

**PANOLIN<sup>®</sup>+**  
*Swiss Oil Technology*

PANOLIN ORCON<sup>®</sup> –  
Safety First!



**Live safer.<sup>™</sup>**

Lubricants for the food industry

**PANOLIN<sup>®</sup>+**  
*Swiss Oil Technology*

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## Trust is good, but certainty is better

To complement the industrial lubricants offering, PANOLIN has developed a range of high-performance H1 lubricants. All these products are NSF controlled and registered. NSF registration of H1 lubricants guarantees users absolute conformity with hygiene and health requirements for the food industry.



PANOLIN food-grade lubricants for the food, beverage and animal feed industries ...



... as well as the pharmaceutical, cosmetics and packaging industries

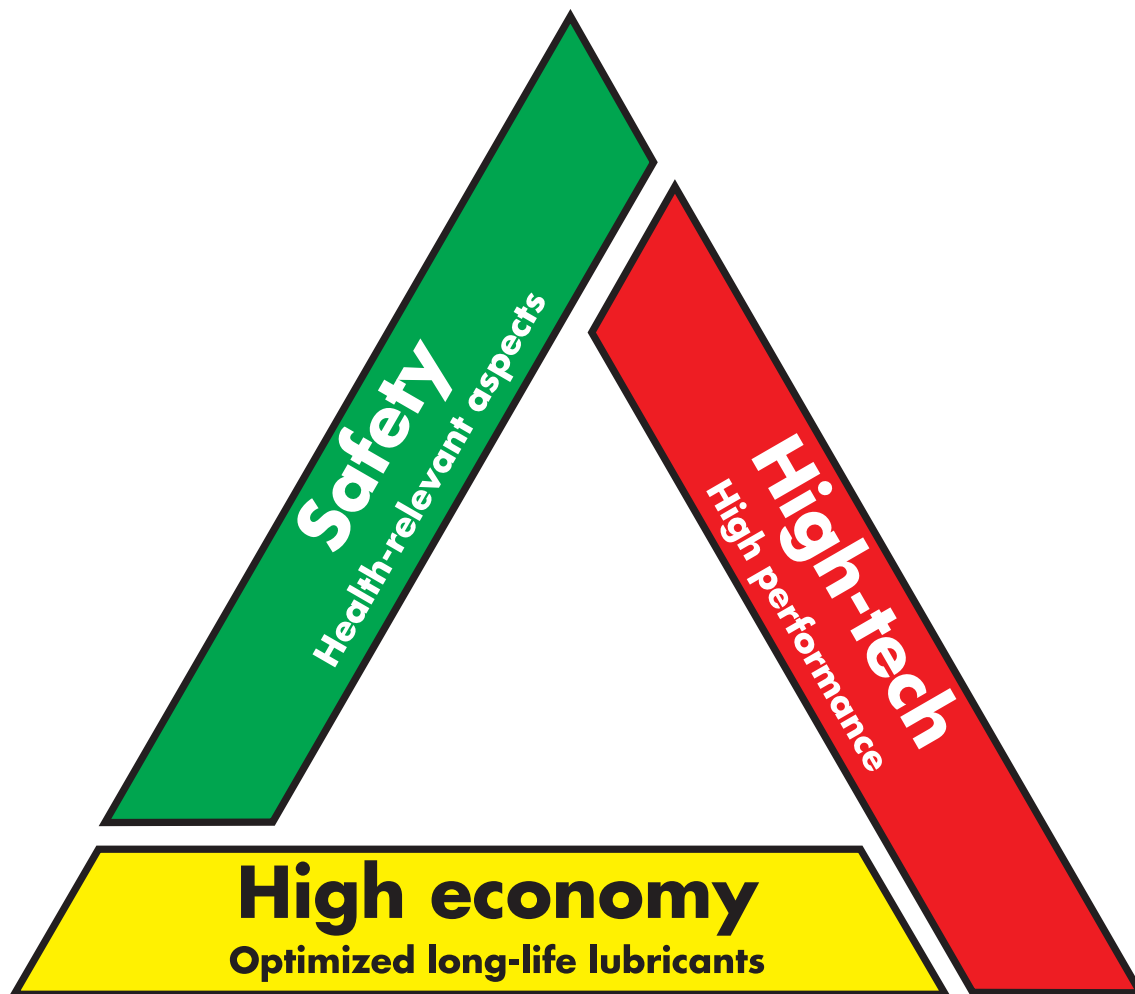
**Note:** H1 lubricants have nothing to do with «salad oils». They are special industrial lubricants for the food industry and similar applications.

