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Chain Lubrication and Maintenance

Provides lubrication and rust protection under extreme conditions for chains, steel cables, wire ropes and gears.

COOMCOOL®
科美克®

Introduction

We specialize in the scientific lubrication of chains and steel cable equipment, offering lubrication maintenance for chains and steel cable equipment. Additionally, we provide services including peripheral equipment, energy conservation and consumption reduction, kinetic energy improvement, process improvement, full-process condition monitoring, chemical management training, equipment management consulting, and third-party testing.

Our products encompass eight major series: oil-based lubricants, solid lubricants, dry film lubricants, chain sprays, chain cleaners, chain plate lubricants, steel cable lubricants, and chain equipment. We provide lubrication solutions for up to 100 industries, ensuring the efficient operation of chains and steel cables under conditions such as high temperature, ultra-high temperature, and acid-base salt corrosion, while also meeting food safety requirements.

Why Choose Coomcool?

1. Chain lubricants & Pastes
2. Chain antifriction coating
3. Chain lubrication Solutions and Services
4. Chain lubricant detection and analysis
5. Chain clean
6. Chain fueling equipment
7. Chain wear monitoring
8. Analysis of chain damage
9. Chain online repair
10. Chain Care & Trouble Shooting

Challenges for Chain Lubrication

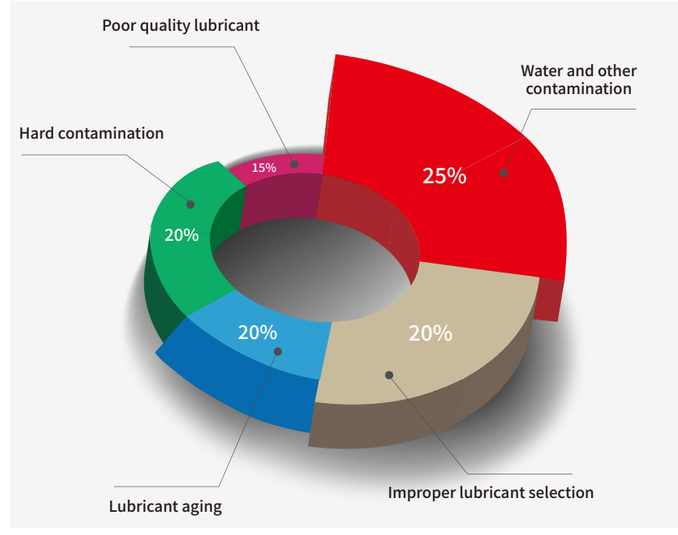
- Mechanical motion causes friction and boundary friction in mixed components.
- No hydrodynamic lubrication at low speeds.
- Friction points are relatively difficult to access.
- Friction areas are mainly linear contacts.
- High surface pressure at friction points.
- Oscillation of friction components.
- Chain oil film cannot prevent internal wear of the chain.

What can an excellent chain lubricant do?

- Reduce friction and wear
- Ensure smooth and reliable operation of the chain
- Extend the service life of the chain
- Reduce operating costs
- Ensure product quality
- Improve the environment and reduce maintenance costs
- Save energy consumption
- Easy to clean

80% of lubrication problems stem from improper lubrication

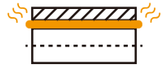
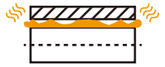
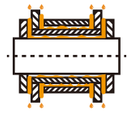
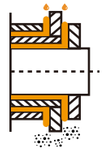
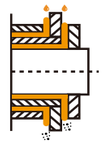
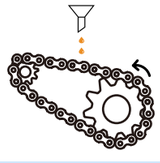
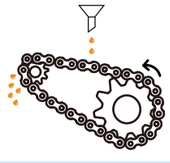
- Using the same lubricant for chains under different working conditions
- Using lubricating oil with poor wetting properties
- Lubricating chains with gear oil, mechanical oil, or even waste oil
- Chain lubricant does not reach the required operating temperature
- Lubricant lacks sufficient lubricity and corrosion resistance
- Chains are not cleaned or maintained for long periods



How to Choose The Right Lubricant

Selection of lubricant oil viscosity for chain lubrication (40°C, mm^2/s)

Chain Load /MPa	Chain Speed (m/s)						
	＜1	1 - 5	＞5	＜5	5 - 10	10 - 100	＞100
	ISO VG Grade						
＜10	70 - 100	50 - 80	30 - 60	50 - 80	30 - 60	20 - 40	10 - 20
10 - 20	80 - 120	70 - 100	60 - 80	80 - 110	70 - 100	40 - 60	20 - 40
＞20	160 - 240	120 - 160	80 - 120	160 - 200	120 - 160	80 - 120	65 - 100
	Manual or drip oiling			Oil bath			

Performance	Suitable Oil	Unsuitable Oil	Performance	Suitable Oil	Unsuitable Oil
High Temperature Stability			Evaporation Rate		
	Good oxidation resistance; the oil remains clear even after prolonged high-tem-perature baking.	Poor oxidation resistance; the oil darkens after prolonged baking.		Low evaporation rate; the oil is durable.	High evaporation rate; the oil volatilizes quickly.
Penetration			Cleanliness		
	Strong penetration; the oil can quickly reach the lubrication points.	Weak penetration; the oil cannot reach all lubrication points.		Good cleanliness; can remove residues and other impurities.	Weak cleanliness; partially removes residues and other impurities.
Water Resistance			Adhesion		
	Strong water resistance; a small amount of water spray does not affect the oil's adhesion.	Weak water resistance; moisture will wash away the oil.		Strong adhesion; the oil is not easily dripped off.	Weak adhesion; the oil is thrown off.

Automotive Coating Line Chain Lubrication

Automotive components such as the vehicle frame, chassis, cabin, and surface covers all require coating protection. Currently, most major automotive manufacturers use cathodic electrodeposition (e-coating) paint, but each has its own unique paint system.

The conveyor chains in large drying ovens are exposed to various external corrosions and erosions over time, requiring continuous lubrication protection. However, the chain lubricants must not negatively impact the automotive coating system.

Automotive coatings consist of a primer, a mid-coat, and a topcoat. The primer is generally applied using water-based paint or electrodeposition coating. The mid-coat and topcoat can be either water-based or oil-based paints, with the topcoat often being a metallic gloss paint.

