Chain Guide

Regular maintenance and lubrication are preconditions for low wear and long service life of the chain drive. The maintenance and lubrication frequency, as well as the related relubrication, are determined by the operating conditions of the application. The iwis chain guide outlines the choice of possible chain lubrications and recommended relubricants. All initial lubricants are developed especially for iwis and their composition is tailored to be the best possible for the product chain. Please contact our Technical Service Team for more information regarding the maintenance and handling of chains. We will happily advise you!

Our chain guide gives you an overview of our range of iwis initial lubricants and recommended relubricants. All initial lubricants are developed especially for iwis and their composition is tailored to meet all possible demands for our product ‘chain’.

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Lubricating the iwis® chains

iwis chain lubricants

THE BEST POSSIBLE SOLUTION FOR EVERY APPLICATION

Sufficient and effective lubrication increases the length of life of the chains several times over. The selection of the correct lubricant and the appropriate method of lubrication guarantee best reduction of wear, sufficient protection from corrosion and optional damping characteristics.

Countless trials on specially developed test equipment and close collaboration with well known lubricant manufacturers make iwis your competent partner for all questions relating to chain lubrication.

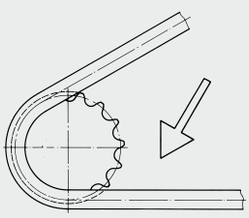
All iwis chains are provided with sufficient, reliable, high quality initial lubrication in accordance with precisely stipulated procedures, which are the subject of constant monitoring, and delivered ready for installation.

All the initial lubricants are developed especially for iwis and their composition is tailored to be the best possible for the chain product.

RECOMMENDATIONS

The chain drive should be cleaned with a brush before the lubricant is topped up to enable the lubricant to enter. In addition the surface of the chain can be cleaned with cleaner's naphtha or petroleum. Full submersion and washing out is not recommended.
Connecting elements (for example, connecting links), when supplied separately, have only been immersion-protected against rust and must be greased upon installation. If the connecting links are supplied together with the chains, they will have been greased with the same lubricant as the chains.

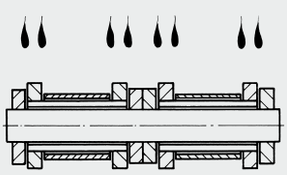
MANUAL LUBRICATION



Using a paint brush, oil can or spray can for slow-running chain drives. The proven VP6-Kombi superplus (spray) is distinguished by the following characteristics:

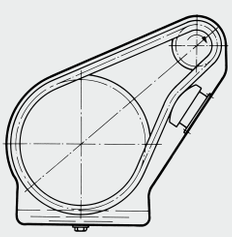
- Synthetic high performance chain lubricant
- Optimum lubricating effect and adhesion
- Excellent ability to creep
- For normal and high temperature use up to +250 °C (+482 °F)
- Excellent corrosion protection
- Also well suited to O-ring chains

DRIP LUBRICATION

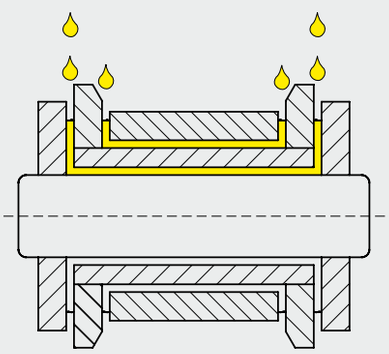


Using drip oilers, automatic lubricant feed or central lubrication units at medium chain speeds.

OIL BATH LUBRICATION



Using enclosed chain boxes and, if necessary, additional centrifugal disc for fast-running chain drives



The lubricant product must be able to penetrate into the bearing area of the chain. To guarantee this, the lubricant must be applied deliberately to the gap between the inner and outer plates.

