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# TUNAP INDUSTRY



# HIGH PERFORMANCE GREASES

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# AGENDA

**General requirements**

**Lubricant portfolio**

**Applications in detail**

Door lock components

Tailgate lifter

Seat components

**Summary**



# GENERAL REQUIREMENTS

## Functional requirements for automotive lubricants

- Wide temperature range from -40 °C to 160°C
- Compatibility with plastics
- Resistant to water, dust or other environmental influences
- Wear protection of the contact surfaces
- Corrosion protection of different metals
- Damping effect and noise reduction properties
- Often silicone free products required

# TUNAP PORTFOLIO

## GREASES



Product	Base oil	Thickener	Solids	Base oil viscosity, 40 °C [mm <sup>2</sup> /s]	NLGI	Appearance
TUNGREASE LP-1 LT	PAO	Lithium soap	-	30	1	light beige
TUNGREASE LP-1	PAO	Lithium soap	-	30	1	light beige
TUNGREASE LPT-2	PAO	Lithium soap	organic	30	2	light beige
TUNGREASE CP-2/50	PAO	Ca-Su-X soap	-	50	2	beige
TUNGREASE H1/EP-2	PAO	Al-X soap	-	320	2	white
TUNGREASE CP-2/200	PAO	Ca-Su-X soap	-	220	2	beige
TUNGREASE CSH-2/400	PAO	Ca-Su-X soap	-	400	2	beige

# TUNAP PORTFOLIO

## GREASES



Product	Product description	Application examples
TUNGREASE LP-1 LT	Excellent low temperature properties in regards to haptic feeling and shear resistance	Haptic elements, electrical components, small gears, linear guides, joints, plain bearings
TUNGREASE LP-1	Very good low temperature behavior, low oil separation also at elevated temperatures	Haptic elements, electrical components, small gears, linear guides, joints, plain bearings
TUNGREASE LPT-2	Excellent low temperature properties, reduced friction resistances at mixed friction	Haptic elements, electrical components, small gears, linear guides, joints, plain bearings
TUNGREASE CP-2/50	Balanced temperature behavior, excellent wear protection performance	Small gears, linear guides, joints, plain bearings, electrical components
TUNGREASE H1/EP-2	Broad temperature range, very good noise dampening and adhesion properties	Small gears, linear guides, joints, plain bearings
TUNGREASE CP-2/200	Good noise dampening properties, excellent wear protection performance	Small gears, linear guides, joints, plain bearings
TUNGREASE CSH-2/400	Excellent noise dampening properties, excellent wear protection performance	Small gears, linear guides, joints, plain bearings

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# TUNAP PORTFOLIO

## BONDED COATINGS



Product	Matrix	Solids	Drying time, 20 °C [min]	Appearance
TUNCOAT SBM	organic	Molybdenum disulfide	10	deep grey
TUNSOLID TE 812	organic	Polytetrafluorethylene	10	white

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# TUNAP PORTFOLIO

## BONDED COATINGS



Product	Product description	Application examples
TUNCOAT SBM	Dry lubrication with constant and very good friction behavior over whole temperature range	Life time lubrication of primarily metal/metal contacts, also for running in lubrication
TUNSOLID TE 812	Dry lubrication with constant and excellent friction behavior over whole temperature range	Life time lubrication of primarily metal/plastic contacts, also for running in lubrication

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# TUNAP PORTFOLIO

<b>Resistance of shearing Grade of loading</b>	<b>Dynamically light grease</b>	<b>Dynamically medium grease</b>	<b>Dynamically heavy grease</b>
<b>Low loaded</b>	TUNGREASE LP-1 LT TUNGREASE LPT-2	TUNGREASE LP-1	TUNGREASE H1/EP-2
<b>High loaded and/or shock loaded</b>	TUNGREASE LPT-2	TUNGREASE CP-2/50	TUNGREASE CP-2/200 TUNGREASE CSH-2/400

# APPLICATION IN DETAIL

## DOOR LOCK SYSTEMS



### Technical components

- Locking unit
- Outside handle with lock cylinder
- Inside handle

### Used material

- Metals, e.g. galvanized steel, aluminum
- Surface coatings, e.g. PTFE
- Plastics, e.g. POM, PA

### TUNGREASE LPT-2

- ✓ easy operating also at low temperatures

### TUNGREASE CP-2/50

- ✓ optimized wear protection and life time



# APPLICATION IN DETAIL

## TAILGATE LIFTER



### Technical components

- Gear drive
- Spindle drive
- Spring mechanism

### Used material

- Metals, e.g. steel, aluminum
- Surface coatings, e.g. flockings, PTFE
- Plastics, e.g. POM, PA, EPDM

### TUNGREASE CP-2/50

- ✔ low torques and very good wear protection

### TUNGREASE CP-2/200

- ✔ very good noise dampening and water resistance



# APPLICATION IN DETAIL

## SEAT COMPONENTS



### Technical components

- Joints and Hinges
- Seat rails and linear guides
- Toothed segments
- Worm, spur, and planetary gears

### Used material

- Metals, e.g. steel, brass, aluminum
- Plastics, e.g. POM, PA, PMMA

### TUNGREASE LP-1

- ✓ low operating forces over a broad temperature range

### TUNGREASE H1/EP-2

- ✓ very good noise dampening and adhesion properties



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# APPLICATION IN DETAIL

## SEAT COMPONENTS



Application	Product suggestion	Advantages
Seat rails and linear guides	TUNGREASE CSH-2/400	Excellent wear protection performance and very good dampening properties
Worm, spur, and planetary gears	TUNGREASE LPT-2	Efficient power transfer due to excellent friction behavior low torques also at low temperatures
	TUNGREASE H1/EP-2	Excellent lubrication performance due improved lubricant availability especially for plastics
Toothed segments	TUNGREASE CSH-2/400	Excellent wear protection performance and very good dampening properties
Joints and hinges	TUNGREASE CSH-2/400	Excellent wear protection performance and very good dampening properties



# SUMMARY

**TUNAP offers ...**

- ✓ **high product quality in regards to raw materials and production.**
- ✓ **specific formulations to meet the right requirements.**
- ✓ **strong service and development capabilities.**
- ✓ **optimized supply chain for the best availability.**

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