The current conventional process flow is:

- Electrocoating Pretreatment:
  Degreasing (spray and immersion combined, pressure 0.06 - 0.12 MPa, 3 min) → Phosphating (temperature 38 - 45°C, immersion time 3 min, total acidity 20 - 27 points, free acidity 0.7 - 1.3 points, zinc content 0.9 - 1.2 g/L) → Phosphating rinse spray for 1 min, spray pressure 0.04 - 0.06 MPa.
- Primer Coating:
  Electrocoating paint, baked at 160°C - 180°C.
- Intermediate Coating:
  Spraying with water-based paint → Pre-bake (approx. 80°C, 10 min) → Drying (approx. 150°C, 30 min).
- Topcoat:
  Spraying with water-based gloss paint → Pre-bake (approx. 80°C, 10 min) → Spray with solvent-based high-solid clear coat → Drying (approx. 130°C, 30 min).

Products applications

- Transmission chain lubrication for vehicle body pretreatment
- Room temperature chain lubrication for painting line accessories
- Lubrication of oven fan bearings
- High-temperature chain lubrication in the coating oven
- Lubrication of conveyor roller bearings and steering bearings in the coating oven
- Other non-primary lubrication points

About shrinkage holes

- During the electrophoretic coating process, if dust, oil, or particles incompatible with the electrophoretic paint adhere to the surface of the coated object, the phosphating film, or the wet electrophoretic coating film, it can cause uneven leveling of the coating during the initial drying phase, resulting in crater-like depressions known as pinholes. These pinholes typically range in diameter from 0.5 to 3.0 mm and can be classified as either penetrating or non-penetrating, and solid or hollow.
- In terms of form, they are further categorized into air bubbles, water bubbles, and pinholes.

Products recommended

- Coomcool Chain BP 220: Primer coating workshop chain lubricant
- Coomcool Chain FP 260: Intermediate/topcoat workshop chain lubricant
- Coomcool Chain HWR 2000: High-temperature and water-resistant chain oil
- Coomcool Chain NWR 460: Room-temperature water-resistant chain oil
- Coomcool Chain Rust 400: Chain rust preventative
- Wallimore PF 600: High-temperature chain grease

BOPP Chain Lubrication

Product advantages

- Compatible with polypropylene, polyester, nylon, polyethylene, or other polymers, ensuring film production and quality, and preventing film punctures or breakages.
- Will not cause blockages at lubrication points in chain track systems, conveyors, or lubrication lines, and will not form deposits on connected chains or bolt bearings, effectively saving costly downtime for cleaning.
- Suitable for film stretching machine manufacturing equipment from Brückner, Lindauer Dornier, Mitsubishi, DMT, and others.

Product replacement

- Klüber Primium Super M93
- Lubecon Turmofluid 40 B
- Addinol Cliptec XHS 280
- Bechem CU 250
- Castrol Viscogen KL 23
- Lubecon Turmofilm Oil 220/320
- Rocol FLO-LINE 700

Products recommended

- Coomcool Chain FSO 300

MDF Chain Lubrication

Steel belt & chain lubrication

Steel belt and chain blanket lubricants must be able to provide good wear protection under extremely high thermal loads (up to 250°C) and mechanical load conditions.
At the same time, they should have a low evaporation rate and generate little to no residue to avoid increased wear and reduce fire risk.

Chain & Chain Pin & Roller Lubrication

The lubricant must withstand high temperatures and provide wear protection for chain components. It must minimize residue formation to keep the chain clean and ensure that new lubricant reaches the friction points.

The lubricant needs to penetrate the friction points and provide wear protection for the entire pin shaft while minimizing the likelihood of residue formation to prevent chain pin sticking and skipping.

Operating conditions for lubricants in continuous press machines for engineered wood are extremely demanding.

- Temperatures up to and above 250°C
- High mechanical loads
- Presence of corrosive gases and contaminants

Under such harsh conditions, the lubricant must provide excellent wear and corrosion protection for machine components while minimizing surface residues to avoid increased wear.

Products recommended

- Coomcool Chain MDF 260 High-Temperature Steel Belt Oil
- oomcool Chain MDF 100 High-Temperature Roller Pin Oil

PVC Gloves Chain Lubrication

PVC gloves are widely used in the medical and health sectors, food production, and other fields, with high demand. China is a major producer of PVC gloves globally.
Under normal production conditions, the hand molds on the production line automatically enter the dipping tank. The hand molds with adhered latex exit the dipping tank one after another, continuously rotating during the process to ensure an even coating of latex on the surface. Excess latex drips off and is collected back into the dipping tank.
After dripping off the excess latex, the hand molds move with the production line into the oven. The oven temperature is generally controlled between 230°C and 250°C, with extreme conditions reaching up to 280°C. Under these conditions, the latex on the hand molds cures and forms into shape.

The conveyor chains in glove production lines are long and operate at high temperatures. The hand mold seat bearings, subjected to prolonged temperatures of 230°C to 250°C, are prone to lubricant coking, leading to seizing or even scrapping. Therefore, high-temperature chain oils must have excellent volatility resistance, adhesion, and anti-coking properties.

Results

Lubricant	ISO VG 46 Oil		Competitor A		Chain RBG 320	
	Line 1	Line 2	Line 1	Line 2	Line 1	Line 2
Lubrication Frequency	daily	daily	every 5 days	every 5 days	every 9 days	every 9 days
Lubrication Quantity per Application(kg)	6.5	5	4.6	3.5	4.5	3.6
Smoke Levels	large amount	large amount	medium	medium	minor amount	minor amount
Carbon Accumulation Status	large amount	large amount	medium	medium	minor amount	minor amount

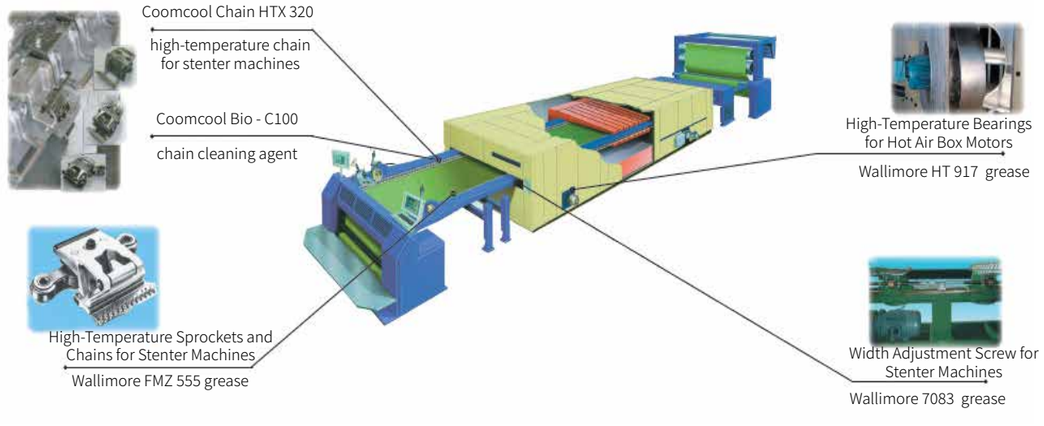
The data is for reference only and may vary under different operating conditions.