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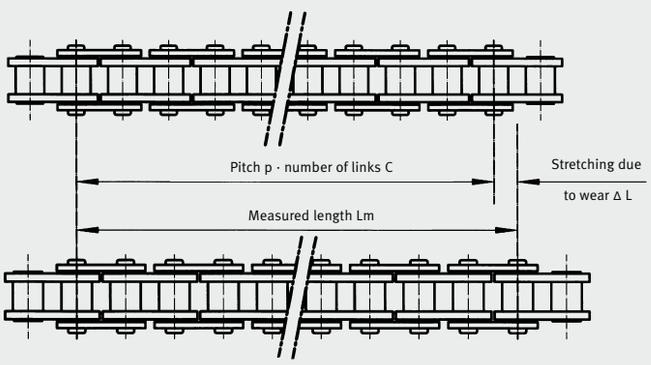
Perfect maintenance of iwis® chain drives

Regular maintenance and lubrication are preconditions for low wear and long service life of the chain drive. Maintenance and lubrication frequency, as well as the related relubrication, is determined by operating conditions (tensile forces, temperature, contamination, aggressive media).

MEASUREMENT OF STRETCHING DUE TO WEAR



$$\Delta L = \frac{Lm - (p \cdot X)}{p \cdot X} \cdot 100\ [\%]$$

MAINTENANCE

During **regular visual inspections** special attention should be paid to **stretching due to wear, tension, lubrication condition, and evidence of wear due to tracking errors.**

Checking the maximum permissible stretching due to wear:

The length of a chain is defined by the pitch p and the number of links X. In the course of time stretching due to wear occurs, and usually this can be measured without removing the chain. The difference from precise measurement with a specified measurement load is slight if measurements are conducted over the highest possible number of chain links, approximately 20 to 40.

The **chain should be replaced** at:
- max. 3 % for simple drives
- max. 2 % for high-performance drives
- max. 1 % for special applications (synchronous operation, positioning)

Controlled **retensioning** of the chains has a very positive effect on the chain life. Extreme retensioning should be avoided just as much as excessive slack. A guideline figure would be a tension load of approx. 5 % of the actual chain pulling force. In the case of chains running in parallel both strands must be tensioned equally, at best by a common shaft for both sprockets. If no automatic chain tensioning device is available, the chain must be adjusted by hand by altering the distance between the sprocket shafts. A further possibility with long drives is to shorten the chain by removing individual links, provided that wear is relatively light. Various tools are available for dismantling and reassembling the chain. These tools are available for parallel pin and shouldered pin chains.

Before **relubrication** the chains and sprockets should be **cleaned** to remove obstinate contamination and to permit the lubricant to penetrate via the back of the plates. The surface of the chain can also be cleaned using an appropriate solvent.

Complete immersion and washing is not recommended as the cleaning agent does not evaporate completely from within the chain and thus the penetration of the fresh lubricant is obstructed.

During **visual inspection** attention should be paid to evidence of chain linkplate marking and wear due to tracking errors. These are caused by misaligned sprockets or guides or by chains which are not in parallel.

Guide for alignment deviations per 100 mm axle separation:
- 0.1 mm with fast-running drives and close axle spacing;
- 0.2 mm with slow-running drives.

The sprockets should be constantly inspected and if necessary replaced. We do not recommend that new chains are used with worn sprockets.

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iwis® Lubricants

The optimum solution for every application

A SUMMARY OF OUR INITIAL LUBRICANTS

IP0 Low-temperature lubricant

A low-temperature lubricant with optimum lubricating properties and consistent fluidity over the entire temperature range.

Technical data:

Chemical composition	Ester oil + synthetic hydrocarbon oil + UV indicator
Colour	Brown
Viscosity	Kinematic (40 °C | 104 °F): 68 mm²/s
Density	Approx. 0.92 g/cm³ (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	-40 °C (-49 °F) to +150 °C (+302 °F)

iwis recommendation for relubricants

- All low-temperature commercial chain oils

IP2 Standard lubricant

The proven standard lubricant with a good lubricating effect and excellent corrosion protection for applications of all kinds.

