

FUCHS Industrial Lubricants

For extra process reliability



**Lubricant concepts
for hydroforming**



FUCHS EUROPE SCHMIERSTOFFE GMBH

YOUR STRONG GLOBAL PARTNER



HOW WE EXCEL

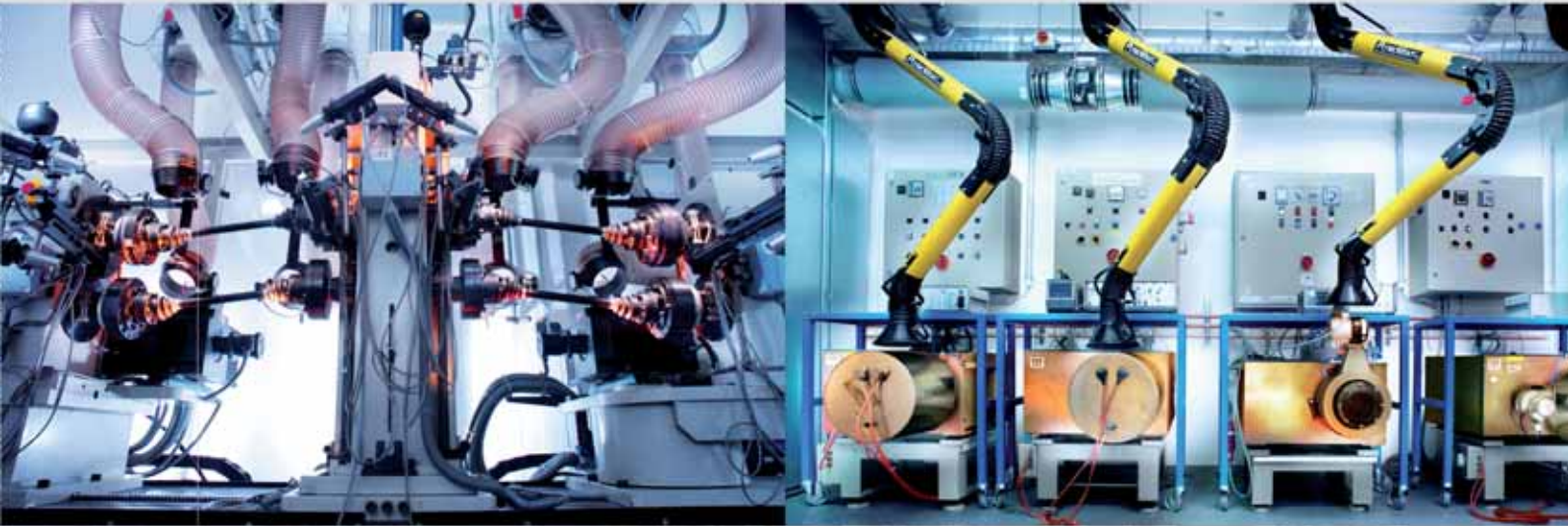
We are a German company whose almost 600 employees manufacture and market a wide range of lubricants and derived specialties. The company, which was founded in 1931 as RUDOLF FUCHS, is located in Mannheim and is a 100 % subsidiary of FUCHS PETROLUB AG, which is the largest independent lubricants manufacturer worldwide.

Our company's degree of specialisation and innovation is way above the industrial average in this field. The full product line includes almost 2,000 lubricants and derived specialties for all walks of life, industrial processes and applications. Our customer's success is also our success. Because partnership to us means passing-on benefits.

The advantage of a strong market presence: FUCHS is the largest independent manufacturer of lubricants in the world. The benefit of premium, innovative products from a full-line manufacturer: With a complete product line as well as tailor-made special solutions, FUCHS has a product for every application. The benefits of reliability: Certified according to DIN EN ISO 9001:2000 and ISO/TS 16949:2002, FUCHS has been continuously upgrading its highly specialised lubricants for decades.

And naturally, partnership for us also means providing our customers with competent support. With comprehensive marketing. With high-performance logistics. With the development of successful service concepts. And qualified consulting. Because together, we can achieve more.

FOR INDUSTRIAL LUBRICANTS



WHAT INCREASES THE VALUE OF OUR PRODUCTS

We develop lubricants: application-specific and tailor-made for our customer's processes. Together we look for the best lubricants for our customers. This cooperation is unique in terms of its form, scope and intensity. We call it **development partnership**. The success of our development partnerships is based on an important fact: FUCHS is not one of the oil-giants.

FUCHS is a multinational, independent lubricant manufacturer. Our independence is the difference. We are open to new solutions, open for visions – the prerequisites for innovations. And innovation is the defining characteristic of FUCHS. 70 % of our products are less than five years old and the great majority of our products are individual solutions. Challenge us and see!