Products recommended

- Coomcool Chain RBG 320 High-Temperature Chain Oil for Hand Mold Seats
- Coomcool Chain SPT 220 Main Track Lubricating Oil for Demolding Machines
- Wallimore P453 High-Temperature Grease for Hand Mold Seat Bearings

Chain Lubrication in Textile Dyeing and Bleaching Industry

In the textile dyeing and finishing process, after the fabric is dyed and rinsed, it must undergo high-temperature setting in the finishing process, which is completed in a stenter machine.
The chains, carrying the fabric, enter the high-temperature oven for gradual setting. The oven temperature typically ranges from 180°C to 220°C, depending on the type of fabric being processed.
The chains on both sides are generally lubricated with automatic lubrication systems at regular intervals and quantities. Due to the chains being exposed to high temperatures for extended periods, maintaining the chains requires extremely high standards.



The product is suitable for domestic and imported equipment such as Brückner, Kralitz, Babcock, Korean Nisshin, Riho, Taiwan Ligen, Chengfu, Yiguang, Huangji, and others.

Application

Product	Typical Temperature for Stenter Machine Ovens	Lubrication Frequency
Nylon Fabric	200°C	Every 1-2 days
Cotton Fabric	200°C	Every 2-4 days
Warp Knitted Fabric	240°C	Daily

Why does the lubricant fail

- Slow oxidation, leading to the formation of acids or sludge
- High-temperature oxidation, resulting in carbon buildup or coking
- Severe oxidation, causing ignition or explosion
- Volatility or leakage leading to lubrication drying out
- Insufficient temperature resistance, resulting in lubricant loss
- Condensation mixing in, causing the lubricant to emulsify
- Corrosion from contact with chemicals such as acids, bases, or organic solvents

Other lubrication applications

Stenter Machine Roller Bearings - Waterproof Grease:
- Wallimore CVG 45 Waterproof Grease

Calendering and Drying Machine Bearings:
- Wallimore CMG 648 Long-Life Bearing Grease
- Suitable for: Dyeing and Finishing Machine Bearings, Steam Engine Bearings, Dryer Bearings, Airflow Dryer Fan Bearings, Drum Roller Bearings, Mercerizing Machine Bearings, and Singeing Machine Bearings.

Standard Motor Bearings:
- Wallimore Supermoly R Motor Bearing Grease

Ultra High Temperature Chain Lubrication Application

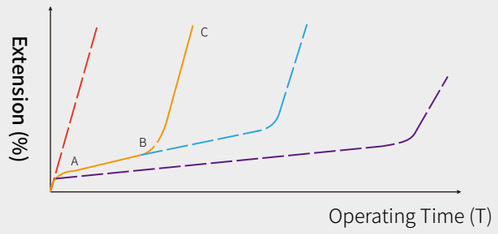
Ultra high temperature application

- Ceramic and Porcelain Curing Ovens
- Glass Wool Roof Insulation Ovens
- Gypsum Board Ovens
- Refractory Materials
- Heat Treatment Tunnel Furnaces

Application

- Coomcool Chain HTM 500 Ultra-High-Temperature Chain Oil
- Coomcool Chain HT OV 800 Ultra-High-Temperature Chain Oil

Conveyor Chain Wear Curve



A - Initial Wear, <0.1% within the first 20 hours after startup.
B - Normal Wear, 1.5-2%.
C - Factory Chains Without Lubrication
The dashed line represents normal wear with lubrication.

- **When chain links wear out, they elongate. Elongation exceeding 5% due to wear can lead to chain failure, rendering the chain unusable or causing premature scrapping.**
- **Chains without proper lubrication have a lifespan of no more than 5 years, while well-lubricated chains can last 15-20 years.**
- **During use, the wear rate of a chain with good lubrication can be 20-30 times lower than that of a chain with poor lubrication.**

SMT Wave Soldering and Reflow Soldering Chain Lubrication

SMT (Surface Mount Technology) is currently the most popular technology and process in the electronics assembly industry. In SMT production lines, reflow soldering and wave soldering are significant and crucial steps.
Conventional chain oils for SMT are generally only suitable for use below 250°C. At higher temperatures, they can exhibit varying degrees of smoking, carbon buildup, and oil dripping during use, leading to gas contamination in SMT clean rooms. Additionally, this shortens the lubrication interval and fails to meet the process requirements.

Working conditions

An SMT production line consists of three types of equipment: screen printers, pick-and-place machines, and reflow ovens. Due to environmental requirements, lead-free processes in the SMT industry are becoming increasingly mature. The physical differences between lead-free solder paste and tin-lead solder paste are mainly reflected in the reflow oven.
The melting point of ordinary tin-lead solder paste generally does not exceed 200°C, so the reflow zone temperature usually does not exceed 250°C. However, the melting point of some lead-free solder pastes exceeds 250°C, and the corresponding reflow zone temperature reaches 280-300°C. At this point, the operating temperature of the chains also reaches 280-300°C. To ensure the chains run smoothly under these temperature conditions, the oil must have excellent high-temperature resistance and low volatility loss.

Application

- Coomcool Chain SMT 200 High-Temperature Chain Oil for Wave Soldering
- Coomcool Chain SMT 220 High-Temperature Chain Oil for Reflow Soldering

The consequences of poor lubrication

- Severe scaling and flaking
- Stiffness and seizing
- Corrosion and rust
- Breakage and elongation
- Dirt and dust accumulation
- Noise
- Smoking and irritating odors
- Deformation and high wear
- Short maintenance cycles, requiring frequent periodic maintenance

Rock Wool & Glass Wool Chain Lubrication

Rock wool is a fibrous material made by melting and fiberizing various mineral raw materials such as basalt and diabase, and then treating the surface with different organic and inorganic agents. Rock wool is a type of mineral wool and is commonly used as an insulation material.

In the production process of rock wool, after the resin felt exits the settling chamber, it is pre-compressed by pressure rollers and enters the curing oven for heat treatment. This process dehydrates and cures the resin, forming a product with a fixed structure and shape. This is the most critical step in the manufacturing process of mineral wool slag and rock wool insulation boards.
To polymerize the resin in the felt, hot air blowers are used to introduce hot gases at temperatures of 300-350°C into the heating zone of the curing oven. Consequently, the chains in the curing oven are exposed to high temperatures of 260-280°C for extended periods.
Most chain oils, when used at these temperatures, produce smoke, odors, carbon deposits, and dry powdery substances, which are polymeric residues. These residues hinder the effective operation of the chains, leading to issues such as chain sticking, elongation, and breakage.

