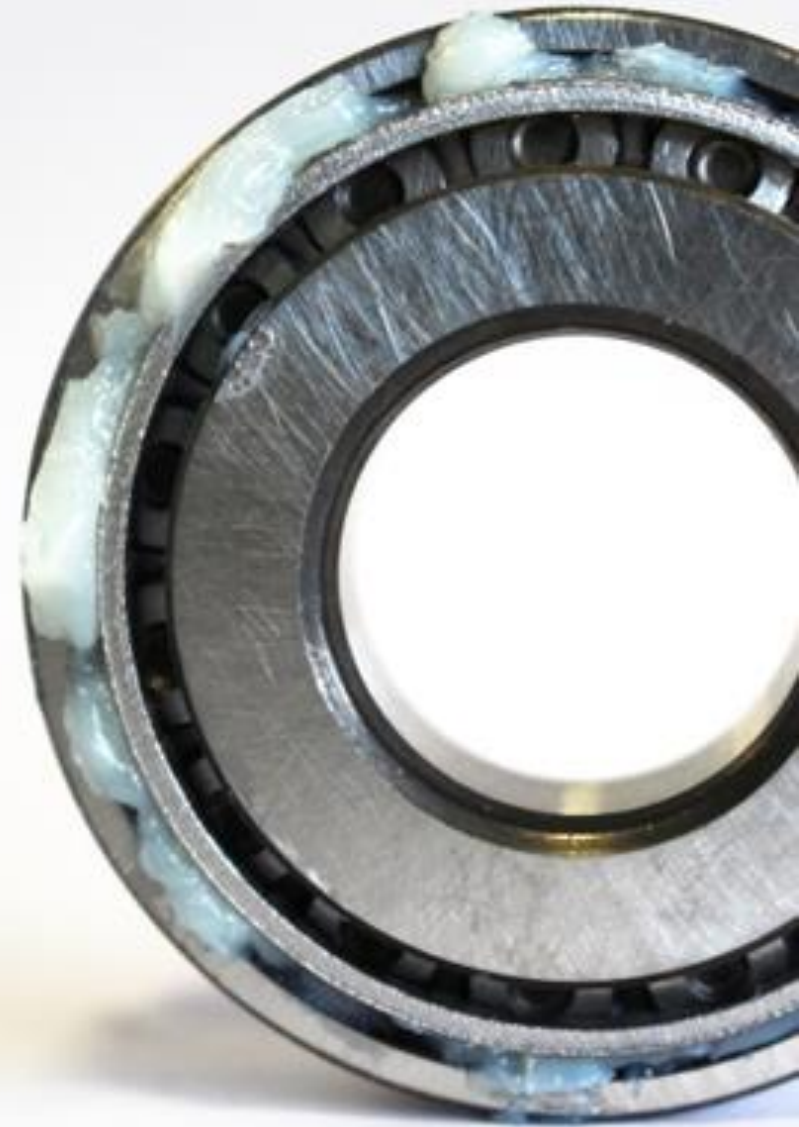


TUNAP Industry

High performance greases for reliable operation of bearings

TUNAP

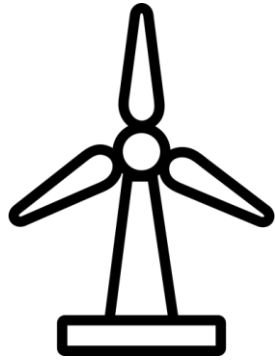


Bearing Protection against Damages

Introduction



Damage prevention of bearings worldwide



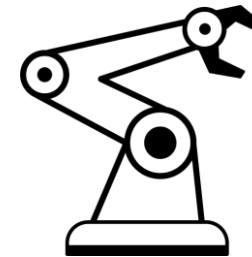
Wind power, e.g.

- Pitch bearings
- Main bearings
- Planetary bearings



Automotive, e.g.

- Belt Tensioners
- Electric drives
- Transportation



Industry, e.g.

- Liner, Pulp & Paper
- Rail, Aerospace, Transport & Machinery

Damages can be prevented by lubricants

Typical damage of wear



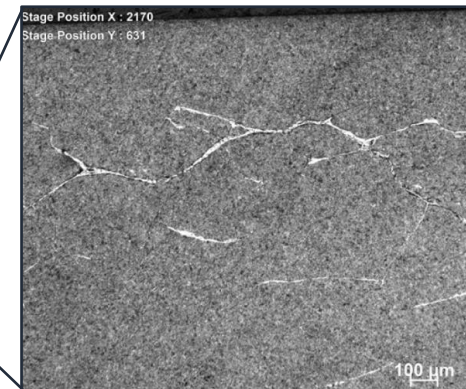
Typical damage of corrosion



White Etching Cracks

Cracks within the microstructure of bearing steel while they are decorated by white etching areas on the steel surface.