Technical data:

Chemical composition	Mineral oil + synthetic hydrocarbon oil
Colour	Brown
Viscosity	Kinematic (40 °C | 104 °F): 12 cm²/s (1200 cSt)
Density	0.9 g/cm³ (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	-10 °C (+14 °F) to +80 °C (+176 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- All standard commercial chain oils

IP3 Long-lasting lubrication

Long-lasting lubrication at higher speeds, loads and temperatures. As a consequence of its high viscosity, it is absolutely resistant to spinning off over the entire temperature range.

Technical data:

Chemical composition	Mineral oil + synthetic hydrocarbon oil
Colour	Brown
Viscosity	Kinematic (40 °C | 104 °F): 7200 - 8800 mm²/s
Density	0.9 g/cm³ (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	0 °C (+32 °F) to +150 °C (+302 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- Standard commercial high-performance chain oils

IP4 High-temperature lubricant

Thermally stable high-temperature lubricant with good wear- and corrosion-resistance. Low evaporation rate in the temperature range from 32° to +482 °F. Forms no residue at temperatures above 482 °F. NSF-H2 approved.

Technical data:

Chemical composition	Ester oil + synthetic hydrocarbon oil
Colour	Yellow
Viscosity	Kinematic (40 °C | 104 °F): 11.75 cm²/s
Density	0.91 g/cm³ (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	0 °C (+32 °F) to +250 °C (+482 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- High-temperature chain oils from various suppliers, suitable for operating temperatures over +250 °C (+482 °F) with a proportion of solid lubricant

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A SUMMARY OF OUR INITIAL LUBRICANTS

IP9 Corrosion-protection

The corrosion-protection for preservative use with a low lubricant effect.

Technical data:

Chemical composition	Synthetic hydrocarbon oil + ester oil
Colour	Brown
Viscosity	Kinematic (40 °C | 104 °F): 20 mm^2/s
Density	Approx. 0.86 g/cm^3 (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	0 °C (+32 °F) to +150 °C (+302 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- All standard commercial chain oils

IP14 Stove-enamelled dry lubricant

Dry lubricant for slow-running chain drives and low to medium loads.

Technical data:

Colour	Dark grey
Operating temperature	-70 °C (-94 °F) to +250 °C (+482 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- Chain oils with a proportion of solid lubricant e.g. graphite or molybdenum disulphide (MoS_2)

IP16 Food-grade lubricant

The lubricant for food use with good wear- and corrosion-resistance. Meets the requirements of USDA-H1 and LMBG – authorised for contact with food.

Technical data:

Chemical composition	Synthetic hydrocarbon oil + ester oil
Colour	Yellow
Viscosity	Kinematic (40 °C | 104 °F): 15 cm^2/s (1500 cSt)
Density	Approx. 0.86 g/cm^3 (20 °C | 68 °F)
Physical state	Liquid
Operating temperature	-25 °C (-13 °F) to +120 °C (+248 °F)

iwis recommendation for relubricants

- Food-grade chain lubricants

IPW High-performance lubricating wax

The handling-resistant high-performance lubricating wax with very high wear protection permits significantly longer intervals between applications of lubricant. Problem-free use as a „barrier grease“ in all environments where dust and powder are present.

Technical data:

Chemical composition	Wax + mineral oil + synthetic hydrocarbon oil
Colour	Beige
Density	Approx. 0.89 g/cm^3 (20 °C | 68 °F)
Physical state	Paste
Operating temperature	-10 °C (+14 °F) to +80 °C (+176 °F)

iwis recommendation for relubricants

- iwis VP6 Kombi Superplus (spray)
- Standard commercial high-performance chain oils