Product advantages

Coomcool Chain RWL 900 is formulated with high-quality synthetic specialty base oils and additives, and does not contain substances that form solid residues. It is used for lubricating bearings, chains, slides, and gears in environments where temperatures frequently exceed 280°C.

- No carbon buildup at high temperatures, no solid coke residues, no smoking, no odors, and excellent cleaning performance.
- Ashless lubricant, eliminating cleaning issues caused by solid accumulation and reducing downtime.
- Excellent lubrication performance, significantly reducing energy consumption.
- High viscosity index, good adhesion at high temperatures.
- Recommended for lubricating high-temperature chains in the production lines of rock wool, glass wool, and refractory materials.
- Temperature range: -20°C to 280°C, can reach up to 300°C for short periods.

Products recommended

Coomcool Chain RWL 900

Steel Industry Conveyor Chain Lubrication

Background

In the steel and metallurgy industry, many production processes take place in high-temperature and ultra-high-temperature environments. Ensuring effective lubrication of equipment in such conditions is a global challenge.

Case

The customer is seeking to improve the lubrication for the cooling rebar red-hot coil transport chains.
Previous lubricants had a high evaporation rate, resulting in high oil consumption, excessive smoke, significant carbon buildup, and seizing of pins and bushings. Employees also complained about oil spillage.
The factory has two production lines, each with three chains, totaling 600 meters in length.

Solution

It is recommended to use Coomcool Chain CCL 220 high-temperature synthetic chain oil, which penetrates and removes a significant amount of carbon buildup.
This oil is highly effective in penetrating and removing residual deposits, and can release seized pins, rollers, and side chains.

Results

More than 97% of the chain pins and rollers were freed and are running smoothly.
Due to the oil's extremely low evaporation loss, the customer's annual lubrication oil costs have been significantly reduced.

Considerations for choosing a lubricant

- Correct viscosity
- Re-lubrication interval
- Correct lubrication amount
- Correct lubrication points
- Application type
- Temperature range
- Lubricant penetration
- Material compatibility
- Differences in drive structures of different chains, etc.

Cooling of Steel Wire on Conveyors

Conveyor Transport Chains

Chain Roller Bearings Frozen by Old Lubricant

Enamel Product Chain Lubrication

Background

Enamel production involves processes such as glaze preparation, body preparation, coating, drying, firing, and inspection.
In the firing process, the coated enamel pieces are placed in box kilns, rotary kilns, or tunnel kilns for firing.
The firing temperature for borosilicate base glazes containing bonding agents is approximately 880 - 930°C. The firing temperature for surface glazes is slightly lower: antimony opacified antimony glazes at 850 - 900°C, and titanium glazes at 820 - 860°C.
The radiation temperature of the transport chains in the curing furnace reaches up to 800°C, and conventional chain lubricants cannot meet the long-term lubrication needs at this temperature.

Enamel Hanging Line

Solution

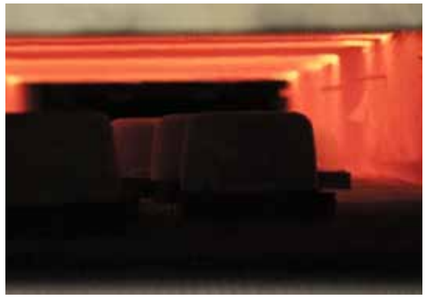
Chain HT OV 800 Ultra-High Temperature Synthetic Lubricant forms a solid lubricating film at temperatures exceeding 300°C, and the friction coefficient of this solid lubricating film remains constant up to 900°C.

- The product effectively addresses the issue of delamination in current solid lubricants on the market and penetrates well into the internal lubrication points of the workpieces, providing excellent lubrication.
- The product effectively solves the problem of loss of lubrication after the evaporation of liquid lubricants, providing emergency lubrication.
- The product is white and non-contaminating, ensuring no issues with product quality.

Enamel Curing Furnace

Results

Over a period of up to 3 years, there have been no chain breakages causing downtime, and the product meets the lubrication needs of chains under extremely high temperatures.



Inside the Enamel Curing Furnace

Products recommended

- Chain HT OV 800 Ultra-High Temperature Synthetic Lubricant

Teflon Coating Curing Furnace Chain Lubrication

The Teflon coating on stainless steel pressure cookers needs to be cured in a high-temperature tunnel furnace at temperatures above 650°C. Currently, there is a lack of ultra-high temperature chain lubricants on the market. Either the chains are left unlubricated—resulting in dry running—or conventional solid lubricants such as graphite powder or molybdenum disulfide powder are used, which do not provide adequate lubrication to critical components such as sprockets, rollers, chain shafts, and bushings. They only protect the visible meshing parts like sprockets and gears.
Using unsuitable lubricants ultimately leads to numerous lubrication-related issues.

Working condition

High-Temperature Section of Tunnel Furnace for External Spraying Process of Stainless Steel Pressure Cookers

- Chain Type: Mesh Belt Chain or Longlink Chain
- Temperature: Core Zone > 650°C, Low-Temperature Zone > 230°C
- Speed: Average 6 m/min

Products recommended

- Coomcool Chain HTM 500 Ultra-High Temperature Chain Oil

Use result

Usage Situation	Manually apply lubrication to both sides of the chain at the exit end of the high-temperature section of the tunnel furnace in the external spraying process, covering approximately 3/4 of the chain.	
Usage Comparison	Before Use	After Usev
Noise Level	The chain produces a squeaking metal friction noise	Noise is significantly reduced, and metal friction sounds are almost inaudible
Current Level	7.6A	7.3A
Moisture Retention	The chain at the exit end is dry and lacks luster, feels dry to the touch, and shows no presence of lubricants, mostly covered with dust.	The chain at the entrance end has a shiny surface with noticeable oil; the chain at the exit end is dry but glossy, feels smooth to the touch, and has a presence of lubricant on the surface.
Friction Reduction Effect	The sprockets show signs of wear and shine, with a history of jamming and breakage incidents.	The trial period is short, and no significant effects have been observed yet.
Smoke Situation	No lubricating oil, no oil smoke impact.	Slight oil smoke odor (Noack volatility loss ⩽2%, which allows for strict control of usage costs)

Chain Lubrication in Complex Conditions

Marine chain lubricant

Ships operate for long periods, with significant temperature fluctuations and constant exposure to water and high salinity environments, requiring lubricants with excellent water resistance, rust prevention, and temperature adhesion properties.
Gantry cranes, overhead cranes, and similar equipment are exposed to salt mist from seawater over long periods, requiring excellent seawater corrosion resistance.
Environmental regulations are becoming increasingly stringent, requiring that residues and leaking substances do not enter the biological food chain and cause impact.
The lubricant also provides lubrication for steel ropes, reducing and optimizing the variety of lubricants.