### H1 production

Like all PANOLIN products, our food-grade lubricants are manufactured with the greatest care and precision. The H1 production line guarantees absolute freedom from mineral oil.



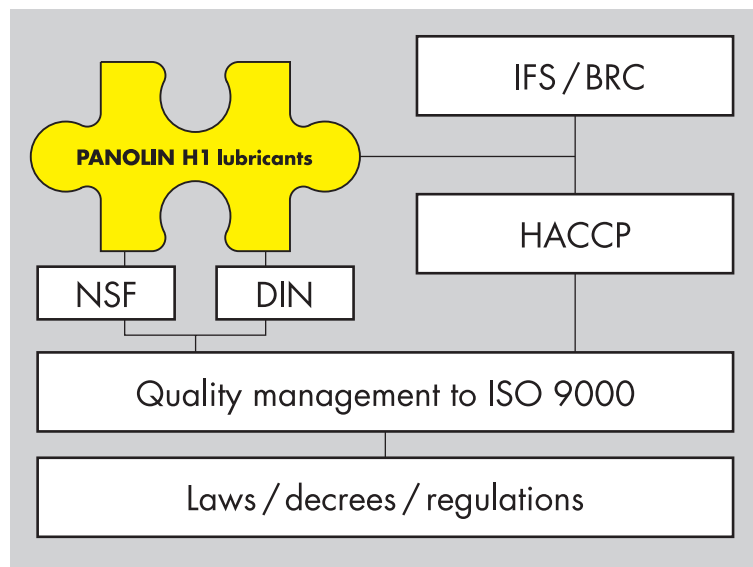
## **Safety, high-tech and economy – the foundations of our H1 lubricants**



### **Solid value – our contribution to your success**

- 1.** All health-relevant aspects, hygiene requirements and food regulations, and the correct use of all ingredients, are complied with H1 product registration to NSF. This gives you the assurance of using an absolutely food-compatible lubricant.
- 2.** Fully synthetic PANOLIN high-tech lubricants exceed all modern machinery requirements by far. This way, we guarantee your readiness to meet tougher demands in future.
- 3.** Perfectly optimized for a wide variety of applications, PANOLIN H1 lubricants enhance production efficiency. Their long service life and high purity also pay off with far less shutdown time.

## **PANOLIN ORCON® – part of the overall HACCP concept**



If your production facility already complies with the strict IFS or BRC regulations or soon will do, you must take the HACCP concept seriously.

One hazard you might face is product contamination by lubricants, defined as «incidental contact», i.e. unintentional and technically unavoidable minimal contamination.

If you use PANOLIN ORCON® in your production facility, the FDA/USDA regulations allow higher contamination limits than with conventional lubricants (see inset on page 5 – maximum FDA/USDA limits). The law and regulations are thus complied with.

## Possible contamination hazards arising in production processes

Direct contact with lubricants

- Leakage from machinery
- Infiltration via air intake (compressed air, vacuum, evaporation of lubricants)
- Contamination during the cleaning of machinery



## Maximum admissible FDA/USDA limits

admissible in foodstuffs, pharmaceuticals, etc.

Mineral oil	0 ppm
Silicon oil	1 ppm
White oil, vaseline	10 ppm
Synthetic oils (e.g. PANOLIN ORCON®)	10 ppm

## Glossary

<b>BRC</b>	<b>B</b> ritish <b>R</b> etail <b>C</b> onsortium British retail audit system, very widespread internationally
<b>DIN</b>	<b>D</b> eutsche <b>I</b> ndustrie <b>N</b> orm German Industry Standards
<b>FDA</b>	<b>F</b> ood and <b>D</b> rug <b>A</b> dministration
<b>HACCP</b>	<b>H</b> azard <b>A</b> nalysis <b>C</b> ritical <b>C</b> ontrol <b>P</b> oint
<b>IFS</b>	<b>I</b> nternational <b>F</b> ood <b>S</b> tandard German retail audit system, very widespread internationally
<b>ISO</b>	<b>I</b> nternational <b>O</b> rganization for <b>S</b> tandardization
<b>NSF</b>	<b>N</b> ational <b>S</b> anitation <b>F</b> oundation
<b>USDA</b>	<b>U</b> nited <b>S</b> tates <b>D</b> epartement of <b>A</b> griculture