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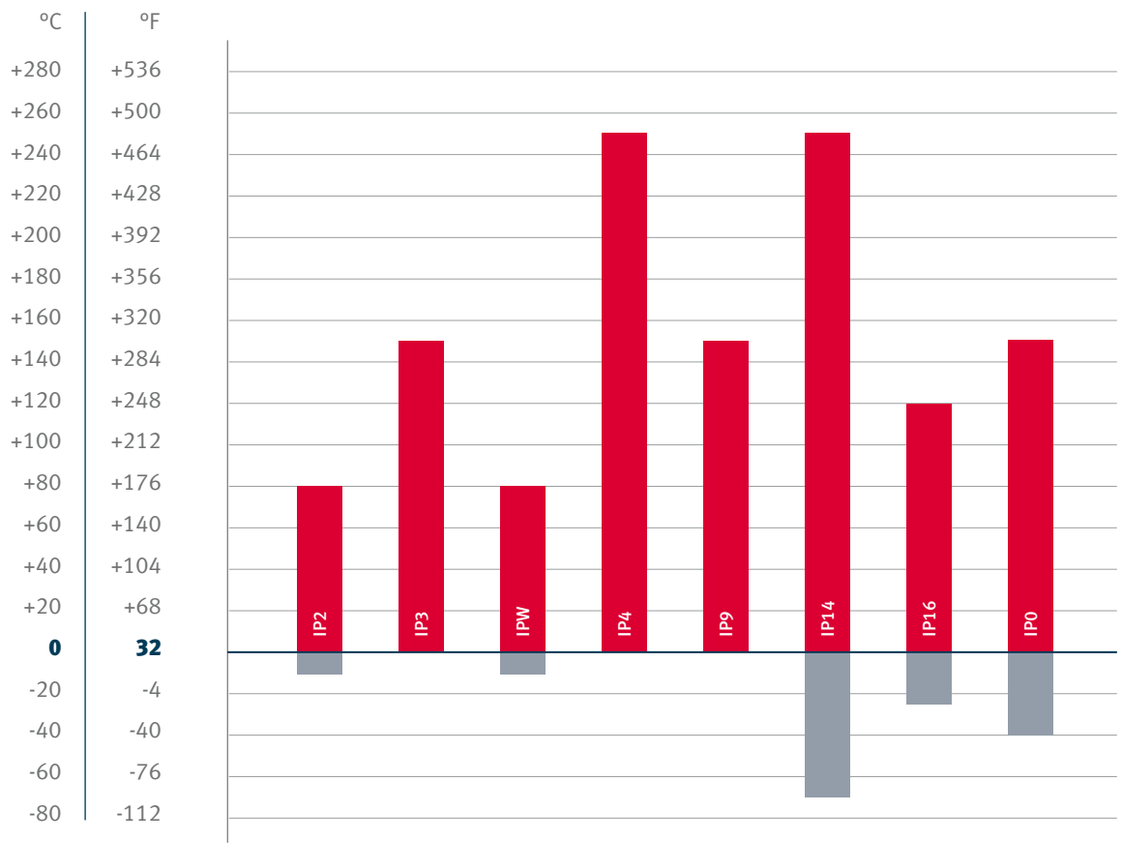
iwis® Lubricants

Overview of all temperature ranges



IP2

Standard lubricant with good lubricating properties and outstanding corrosion protection for all applications.

IP3

Long-life lubricant for high speeds, absolutely non-drip/non-splash.

IPW

High-adhesion, high-performance lubricant wax with extremely high wear protection that allows significantly longer relubrication intervals. Can be used without problems in dusty and powdery environments.

IP4

Thermally stable high-temperature lubricant with good protection against wear and corrosion.

IP9

Preservative corrosion protection with minimal lubricating effect.

IP14

Dry lubrication for slow-running chain drives and low to medium loads.

IP16

Food-grade lubricant with good protection against wear and corrosion. Meets the high standards of USDA-H1 and LMBG.

IP0

Low-temperature lubricant with optimum lubricating properties and consistent fluidity over the entire temperature range.