Biodegradable chain oil

Conventional petroleum-based chain oils have poor biodegradability, high ecological toxicity, and significant environmental pollution, failing to meet the urgent need for environmental protection.
The high-speed operation of chains and sprockets can expel lubricants into the environment, causing environmental pollution.
The high-speed operation of chains and sprockets can cause lubricant fling-off, thereby accelerating equipment wear.

Heavy duty chain lubricant

Chains in cement production facilities operate in relatively harsh environments, with high loads and a lot of dust.
The main purpose of chain lubrication is to form a lubricating oil film between the friction pairs of the chain to provide protection.

Products recommended

Cement Industry Heavy-Duty Chain Lubrication

- Apron Feeder
- Raw Material Storage/Cement Grinding Mill Bucket Elevator
- eclaimer
- Stacker-Reclaimer Section, Hot Clinker Conveyor
- Scraper Conveyor Chain
- Clinker Grate Cooler Chain

- Wallimore EPC 250 Series Heavy-Duty Chain Lubricating Grease

Biodegradable Chain Lubrication

- Chainsaws, Power Tools
- Port Terminals
- Marine and Offshore
- Ships
- Golf Courses
- Outdoor Elevators
- Specialty Textiles, Interior Components

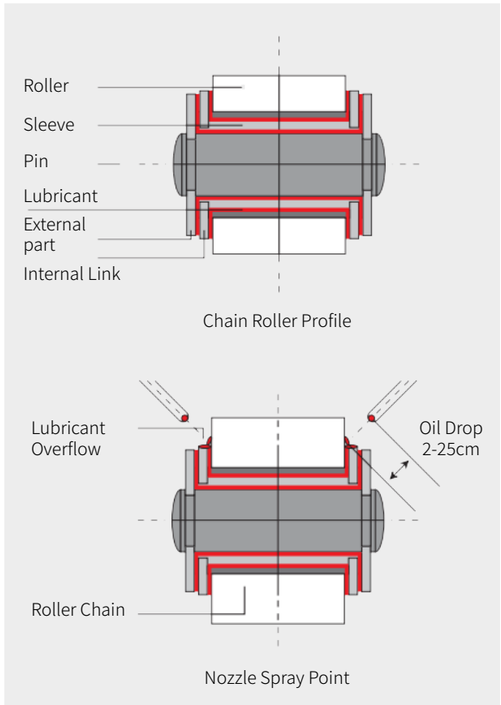
- Wallimore EAL 050 Series Marine Chain Lubricant
- Wallimore EAL 100 Series Biodegradable Chain Lubricant

Lubrication Method Selection

Different chain systems and production processes require different lubrication application methods.

Additionally, choosing high-temperature chain oils with different viscosity grades for different seasons ensures good flow in winter and reduces loss and evaporation in summer, thereby better saving energy and reducing costs.

Correct lubrication method



Chain Plate Lubricant

Difficulties in lubrication

Lubrication of conveyor chains in the food and beverage bottling process has always been a key factor affecting filling and production efficiency. In addition, meeting sustainable development criteria, including water conservation, environmental protection, and food production standards, is also a pressing challenge that needs to be addressed in the lubrication solutions for conveyor chains in the food and beverage bottling process.
In the bottling process of food and beverages, conveyor chain lubrication needs to effectively cover three critical friction points: between the bottom of the packaging and the top surface of the chain plate, between the chain links of the chain plate, and between the bottom surface of the chain plate and the wear-resistant slide strips in the chain track. The conveyor chain lubricant must provide efficient wear and lubrication protection for all three friction points simultaneously.

Application range

The special conveyor chain lubrication series is particularly suitable for the following packaging materials and bottling processes in the food and beverage industry:

- Paperboard Packaging: Such as dairy products
- Plastic Bottles: Such as mineral water
- Metal Cans: Such as carbonated drinks
- Glass Bottles: Such as condiments, sauces, and alcoholic beverages

Product advantages

Significantly Increases Bottling Efficiency for Food and Beverages

- Lower Bottle Spillage Rate: Higher bottling efficiency
- More Uniform and Long-lasting Lubrication Protection: Effectively reduces maintenance downtime
- Improved Chain Plate Hygiene: Extends the cleaning cycle of the chain plates
- NSF Food Grade Certification: Reduces production compliance risks

Effectively Reduces Overall Production and Bottling Costs

- Higher Bottling Efficiency: Lower unit bottling costs
- Reduced Lubricant Consumption: Lower lubricant material costs
- No Water Required for Lubrication: Lower water consumption and wastewater treatment costs
- Extended Chain Plate Life Cycle: Lower maintenance and spare parts costs
- Longer Chain Plate Cleaning Cycle: Lower cleaning costs

Products recommended

- Coomcool Chain DP 2 Dry Chain Plate Lubricant
- Coomcool Chain CPL 102 Chain Plate Lubricant

Bread Baking and Food Grade Chain Lubrication

Bread baking is a specialty within food baking and processing. During the process, it involves high humidity and high temperatures, with top baking temperatures exceeding 275°C and bottom baking temperatures above 245°C, along with acid and alkali corrosion. These conditions far exceed the technical limits that food-grade lubricants can withstand, presenting a significant challenge in selecting the appropriate lubricant.

Operational Tasks	Operational Process	Lubrication Points
Freight Storage	Ingredient Storage Sugar Storage Flour Storage	Chain、Conveyor Belt、Bearing
Mixing	Conveyor System	Chain、Conveyor Belt、Bearing
Sample Production	Baking Inspection Conveyor System	Chain、Bearing
Baking	Baking Furnace System Oven System Rack Oven Conveyor System	Chain、Bearing
Cutting & Packaging	Conveyor System	Drive Chain
Packaging & Refrigeration	Refrigerated Warehouse	Chain、Conveyor Belt

Product advantages

- Wide Temperature Range: Suitable for use at temperatures up to 288°C (550°F).
- Stable Lubrication: As temperature increases, the lubricant forms a layer of soft carbon residue, maintaining stable lubrication properties.
- Excellent Oxidation Stability
- High Flash Point: Minimizes safety concerns when used on high-temperature chains.
- Protects Against Harmful Mist: Resistant to corrosion.
- Effective Lubrication: Minimizes wear on movable parts of the chain.
- Reduces Energy Consumption

Application

- Automatic Lubrication System for Baking Ovens
- High-Temperature Oven Chains
- Drying Kiln Chain Drive System
- Slider Chain for Toasting Machines
- Beverage Production Line
- Can Production Line

Products recommended

- Coomcool HTC 320 High-Temperature Chain Oil for Food Machinery
- Wallimore FCL 500 High-Temperature Lubricating Grease for Food Machinery

