worldwide every day?

- e. g. in single-lever mixers of water fittings
- in energy regulators in electric stoves
- in the AIRBUS
- in the ARIANE carrier rocket
- in the FORMULA 1 by Sauber-Petronas, Jordan and Benetton
- in vehicle components lubricated for life
- in the food production with specially approved (NSF-H1) food lubricants
- in large open gear drives of cement mills, in small gears of dental turbines
- in large bearings in the open pit mining, in miniature bearings of computers
- in conveyor chains of paint dryers, in transport chains of refrigerating plants etc.

LUBCON philosophy:

... the right **LUBCON product** at the agreed date:

... 100 ml tubes, 400 ml sprays, 400 ml cartridges, 1 kg cans, 5 l canisters, 20 l canisters, 5 kg buckets, 25 kg buckets, 180 kg drums, 200 l drums or the 1000 l container are just a small selection of the possible packing units...

LUBRICANT CONSULT GMBH

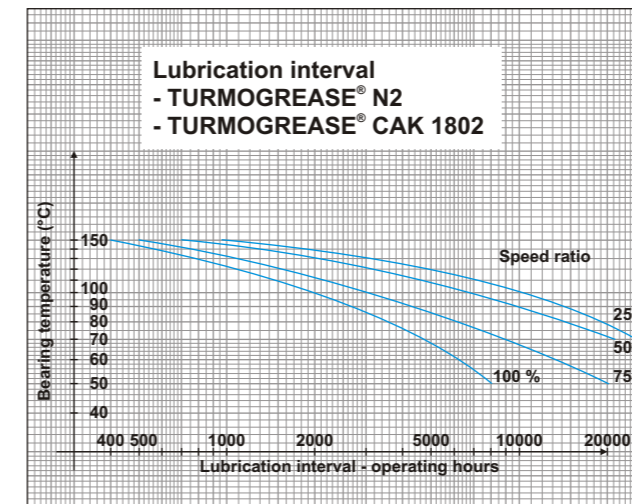
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e-Mail: webmaster@lubcon.com · www.lubcon.com



NLGI (National Lubricating Grease Institute)
Division of greases acc. to their consistency (DIN 51818)

NLGI class	Consistency	Worked penetration in 1/10 mm
000	liquid	445 - 475
00	heavy liquid	400 - 430
0	partly liquid	355 - 385
1	very soft	310 - 340
2	soft	265 - 295
3	smooth	220 - 250
4	nearly solid	175 - 205
5	solid	130 - 160
6	very solid	85 - 115

3) Lubrication interval diagram



Example:
Bearing type 2307 K; average bearing temperature +100 °C;
 $n_g = 7000 \text{ min}^{-1}$ (see table 2);
Speed ventilator $n = 3000 \text{ min}^{-1}$
 $n/n_g = 3000 : 7000 = 0,43$ (43 %)
Lubrication interval approx. 8000 h

Viscosity survey

1. Generally

The viscosity is a measure for the inside friction. Its determination is made for Newtonian fluids, especially mineral oils, hydrocarbons and similar liquids, according DIN 51550.

The unit of the kinematic viscosity in mm^2/s (former: cSt), whereas $1 \text{ mm}^2/\text{s}$ corresponds to 1 cSt.

2. ISO viscosity classes

The ISO viscosity classes describe a system for fluid industrial lubricants in dependance to their viscosity. The numerical values refer to the kinematic viscosity at a test temperature of +40 °C. The maximum limits of each class are $\pm 10 \%$ above these numerical values.

Tables: SAE-ISO Viscosity classes (Survey) base VI = 100

ISO VG SAE classes	Engler-Grad, +50 °C		kinematic viscosity in mm^2/s , +50 °C		ISO viscosity class	Limits of kinematic viscosity at +40 °C mm^2/s (cSt)	
	min.	max.	min.	max.		min.	max.
Industrial lubricating oils	1,6	57	1,6	433	ISO VG 68	68	61,2 - 74,8
Automotive gear oils	2	48	2,2	399	ISO VG 100	100	90,0 - 110
Automotive motor oils	3	43	3,2	365	ISO VG 150	150	135 - 165
	4	39	4,1	330	ISO VG 220	220	198 - 242
	5	36	4,6	300	ISO VG 320	320	288 - 352
	7	32	6,8	248	ISO VG 460	460	414 - 506
	10	29	9,0	210	ISO VG 680	680	612 - 748
	15	25	13,5	165	ISO VG 1000	1000	900 - 1100
	20	22	19,8	122	ISO VG 1500	1500	1350 - 1650
	30	18	28,8	81			
	40	15	41,4	62			
	50	12	50,6	50			
	60	10	62,5	40			
	70	8	77,5	30			
	80	7	90,0	25			
	90	6	102,0	20			
	100	5	117,0	15			
	110	4	135,0	12			
	120	3	156,0	10			
	130	2	180,0	8			
	140	1	207,0	6			
	150	1	237,0	5			
	160	1	270,0	4			
	170	1	306,0	3			
	180	1	345,0	2			
	190	1	387,0	2			
	200	1	433,0	2			

1) Grease quantity/Rolling bearings

As a general rule: $d \times B \times 0,01 = \text{cm}^3$
d = bore of the bearing in mm; B = width of bearing in mm
High speed rolling/spindle bearings
DF > 800.000; grease quantity: 25-35 % of the bearing clearance

2) Speed factor (DN-value)

The DN-value represents the limiting of the lubricating grease regarding the maximum speed in rolling bearings. The statements refer to deep groove ball bearings. DN-values are determined by means of the kinematic viscosity and general test fields.
 $DN = n \cdot d_m = \text{mm/min}$;
 $d_m = \text{average bearing diameter in mm}$;
 $n = \text{operating speed (rpm)}$

4) Table of Miscibility

Thickener	Ca soap (water free)	Ca complex soap	Li soap	Na soap	Gels	Ba complex soap	Al complex soap
Ca soap (water free)		+	+	-	+	+	-
Ca complex soap	+		+	-	+	+	-
Li soap	+	+		-	+	+	-
Na soap	-	-	-		+	+	-
Gels	+	+	+	+		+	-
Ba complex soap	+	+	+	+	+		+
Al complex soap	-	-	-	-	-	+	

+ = miscible - = not miscible

5) Definition NSF H1/H2 - Foodstuff-greases/oils

H1 = Incidental contact with foodstuff is possible. In this case the requirements of § 5 of the German food act (LMBG) and the FDA 21 CFR 178.3570 of NSF H1 registration have to be fulfilled.

H2 = Direct contact with foodstuff is excluded, as e. g. in closed gears, chains or underfloor conveyor systems. In case e. g. of fracture of machine elements, the complete batch of the foodstuff has to be destroyed.