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Lubricating the iwis® chains
Relubricants

RECOMMENDED RELUBRICANT

The life of a chain is dependent to a decisive extent on correct and adequate topping up of the lubricant. As a consequence of the oscillating movements of the chain link, the initial lubricant is used up in the course of time depending on the operating conditions. If the lubricant is topped up regularly, the chain is mainly within the range of fluid and mixed friction. An absence of lubricant or badly selected relubricants cause dry friction, which leads to the formation of fretting corrosion and increased wear of the chain.

The selection of the lubricant and the correct lubrication technique is decisive for effective relubrication.

VP6 **iwis VP6 Kombi Superplus Spray**

The iwis VP6 Kombi Superplus Spray is a high-adhesion, high temperature chain oil for diverse industrial chain applications.

Technical data:

Chemical composition	Synthetic hydrocarbon oil
Colour	Green, transparent
Viscosity	Kinematic, approx. 1800 – 2200 mm²/s (40 °C | 104 °F)
Density	Approx. 0.9 g/cm³ (20 °C | 68 °F)
Physical state	Aerosol
Operating temperature	0 °C (+32 °F) to +250 °C (+482 °F)

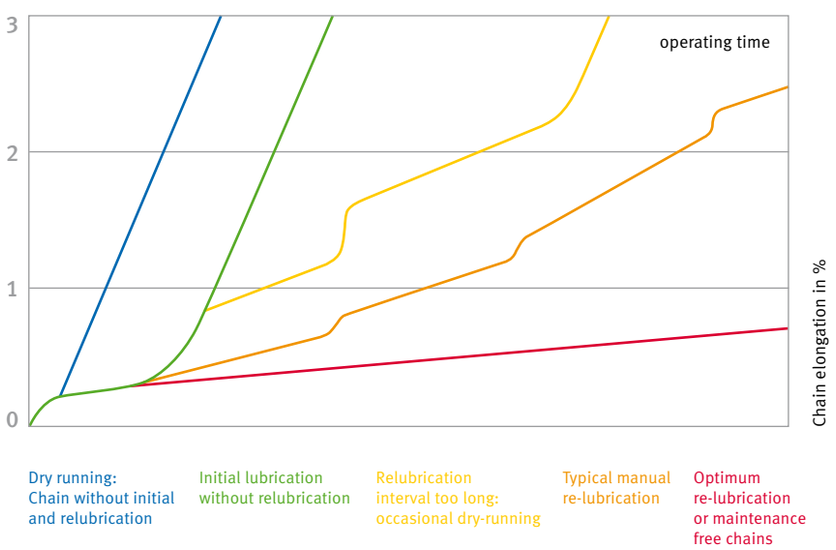
Advantages

- Very high temperature stability
- Low evaporation
- Very good adhesion properties
- Good penetration despite high viscosity
- Extremely high wear protection

RELUBRICANTS

should possess the following characteristics – depending on the application:

- Adhesiveness
- Compatibility with initial lubricant
- Corrosion protection
- Load-bearing capacity of lubricant film
- Ability to creep
- Lubrication of emergency running
- High viscosity and simultaneous ability to flow
- High-temperature stability
- Water-repellent
- Resistance to media etc.



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iwis® Chain Engineering

Important tools for your benefit

CHAIN DESIGN

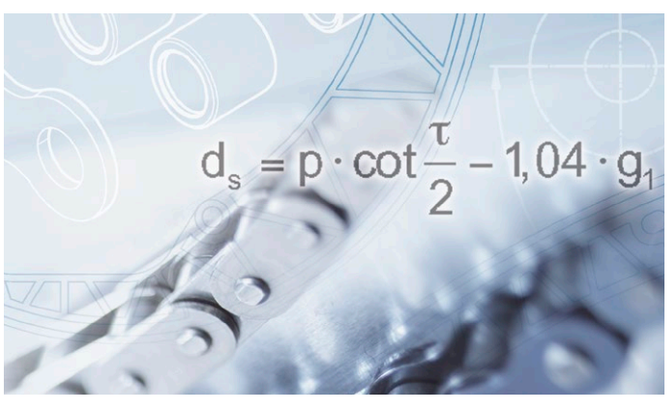
We would be happy to help you design your chain drive. Simply fill in the necessary details on our downloadable form. Then once you have completed the form, just click on the button at the bottom to send it via your e-mail client to chaindrive@iwis.com.