## Registered safety

### Advantages of H1 lubricants:

- tasteless and odourless
- food-compatible
- All raw materials approved by leading authorities



**Live safer.™**

## NSF (National Sanitation Foundation)

Various national and private institutions inspect lubricants for food-grade and pharmaceuticals compliance.

The NSF in the USA is the leading international certification organization for food-grade lubricant ingredients, and the only one recognized worldwide.

**H1** All PANOLIN food-grade lubricants are NSF-registered to the most stringent category – H1.

**H2** This category applies to lubricants not in direct contact with food, with far less stringent requirements than category H1. H2 lubricants must not contain any substances classified as undesirable by the FDA.

## More performance per drum

To ensure optimal performance of plant and machinery, H1 lubricants have to meet a lot of demands. Apart from classical needs such as reducing friction and wear, PANOLIN H1 high-performance high-tech lubricants do a lot more.

**High resistance to oxidation**

**Negligible sludge deposits**

**Stable viscosity**

**Multipurpose**

**Fully synthetic base oils**

for longer oil change intervals

for a clean oil system, filter and tank

practically eliminates thickening and shear losses

for easier storekeeping and less risk of error

with important advantages over mineral oils



## Cincinnati Milacron ASTM D 2070

The Cincinnati Milacron ASTM D 2070 test loads the oil for 168 hours at 135 °C.

This is the standard ageing test for lubricants.

## We start where the others stop!

For PANOLIN ORCON® HYD we set the yardstick **six times higher!**

Instead of 168 hours, this oil was loaded for 1008 hours to prove the advantages of PANOLIN ORCON® HYD.

Special attention was paid to:

- TAN variation (Total Acid Number)
- viscosity variation
- sludge formation

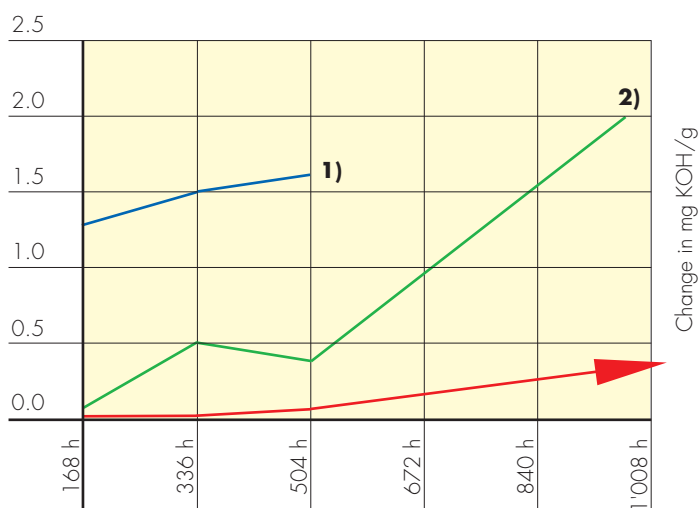


## PANOLIN ORCON®: comparative data

### TAN (Total Acid Number)

PANOLIN ORCON® HYD showed negligible TAN variation.

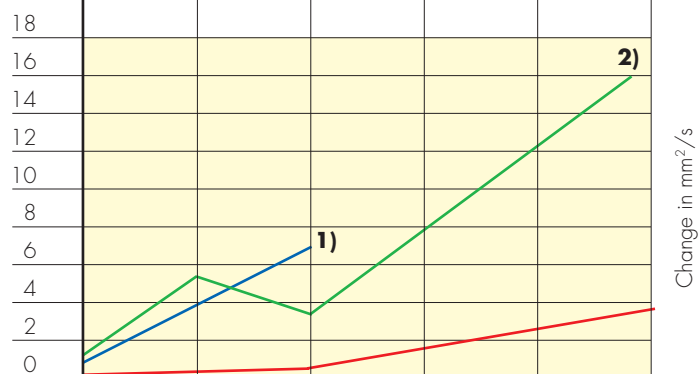
Thanks to extremely high oxidation resistance, its service life is much longer than normal.