Coating Line Light Conveyor Chain Lubrication

Painting line working conditions

- Low Speed, Heavy Load
- High Temperature
- Moisture and Water Vapor
- Chemical Corrosion

Application

Lubrication Point	Temperature Range	Recommended Products
Sprocket Slide Bearing Rotary Wheel Bearing	＜250°C	Wallimore HT 280 High Temperature Chain Grease Wallimore FMZ 350 High Temperature Chain Grease
	＞250°C	Wallimore FMZ 555 Perfluoropolyether (PFPE) Grease
Traction Chain	＜250°C	Wallimore HT 280 High Temperature Chain Grease Wallimore FMZ 350 High Temperature Chain Grease
	＞250°C	Wallimore FMZ 555 Perfluoropolyether (PFPE) Grease
Traction Chain	＜250°C	Coomcool Chain HT OV 180 High Temperature Chain Oil for Spray Lines
	＞250°C	Coomcool Chain HT OV 260 High Temperature Chain Oil for Spray Lines

Common curing temperature

- Dip Coating: 130 - 150°C
- Spray Coating: 160 - 180°C
- Electrophoretic Coating: 180 - 200°C
- Electrostatic Powder Coating: 200 - 230°C
- Nylon, Teflon Coating: 420 - 450°C
- Enamel, Stainless Steel: 560 - 750°C

Conventional industry

- Sheet Metal Parts
- Plastic Parts
- Leather Manufacturing
- Home Appliance Manufacturing
- Initial Equipment Lubrication
- Bicycle and Motorcycle Chains
- Piano, Woodwork, and Furniture Spraying
- Elevator Traction Machine Chains

Paint Mist Flocculant

Background

With the development of the coating industry, various types of paints have emerged in the market, and most of these paints offer excellent quality and performance.

During the coating process, the utilization rate of paint generally ranges from 40% to 60%. The remaining paint forms overspray mist in the spray booth, severely polluting the spraying environment and posing potential health risks to humans.

If paint falls into the water, failing to separate the paint from the recirculated water before treatment can result in very high costs.

Solution

During the spraying process, paint mist coagulants are typically added to the recirculated water in the spray booth, where they come into contact with paint particles, causing them to destabilize and lose adhesion.

Ordinary paint mist coagulants can only achieve the effect of destabilization. To further cause the destabilized paint to flocculate and aggregate into clumps, which then float to the surface for separation from the water, an additional type of paint flocculant with adsorption and bridging properties is usually required in conjunction with the paint mist coagulant.

After treatment with the paint flocculant, the recirculated water can be manually skimmed or used with a skimmer to remove the floating paint sludge from the surface, maintaining the normal operation of the recirculated water.

Product advantages

- Improve the quality of recirculated water, extend its usage lifespan, reduce the frequency of tank cleaning, and decrease cleaning and water costs. This results in a better spray booth environment and increased work efficiency.
- Lower the COD (Chemical Oxygen Demand) content in recirculated water, improve odor issues, reduce cleaning load, and decrease wastewater treatment costs.
- Paint sludge remains non-sticky and odorless, floating on the water surface, making it easy to clean, dewater, and suitable for incineration, which helps reduce waste disposal costs.
- Aid in maintaining spray booth coating equipment by completely removing paint adhesion, preventing pipeline blockages, and ensuring smooth circulation of recirculated water.

Application range

- Solvent-Based Paint
- Water-Based Paint
- Two-Component Epoxy Paint
- Two-Component Clear Coat
- High-Solid Paint
- Alkyd Enamel Paint
- Acrylic Paint
- Polyurethane Paint

Products recommended

- Coomcool PMF 300A Paint Mist Coagulant
- Coomcool PMF 400B Paint Flocculant

Wire Rope and Cable Lubricant

Steel cables generally operate outdoors and are in long-term contact with the external environment. Therefore, they are affected by water, water vapor, and dust. In some conditions, they may also be exposed to chemical gases, or operate under high temperatures, high loads, abrasive dirt, and fibers.

Wire rope wear causes

- Corrosion

Water and temperature changes cause corrosion both inside and outside the steel cable. Rainwater, snowmelt, and condensation can penetrate the steel cable. If the lubricant used is not waterproof, dries out, or does not penetrate internally, damage is only a matter of time.

- Wear

Wear from winding during lifting processes; factors such as dirt, rust, and hardened grease cause wear on the steel cable and pulleys.

- Internal Friction

Dust, dirt, and lubricants mix into a paste that accelerates internal wear.

Ideal lubricant requirements

- Penetrates to the Core: Extends to the load-bearing surfaces.
- Good Load-Bearing Capacity: Minimizes wear during stops and starts.
- Prevents Contaminants: Stops pollutants from entering the inside and outside of the chain.
- Removes Old Lubricant: Allows new lubricant to penetrate.
- Removes Moisture

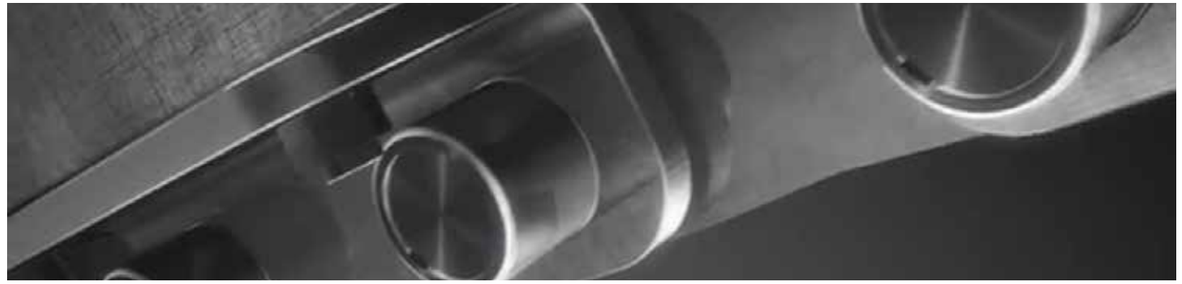
Steel Wire Rope and Cable Lubricant Viscosity Selection

Types	Applications	Viscosity (40°C) / (mm^2/s)	ISO VG
Static Rope	Suspension Rope	460 - 680	460、680
	Aerial Cable (Cable Car)	320 - 680	320、460、680
Dynamic Rope	Mining Hoist	220 - 460	220、320、460
	Construction Machinery, Civil Engineering Machinery	220 - 320	220、320
	Overhead Crane, Hoist Indoor Outdoor	 220 - 320 320 - 460	 220、320 320、460

Products recommended

Lubrication Requirements	Lubricant Selection	Features
General Penetrating Lubricating Oil	Coomcool WRP 30	Full Lubrication of the Steel Wire Rope Interior
Universal External ProtectionUniversal External Protection	Coomcool WRP 40	Powerful Protection Capability
	Wallimore EAG 25	Biodegradable Steel Wire Rope Grease
Combined Lubrication	Coomcool WRP 30+40	Good Internal Lubrication and External Protection

Antifriction Coating and Chain Repair



The friction-reducing coating is an additional method for protecting chains. Coomcool's friction-reducing coating consists of solid lubricants, curing agents, solvents, and other components. Through processes such as surface treatment, coating, and firing to cure, an effective protective film is formed on the chain surface. This significantly reduces both dynamic and static friction coefficients of the chain, while enhancing surface hardness, sealing, acid-alkali-salt corrosion resistance, and solvent resistance. It greatly improves the chain's wear resistance, friction reduction, corrosion prevention, and protection against sintering, sticking, and long-term rusting.