www.iwis.de/**chain-design**

CAD DATABASE

Download, import, go!
Our CAD Database contains 3D models (in over 30 data formats) of standard roller chains and connecting links to make design work easier for you.

www.iwis.de/**cad**



CHAIN ENGINEERING PROGRAM

iwis provides you with a special PC-Software serving as support for the specification of the individual chain drive design or rather the preselection of the appropriate chain. Please ask our Customer Service Team!

www.iwis.com/**chain-calculation**

CHAIN ENGINEERING HANDBOOK

The Chain Engineering Handbook presents a synopsis of the technical knowledge about chain drives that a designer needs for configuration of a drive system. Also contains useful calculation examples and descriptions of typical application cases.

www.iwis.de/**downloads**

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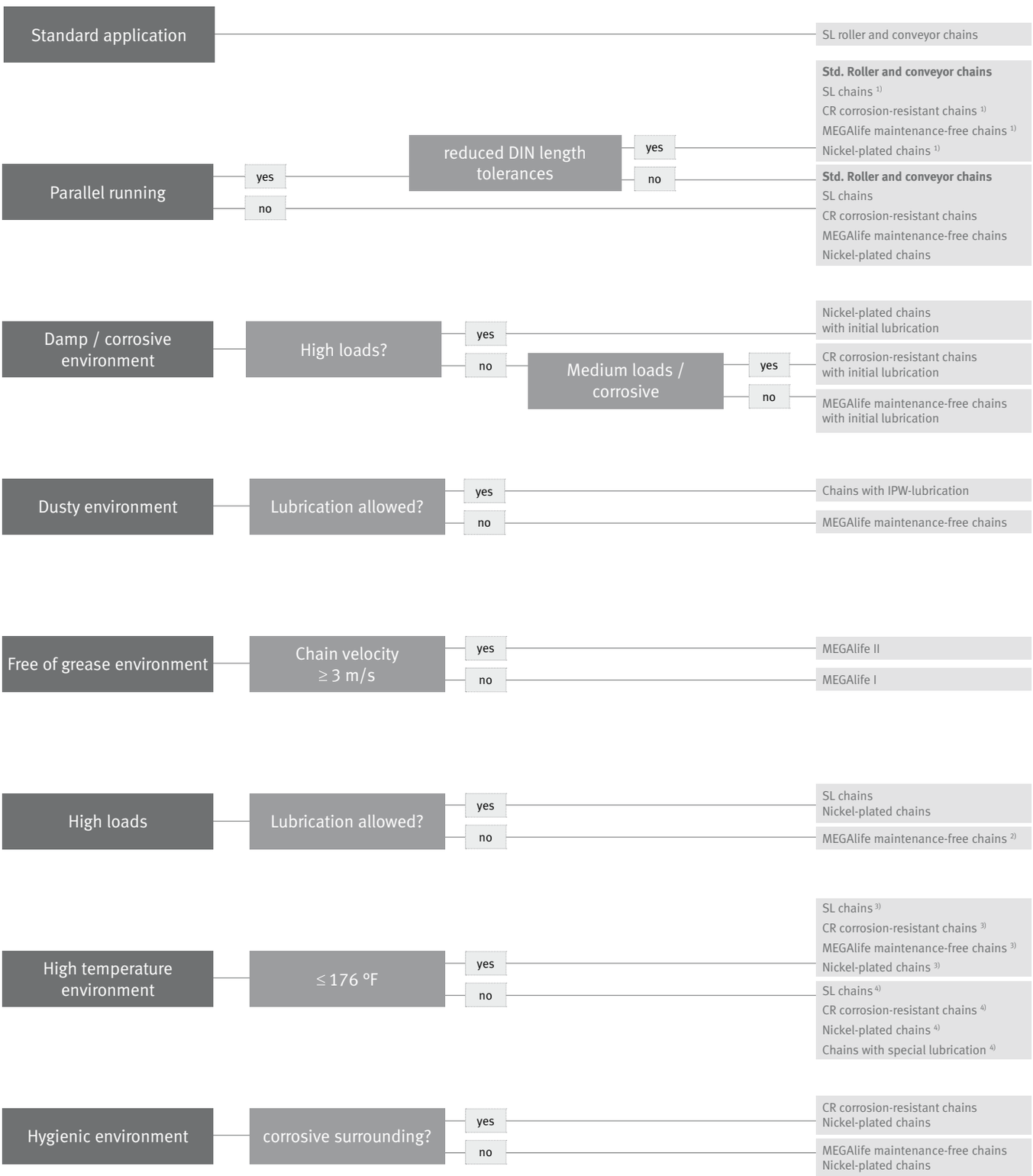
iwis® Chain Guidelines