### Viscosity variation

Excessive viscosity changes can cause malfunctioning, loss of performance and poor filtering.

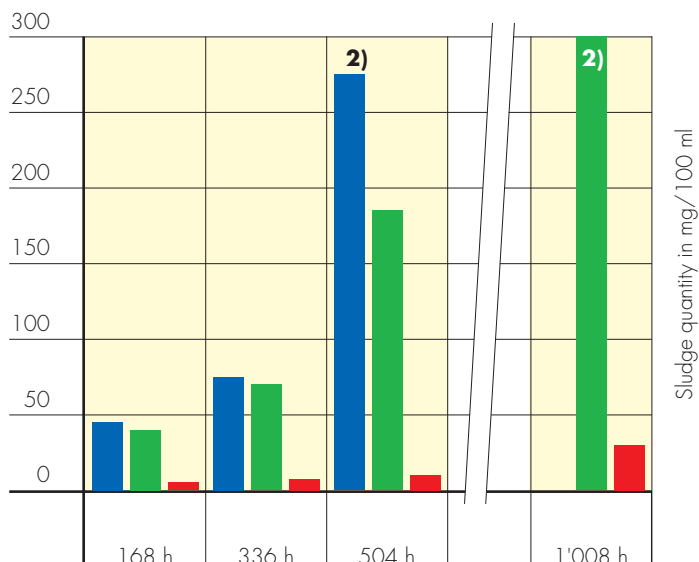
PANOLIN ORCON® HYD viscosity remained stable even after 1008 hours, thus eliminating any such risks.



### Sludge formation

Lubricant ageing products are bad for machinery. They can cause expensive breakdowns and loss of production.

PANOLIN ORCON® HYD forms hardly any sludge, thus keeping hydraulic systems in optimal condition.



1) Test aborted due to excessive sludge formation

2) Test aborted, limit reached

● Conventional HLP hydraulic oil

● White oil with additives

● PANOLIN ORCON® HYD

## Hazardous ageing products

Deposits prevent optimal lubrication.

Ageing residues can cause filter blockage, hindering oil circulation as well as cooling.

### Residues in emptied glass

(after 504 hours)

#### Left:

Ageing deposits stick to the glass – and remain in the hydraulic system.

#### Right:

No visible deposits



### Filter paper

#### Left:

Particles filtered out  
These deposits require intensive filtering. They can cause filter blockage which may lead to hydraulic system damage.

#### Right:

No visible deposits



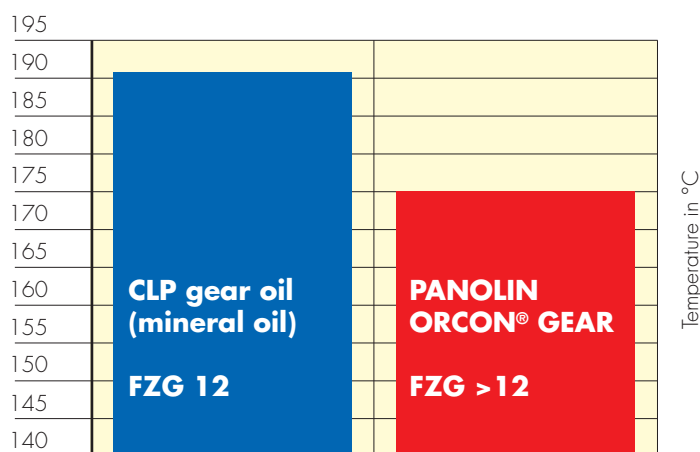
## PANOLIN ORCON® GEAR

### Gear drive test FZG A/16.6/140

PANOLIN ORCON® GEAR reduces friction, thus minimizing thermal loading. This protects gear drive components and the lubricant as well.

### General rule:

A temperature rise of 10 °C doubles the ageing rate.