Coomcool's friction-reducing coating offers advantages such as wear resistance, friction reduction, and corrosion prevention, providing long-term protection for chains and making it easier to clean off coking and dust accumulation.

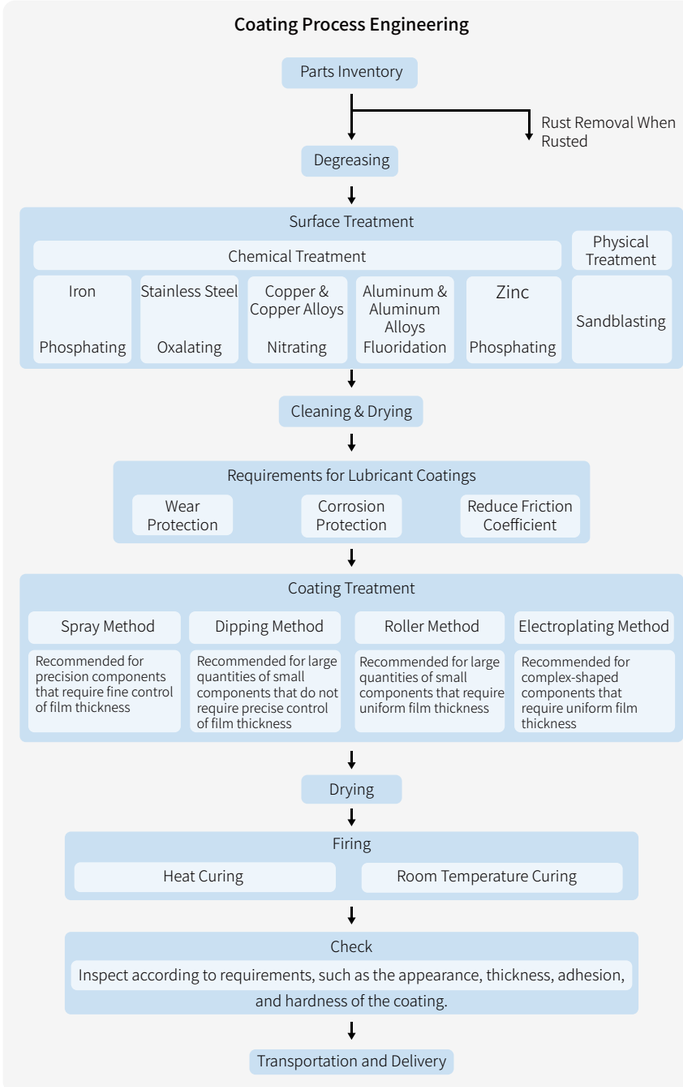
Coomcool's friction-reducing coating can also be used on bearings, gears, screws, guides, bolts, nuts, gaskets, and other components, or as a long-term rust prevention base layer for parts, offering excellent protection.

Product advantages

- Dry and Clean Texture: Not affected by dust, dirt, or humidity.
- Permanent Lubrication: Does not age, evaporate, or oxidize.
- Rust Protection: Provides rust protection without the need for electroplating.
- Flame Retardant: Protects without contaminating metals and plastics.
- Adjustable Film Thickness: Controlled based on actual load capacity.
- Comprehensive Lubrication: Effective even after long periods of inactivity

Products recommended

- Coomcool DC PTFE Friction-Reducing Series
- Coomcool DC EP Anti-Wear Series
- Coomcool DC WC Water-Resistant and Corrosion-Resistant Series



Chain rust remover

Suitable for the degreasing and rust removal processes of ferrous and non-ferrous metal parts. During the degreasing and rust removal process, the dirt settles at the bottom of the solution, keeping the liquid surface clean and unaffected by the cleaning parts' exit.

- Uniform and Thorough Rust Removal: Strong removal of rust, oxidation scale, and other impurities from steel surfaces.
- Rust Removal and Protection in One Step: Prevents secondary rust formation.
- Long Rust Protection Period: Provides certain rust resistance to steel parts when stored in a ventilated and dry place.
- Good Corrosion Inhibition: Effective in preventing corrosion on steel and iron parts.
- Water-Based Product: Free of heavy metal ions and does not pollute the environment.

Products recommended

- Coomcool Chain CRR 50 Chain Rust Remover

Carbon deposit cleaner

Widely used for removing carbon deposits, heavy oil, and sintered hard dirt from components such as engines, valves, pistons, nozzles, and valves of gasoline engines, diesel engines, aircraft engines, internal combustion locomotives, air compressors, and fuel equipment.

- Strong Alkalinity: The product has strong penetration and dispersion capabilities, enabling rapid removal of high-temperature carbon deposits and asphaltic dirt formed on engine parts.
- Maintains Optimal Working Condition: Helps keep cleaned components in good working condition, prevents localized metal overheating, improves fuel atomization, enhances engine power, saves fuel and lubricating oil, and extends the lifespan of parts.
- Safe for Use: Contains no controlled environmental substances, is non-toxic to humans and the environment, and is non-corrosive to metals, ensuring safe usage.

Products recommended

- Coomcool CLN CDC 20 Carbon Deposit Cleaner

Chain rust inhibitor

For long-term and protective rust prevention of outdoor chain components/structures:

- Forms a Thick Wax Coating: Provides robust protection.
- Operating Temperature: -25°C to 120°C
- Rust Protection Duration: Up to 2 years

Products recommended

- Coomcool Chain CRI 30 Chain Rust Inhibitor

High temperature chain grease

- Extremely Long Service Life at High Temperatures: Low residue, does not cause bearing seizure.
- Suitable for Greasing and Lubricating: For chain walking wheels and guide wheel bearings.
- Resistant to Acids, Alkalis, and Various Solvents: Resistant to radiation and non-reactive with oxygen.
- Extended Greasing Interval at High Temperatures: Can last up to 6-12 months.