DIN EN ISO 9001:2000
ISO/TS 16949:2002
DIN EN ISO 14001:2004
REG.NR. 2476



Lubricant concepts for hydroforming.

Bending



Forming



Achieving the optimum wall-thickness, bend radiuses and folding characteristics pose problems for many users. The solution: Special bending media.

Cold welding and premature tool wear can be avoided by the use of high-additive, external lubricants.

Solvent-based	
RENOFORM UBO SERIES	Annealing residue-free bending oils. Volatile at room temperature. Contain VOC*.
RENOFORM LVO SERIES	Annealing residue-free bending oils. Volatile at room temperature. VOC*-free.
Water-miscible	
RENOFORM MBW 2755	Mineral oil-based bending oil.
RENOFORM MBO 2755 SD	Synthetic forming lubricant. For use as a concentrate for bending operations.
Non water-miscible	
PLANTOFORM MBO 2907	Ester-based forming lubricant. Demulsifying. Medium-viscosity.
RENOFORM MBO 2907 SERIES	Ester-based forming lubricants. Demulsifying. High-viscosity.

Water-miscible	
RENOFORM MBO 2755 SD	Water-miscible lubricant. Synthetic. For use as a concentrate for forming operations.
Non water-miscible	
PLANTOFORM MBO 2907	Ester-based forming lubricant. Demulsifying. Medium-viscosity.
RENOFORM MBO 2907 SERIES	Ester-based forming lubricants. Demulsifying. High-viscosity.
Dry films	
RENOFORM HFL SERIES	Suspension of white, solid lubricants (water-based concentrate, air-drying).

*VOC = Volatile Organic Compounds.



Hydroforming



The selection of the best lubrication concept must consider all stages in the manufacturing process as well as the cross-compatibility of all the lubricants used.

Primary hydraulics

RENOLIN
ZAF 46 B

Demulsifying, zinc- and ash-free hydraulic oil, Type HLP 46, fulfils the minimum requirements of HLP hydraulic oils according to DIN 51 524-2 as well as CLP lubricating oils according to DIN 51 517-3.

Secondary hydraulics

RENOFORM
MBO 2755 SO

Demulsifying hydraulic medium, water-miscible and synthetic.

External lubrication: water-miscible

RENOFORM
MBO 2755 SD

Synthetic external lubricant. For use as a concentrate.

External lubrication: non water-miscible

PLANTOFORM
MBO 2907

Ester-based forming lubricant. Demulsifying. Medium-viscosity.

RENOFORM
MBO 2907 SERIES

Ester-based forming lubricants. Demulsifying. High-viscosity.

External lubrication: dry films

RENOFORM
HFL SERIES

Suspension of white, solid lubricants (water-based concentrate, air-drying).

The optimum lubricant for every stage in the process.

Cleaning



Surfaces for subsequent manufacturing processes may have to be oil-free and clean. There are a number of different types of cleaners.

Water-rinsable cleaners

RENOCLEAN UWF	Water-rinsable cleaner. Free of aromatics. Contains VOC*.
RENOCLEAN KU	Odor-optimized, water-rinsable cleaner. Free of aromatics. Contains VOC*.
RENOCLEAN KLV	VOC*-free, universal solvent-based cleaner. Perfect for industrial, workshop and domestic applications.

Water-based alkaline (sprayable cleaners)

RENOCLEAN VR 1021 SERIES	Medium-alkalinity. For use at temperatures between +35 °C and +60 °C.
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Water-based alkaline (submersion cleaners)

RENOCLEAN SPEZIAL 2000	Medium-alkalinity. Universal application such as components, floors, etc.
RENOCLEAN VR 1798/2	Medium-alkalinity. Universally suitable for steel and aluminium. Also for ultrasonic cleaners.

*VOC = Volatile Organic Compounds.

Corrosion protection



Corrosion protection products must be fully compatible with previously-applied lubricants. We recommend: ANTICORIT corrosion preventives.

Dewatering fluids

ANTICORIT DF SERIES	High-speed dewatering fluids. Form thin, highly-effective, oily-, waxy- or lacquer-like corrosion protection films. Also available in versions without film-forming agents for pure, stainless drying.
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Corrosion protection

ANTICORIT OHK SERIES	Corrosion protection concentrates and ready-to-use versions with white spirit, isoparaffins and oils to protect all metals. Outstanding fingerprint-remover properties.
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Water-based

ANTICORIT MKR SERIES	Water-miscible corrosion preventives for the cleaning and interim protection of semi-finished components, phosphated parts and components used in the potable water sector. Also a hydraulic water and coolant additive.
ANTICORIT SKR SERIES	Water-miscible, mineral oil-free and low-foaming additives for cooling and hydraulic water.