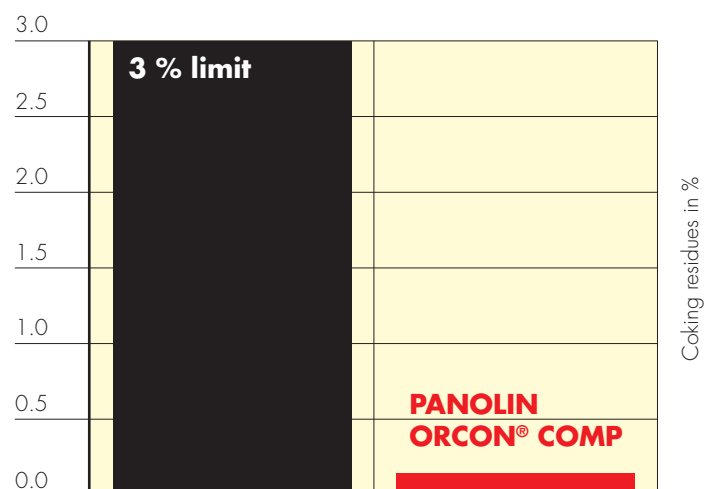


## PANOLIN ORCON® COMP

### Coking residues

DIN 51'506 VDL/Test DIN 51'352 Part 2 sets a 3 % coking limit for compressor oils

PANOLIN ORCON® COMP coking residues are far less!



## PANOLIN H1 oils

For optimal technical benefit and cost-effectiveness, be sure to use the right H1 lubricant!

### PANOLIN H1 lubricants are:

- NSF H1 registered
- Halal certified and Kosher certified
- synthetic, fully synthetic
- long lasting (extended oil-change intervals)

#### Gear oil

**PANOLIN ORCON® GEAR**

ISO: 150, 220, 320, 460, 680



- low evaporation losses, and minimal friction
- minimal ageing, negligible sludging
- for all industrial gear drives

#### Hydraulic oil

**PANOLIN ORCON® HYD**

ISO: 15, 22, 32, 46, 68, 100, 150








- low evaporation losses
- minimal ageing, negligible sludging
- for all hydraulic systems and heat transfer applications

**PANOLIN ORCON® HYD SGM** ISO: 46, 68


- excellent ageing stability even under heavy load
- suitable for all types of hydraulic system
- particularly for injection moulding machines

**PANOLIN ORCON® SYNTH E** ISO: 46


- Biodegradability acc. to OECD 301 B: > 60 %
- excellent thermal stability significantly extends oil change intervals
- suitable both for stationary and mobile hydraulic systems requiring NSF H1 class biodegradable fluids

Compressor oil	PANOLIN ORCON® COMP	ISO: 32, 46, 68, 100, 150
	<ul style="list-style-type: none"> <li>● minimal coking</li> <li>● minimal ageing, negligible sludging</li> <li>● for all compressors</li> </ul>	
Refrig. compressor	PANOLIN ORCON® ARCTIC	ISO: 220
	<ul style="list-style-type: none"> <li>● excellent cold-start characteristics</li> <li>● excellent ageing stability/temperature characteristics</li> <li>● in refrigeration compressors using R12, R22 or R114 refrigerants</li> </ul>	
Heat transfer oil	PANOLIN ORCON® TEMP	ISO: 32
	<ul style="list-style-type: none"> <li>● excellent anti-oxidation properties</li> <li>● suitable with nitrogen blanketing for feed temperatures up to 330 °C</li> </ul>	
Chain lubricant	PANOLIN ORCON® CHAIN	ISO: 5, 15, 68, 100, 150
	<ul style="list-style-type: none"> <li>● extremely low pour-point</li> <li>● extremely low pour-point (ISO 5, 15)</li> <li>● for all industrial chain drives and conveyors</li> <li>● specially for cold storage depots (ISO 15), for shock freezers (ISO 5)</li> </ul>	
Plug oil	PANOLIN ORCON® VITRA	ISO: 150
	<ul style="list-style-type: none"> <li>● plug oil for the glassmaking industry</li> </ul>	

## ECOinside: wide-ranging benefits

The ECOinside label distinguishes PANOLIN products with a variety of outstanding properties. PANOLIN ECOinside products have one or more of the following advantages:



- food-compatible
- environment-considerate
- resource-conserving
- economical
- reduces CO<sub>2</sub> emissions
- health-preserving
- harmless to humans within the test quantity limits

## PANOLIN H1 greases and sprays

Lubricating grease	<b>PANOLIN ORCON® GREASE</b> <ul style="list-style-type: none"> <li>● NLGI: 00, 0, 1, 2</li> <li>● white/light beige aluminium-complex soap based grease lubricant with *Teflon® additive</li> <li>● excellent lubrication, anti-oxidation and corrosion protection</li> </ul>
Lubricating grease	<b>PANOLIN ORCON® GREASE CLEAR</b> <ul style="list-style-type: none"> <li>● NLGI: 2</li> <li>● colourless, transparent fully synthetic lubricating grease</li> <li>● high mechanical and thermal stability</li> </ul>
*Teflon grease	<b>PANOLIN ORCON® GREASE TEF</b> <ul style="list-style-type: none"> <li>● NLGI: 2</li> <li>● white grease lubricant with *Teflon® additive</li> <li>● high load-bearing capacity and good water resistance</li> </ul>
Vaseline	<b>PANOLIN VA GREASE</b> <ul style="list-style-type: none"> <li>● white highly refined Vaseline</li> <li>● excellent dermatological compatibility</li> </ul>
Silicon	<b>PANOLIN SILICONE H1 SPRAY</b> <ul style="list-style-type: none"> <li>● for restoring and protecting plastic and rubber parts</li> </ul>
Parting agent	<b>PANOLIN FORM H1 SPRAY</b> <ul style="list-style-type: none"> <li>● colourless oil-based parting agent free of silicon</li> <li>● harmless to the skin and mucous membranes</li> </ul>
*Teflon oil spray	<b>PANOLIN TEF OIL H1 SPRAY</b> <ul style="list-style-type: none"> <li>● light *Teflon® oil spray</li> <li>● effectively prevents rust, corrosion and binding</li> </ul>
*Teflon grease spray	<b>PANOLIN TEF GREASE H1 SPRAY</b> <ul style="list-style-type: none"> <li>● white aluminium-complex soap based grease lubricant with *Teflon® additive</li> <li>● effectively prevents rust, corrosion and binding</li> </ul>
Bio multilube spray	<b>PANOLIN CL 60 SPRAY</b> <ul style="list-style-type: none"> <li>● fully synthetic rapidly biodegradable universal lubricating spray</li> <li>● biodegradability acc. to OECD 301 B: &gt; 60 %</li> </ul>

## Applications key



Primary application  
Secondary application

PANOLIN		Hydraulics	Gear drives	Compressors	Refrigeration compressor	Chain drives	Heat transfer	Refrigeration/low temp.	General lubrication	Plastics/rubber care	Seals up to 60 °C	Parting agent	Plug oil
ORCON® HYD		●	○	○									
ORCON® HYD SGM		●	○	○									
ORCON® SYNTH E		●	○	○									
ORCON® GEAR			●										
ORCON® COMP				●									
ORCON® ARCTIC					●								
ORCON® TEMP							●						
ORCON® CHAIN						●		1)					
ORCON® VITRA													●
ORCON® GREASE									●				
ORCON® GREASE CLEAR									●				
ORCON® GREASE TEF									●				
VA GREASE											●		
SILICONE H1 SPRAY										●		○	
FORM H1 SPRAY												●	
TEF OIL H1 SPRAY									●				
TEF GREASE H1 SPRAY									●				
CL 60 SPRAY	Part of the PANOLIN concept GREENMACHINE®								●				

1) ISO 15 for cold storage depots, ISO 5 for shock freezers

# For the most demanding requirements

The food and beverage, pharmaceuticals and cosmetics, animal feedstuff and packaging industries, as well as their suppliers, rightly insist on scrupulously hygienic production facilities.

They must therefore be able to depend completely on all their suppliers, particularly of lubricants.



PANOLIN ORCON® products are NSF-registered to H1 category for optimally secure lubrication in the food industry.

Disclaimer The information given in this publication is based on the present state of our knowledge. PANOLIN cannot be held liable for any respective conclusions and recommendations. Buyers and users are advised to assess the suitability of our products for their own requirements, utilization conditions and legal requirements.

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