Which application demands which chain type?



1) with reduced tolerances

2) application limited 3) with standard lubrication or IPW 4) IP up to 302 °F and IP4 up to 464 °F

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iwis® Chain Guidelines

Important information

IMPORTANT NOTICE

The following guidelines support you in choosing the right chain. However, please note that each application is individual. The result should in no case serve as a basis for your order. Therefore please refer to our professional employees who are happy to submit an individual order to you. We do not assume any guarantee or liability.

FOR MORE INFORMATION ON

- SL chains
  → Pages **16** to **19**
- Nickel-plated chains
  → Pages **16** to **19**
- MEGAlife maintenance-free chains
  → Page **40**
- CR corrosion-resistant chains
  → Page **66**

CHAIN FABRICATION LENGTHS

- 5 m
- 10 m
- 10 feet

Adjusted lengths can either be supplied open or closed. Special lengths (e.g. on coils) are available on request and depending on chain type.

OUR CONVEYOR CHAINS

If a parallel run is necessary, iwis can manufacture and supply chain strands with precisely harmonised lengths, bundled together and marked accordingly. This is in particular important for chains with opposite cam or angle side plates.

PRICE SUPPLEMENTS

Price supplements will be calculated for:

- adjusted lengths
- special lubrications
- reduced tolerances
- short lengths
- special coatings
- nickel-plated chains and single parts
  Prices on enquiry.

CUSTOM-MADE CHAINS

Special chains made according to customer drawings are possible. Prices on enquiry. Minimum order quantity is 50 m.

MINIMUM ORDER QUANTITIES FOR CONNECTORS AND CRANKED LINKS

Chain dimensions	Inner link / Outer link / Connecting link	Cottered Link
6 mm – 3/4"	20 ea	10 ea
1" – 1 1/4"	10 ea	10 ea
Duplex – Triplex	5 ea	5 ea
Parts over 1 1/4"	1 ea	1 ea

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High Precision Chains

JWIS®

Engineering Manual

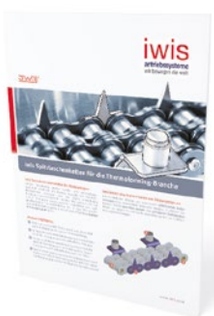
JWIS®

MEGAlife Roller Chains

JWIS®

Transfer Chains

JWIS®



Spike Chains

JWIS®

Flat Top Chains

FLEXON®

Drive and Conveyor Chains

EUROCHAIN® powered by iwis

Sprockets and
Drive Components

Roller- and Conveyor Chains

ELITE®

Agricultural Chains

ELITE®

All product catalogs and flyers, as well as our iwis Engineering Manual can be downloaded on our website: **iwis.com/catalogs**

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