Vapour phase inhibitors

ANTICORIT VCI SERIES	Advanced VCI technology for the protection of all metals. Available as VCI paper, film, powder, tablets or oils. Tailor-made solutions for corrosion protection and packaging.
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A wide range of films are available ranging from oily to vaseline-like and wax-like. If a film is not required, we can solve your corrosion protection problems with our comprehensive VCI line of products. This includes paper, films, tablets, sponges and many other special solutions.

The complete lubricants program from the specialists.

All from one supplier

Hydroforming enables sophisticated components with complex geometries to be manufactured. The hydroforming manufacturing process utilizes a range of lubricant systems with different functions which have to be fully compatible with each other. This leaflet provides an overview of the full line of products offered FUCHS.

Cross-compatibility is constantly monitored in our own, state-of-the-art research facilities and laboratories. This guarantees a reliable process chain starting with cleaning, to metalworking, through to corrosion protection.

As well as constant monitoring, we regularly add new products to our program.

Apart from conventional products and solutions, we also offer products which conform to national environmental legislation and/or VOC regulations.

Decades of experience, far-reaching know-how, global approvals from leading manufacturers and our local experts make our product program unique.

The benefits of FUCHS system products:

- Intensive consultation, optimum service – worldwide
- Full range of products – all from one supplier
- Fully compatible products
- No process failures caused by product incompatibility
- Thorough testing in in-house facilities
- Close cooperation in obtaining approvals

For optimum process reliability.



Ask the specialists:

The FUCHS check list for a product recommendation.

Based on this questionnaire, we can tell you which is the best lubricant for your particular needs.

Your address

Company/customer: _____

Phone: _____

Street: _____

Fax: _____

City: _____

E-mail: _____

Contact/function/dept.: _____

Which product do you currently use?

Primary hydraulic: _____

Secondary hydraulic (concentrate of functional fluid): _____

External lubrication: _____

Cleaner: _____

Corrosion protection: _____

Forming

Material (blank): Steel Stainless steel Aluminium Nonferrous metal

Other: _____

Kind of tube: _____ Tube length: _____ mm

Wall-thickness of the tube: _____ mm Outer-diameter of the tube: _____ mm

Tool: Material: _____ Coating: _____

Machine: Manufacturer: _____ Type: _____

Specification of the desired forming lubricant:

Primary hydraulic:

Kin. viscosity at +40 °C: _____ mm²/s

Density at +15 °C: _____ kg/m³

Flashpoint: _____ °C

Acid value: _____ mgKOH/g

Secondary hydraulic (concentrate of functional fluid):

Kin. viscosity at +40 °C: _____ mm²/s

Density at +15 °C: _____ kg/m³

Application concentration: _____ %

External lubrication:

Kin. viscosity at +40 °C: _____ mm²/s

Density at +15 °C: _____ kg/m³

Water-miscible Not water-miscible Mineral oil-based Synthetic

Application:

Spraying on the material Run-off Spraying the tool Flooding

Other: _____

**Simply copy, complete – as far as possible –
and fax back to +49 621 3701-414.**

Cleaning

Process: Dipping Spraying Flooding Other: _____

Type: Water-based Acidic Alkaline Neutral Other: _____

Washing: Wash temperature: _____ °C pH-value: _____ Duration: _____ s, min, hr

Storage: Type of storage: _____ Duration: _____ Days, Weeks

Subsequent processes: _____

Corrosion protection

Packing: None In µm PE film Individual packaging Closed packaging
 In greaseproof paper In µm VCI film In racks Open packaging
 With VCI On greaseproof paper Other: _____

Transport: No transport National Sea freight on deck Sea freight below deck
 Regional Within Europe

Storage condition: Warehouse Tropical climate Cold climate Temperature: _____ °C
 Shed Subtropical climate Monsoon conditions Humidity: _____ %
 Outdoors Temperate climate Coastal region Other: _____

Required corrosion protection duration: Up to 1 week Up to 3 month Up to 1 year Up to 3 year
 Up to 1 month Up to 6 month Up to 1 1/2 year Over 5 year

Film type: No film Waxy < 2 µm > 5 µm
 Oily Vaseline-like 2 – 5 µm _____

Characteristics of the corrosion preventive: Non-thixotropic With VCI inhibitors Solvent FP < +61 °C Water-based
 Thixotropic VOC-free solvent Solvent FP > +61 °C Barium-free

Application: Dipping Hot application Temperature: _____ °C
 Spraying Drying possible Other: _____

Supplementary comments:

Signature: _____

Date: _____

FUCHS Industrial Lubricants

Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then can the best lubricant system be selected. Experienced FUCHS engineers will be glad to advise on products for the application in question and also on our full range of lubricants.



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