Products recommended

- Wallimore Chain HCG 500 High-Temperature Chain Grease
- Wallimore FMZ 555 Perfluoro-polyether Lubricating Grease

Chain spray

- Suitable for Special Environments and High-Speed Conditions: Special lubricant for these applications.
- Colorless and Free of Silicone Resins: Does not contain silicone.
- Strong Adhesion: Remains in place even with vibration.
- Stable Chemical Properties: Corrosion protection lasting up to 1 year.

Products recommended

- Wallimore 7084 High-Adhesion Chain Spray
- Wallimore 7088 High-Adhesion Chain Spray

High temperature anti-seize grease

- Excellent Flame Resistance: Suitable for high-temperature, non-flame environments.
- Strong Protective Properties: Ensures lubrication components are protected from external environmental damage.
- Operating Temperature: Long-term use up to 300°C, with short-term maximum up to 600°C.
- Applicable for: Lubrication of incinerators, regeneration furnaces, regeneration exhaust machines, and high-temperature chains.

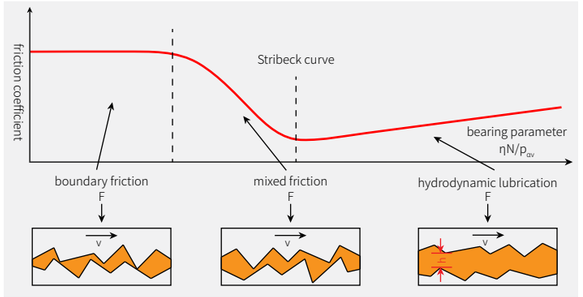
Products recommended

- Wallimore WG 1100 High-Temperature Anti-Seize Grease

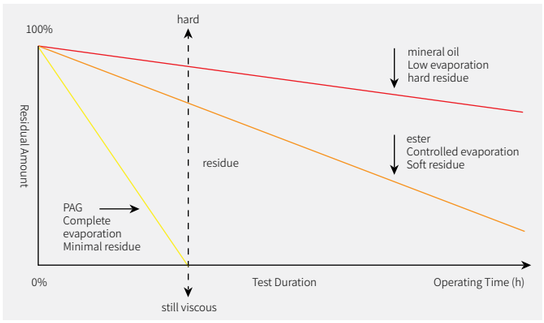
Chain Lubrication Challenges

Chain lubrication is an interesting challenge for the following reasons:

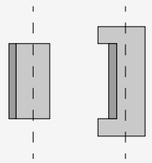
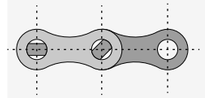
- Mechanical Motion: Causes friction and boundary lubrication of mixed components. At low speeds, fluid dynamic lubrication may be absent, making these friction points relatively difficult to access.
- Friction Points: Mainly involve linear contact with high surface pressure and impact loads.
- External Oil Film: Protects against corrosion but does not prevent internal wear of the chain.

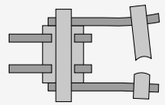
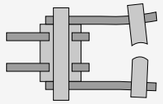
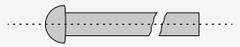
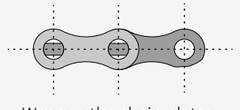
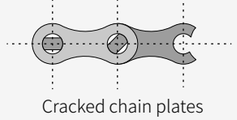


Why choose synthetic lubricants?



Synthetic lubricants offer superior performance

Problem	Potential Cause	Solution
 pin or bushing wear	• Overload • Insufficient lubrication	• Proper lubrication • Replace the chain when elongation exceeds functional limits
 pin rotation	• Overload • Insufficient lubrication	• Replace the chain as soon as possible
excessive noise	• Chain tension too tight or too loose • Chain blockage • Loose chain guard or bearing	• Adjust the alignment or tension • Inspect and remove obstacles • Tighten bolts and check bearings
chain vibration	• Excessive chain slack • Excessive center distance • Rigid connections	• Adjust the chain tension • Install idler wheels • Lubricate or replace the chain
wear on the inner side of chain links and one side of the sprocket teeth	• displacement	• Align the sprockets and shafts properly • Replace the chain and sprockets if necessary
Stiff chain	• Excessive load • Misalignment • Insufficient lubrication • Corrosion	• Replace with a chain of appropriate strength • Check alignment • Clean and establish proper lubrication • Replace with a corrosion-resistant chain
Chain climbing the sprocket	• Excessive chain wear • Excessive chain slack • Insufficient lubrication • Sprocket tooth wear	• Replace the chain • Install a tensioning device if necessary • Replace the sprockets
Chain wrapping around the sprocket	• Excessive center distance • Chain wear elongation • Sprocket wear or deformation	• Install an idler • Replace the chain • Replace the sprockets

Problem	Potential Cause	Solution
 Broken pin	• Overload	• Check the drive system to determine the cause of the high load • Redesign the drive system using a chain with a higher load capacity
 Broken pin (center position)	• The load exceeds the dynamic load capacity of the pin	• Check the drive system to identify the cause of the high load • Redesign the drive system with a chain that has a higher load capacity
 Offset link pin broken	• Overload	• Avoid using a pitch offset link • Redesign the drive system with a chain of higher load capacity
 Fatigue failure	• The load exceeds the dynamic load capacity of the chain	• Check the drive system to identify the cause of the high load • Redesign the drive system with a chain that has a higher load capacity
 Cracking	• Stress corrosion cracking	• Prevent chain corrosion • Install corrosion-resistant chain
 Roller damage	• Foreign material between the chain and sprocket • Fatigue failure	• Redesign the chain speed and load • Protect the drive system to prevent foreign material from entering
 Wear on the chain plates	• Wear on the bottom of the chain plates due to friction from the guide rails	• Replace the chain when wear exceeds 5% of the plate height
 Cracked chain plates	• Extreme overload	• Check the drive system to identify the cause of the high load • Redesign the drive system with a chain of higher load capacity

Chain Damage Form

Chain systems are widely used in various drive and conveyor applications. However, continuous operation of the chain over time can lead to issues such as wear, elongation, and breakage.

Damage to the chain system is often related to factors such as excessive load, impact loading, running speed that is too slow or too fast, insufficient lubrication, and corrosion from external substances.

If abnormalities are detected in the chain components, timely measures should be taken to extend the service life of the chain system.

The importance of chain lubrication

A chain that is inadequately lubricated cannot handle high loads. If the chain is not properly lubricated or cleaned, wear and damage on the contact surfaces will reduce the transmission efficiency. Therefore, selecting the right lubricant and performing regular maintenance positively impact the chain's lifespan.

To achieve effective chain lubrication, consider the following factors:

- Appropriate viscosity
- Lubricant flow characteristics during its application cycle
- Re-lubrication intervals
- Applying the correct amount of lubricant to the necessary points at the right time
- Lubrication method
- Operating temperature range