BEARINGS ARE COMPLETELY DAMAGED



Source: 2018 www.evolution.skf.com, „White Etching Cracks“ – Eine Folge, keine Ursache von Wälzagerschäden



Further Requirements to Lubricants

Introduction

- Good temperature stability for a wide service temperature
- High oxidation stability enables long term lubrication
- Good flow behavior at low temperatures for reliable operation
- Building up carrying lubricant films for proper lubrication
- Reduce friction in the friction contact for lower energy losses
- Building up protecting reaction layers on surfaces for reliable protection
- ...



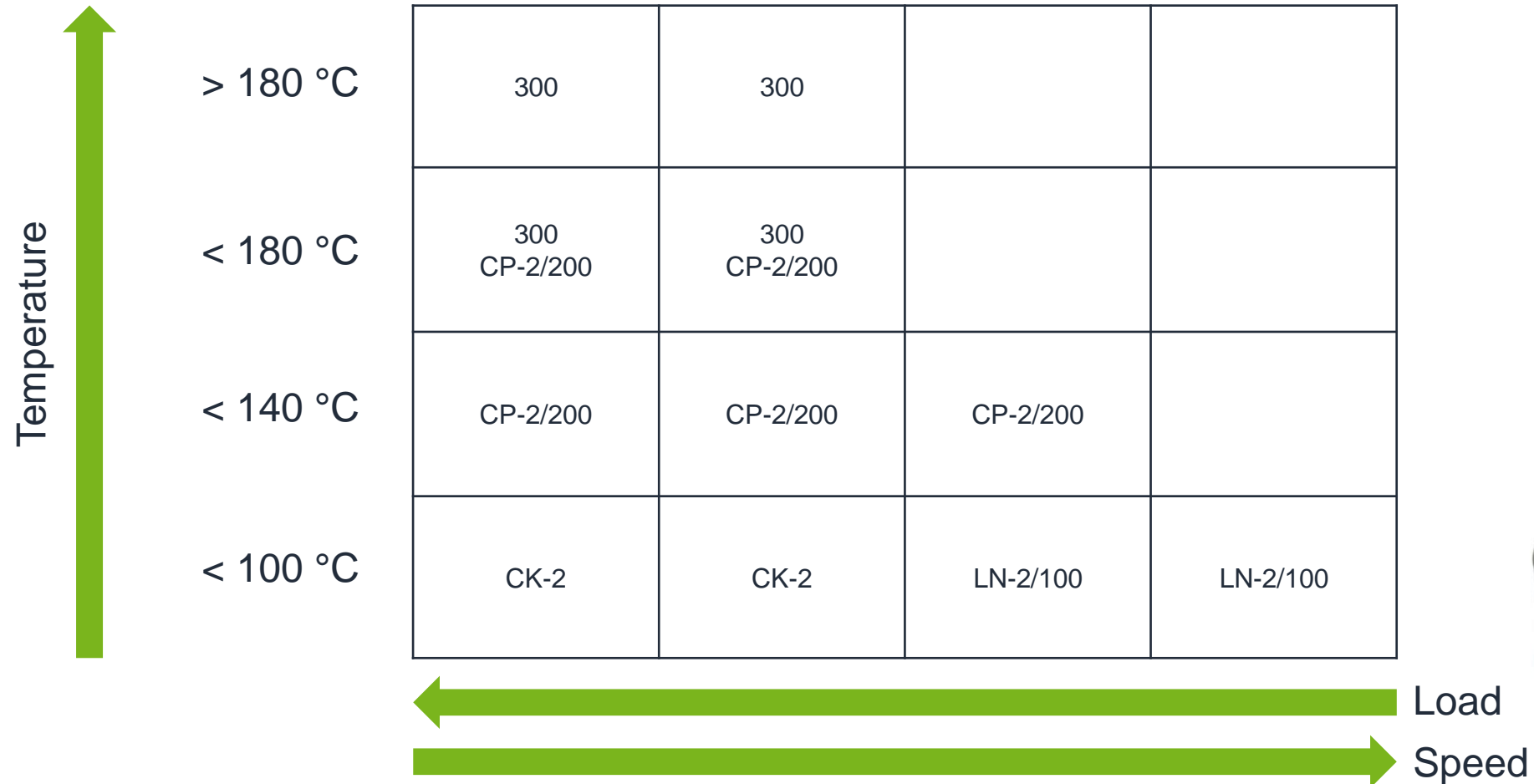
Selection of Special Bearing Greases

Overview

	TUNGREASE LN-2/100	TUNGREASE CK-2	TUNGREASE CP-2/200	TUNGREASE 300
Base Oil	Synthetic	Mineral Oil	PAO	PFPE
Thickener	Special Lithium Soap	Ca-Su-X	Ca-Su-X	PTFE
Base Oil Viscosity, 40 °C	100 cSt	180 cSt	220 cSt	500 cSt
Low Temperature Limit	-40 °C	-20 °C	-50 °C	-40 °C
High Temperature Limit	160 °C	130 °C	140 °C	250 °C

Field of application

Overview





TUNGREASE LN-2/100

Technical Data

Base Oil	Synthetic Oil
Thickener	Special Lithium Soap
Color	Beige
NLGI	2
Flow pressure (DIN 51805)	< 1400 mbar at -40 °C
FE9 (DIN 51821)	B/1500/6000-160, F ₅₀ > 100h
EMCOR dist. (DIN 51802)	0/0

Application Example

- Belt tensioner bearing for long term lubrication
- High speed bearings with wide temperature range

Advantages and Benefits

- Protection against WEC
- Increased operation reliability
- Excellent low temperature behavior
- Excellent high temperature behavior

Main benefit is increased reliability for increased life time requirements!

TUNGREASE LN-2/100

Example of Application – Belt Tensioner Bearings

Type of bearings	Ball and cylinder bearings, typical ball bearing 6203
Size of bearings	Medium diameter from 17 to 49 mm
Speed of bearings	Speed factor from 24000 to 550000 min ⁻¹ x mm

- ✓ Excellent prevention of **WEC** (White Etching Cracks)
- ✓ Excellent hoot noise behavior
- ✓ Wide Temperature range from -40 to 160 °C





TUNGREASE CK-2

Technical Data

Base Oil	Mineral Oil
Thickener	Ca-Su-X
Color	Beige
NLGI	2
Flow pressure (DIN 51805)	< 1400 mbar at -20 °C
FE9 (DIN 51821)	B/1500/6000-120, F ₅₀ > 100h
EMCOR dist. (DIN 51802)	0/0

Applications Example

- All-round grease for increased requirements such as for wheel bearings

Advantages and Benefits

- High wear protection performance
- Excellent lubrication properties
- Excellent water resistance and corrosion protection

Main benefit is increased reliability for increased life time requirements!



TUNGREASE CP-2/200

Technical Data

Base Oil	PAO
Thickener	Ca-Su-X
Color	Beige
NLGI	2
Flow pressure (DIN 51805)	< 1400 mbar bei -40 °C
FE9 (DIN 51821)	B/1500/6000-140, F ₅₀ > 100 h
EMCOR dist. (DIN 51802)	0/0

Applications Example

- Highly loaded (e.g. vibration) bearings also with vertical orientation
- Food and Pharma applications which require NSF H1

Advantages and Benefits

- High wear protection performance
- Excellent water resistance and corrosion protection

Main benefit is increased reliability for increased life time requirements!



TUNGREASE 300

Technical Data

Base Oil	PFPE
Thickener	PTFE
Color	white
NLGI	2
Flow pressure (DIN 51805)	< 1400 mbar at -40 °C
FE9 (DIN 51821)	-
EMCOR dist. (DIN 51802)	<= 3/3

Application examples

- Bearing lubrication of extractors and rotary transmissions
- Heated rollers in the foil, paper and corrugated production

Advantages and Benefits

- Excellent temperature resistance
- Excellent wear protection
- Excellent media resistance

Main benefit is increased reliability for increased life time requirements!



Summary

High performance bearing greases

- **TUNAP develops high quality special greases for the bearing industry**
- **TUNAP produces high quality special greases in Germany**
- **TUNAP greases enable prolonged bearing life times as well as increased reliability of operating machines**
- **TUNAP contribute to your competitive advantages**

