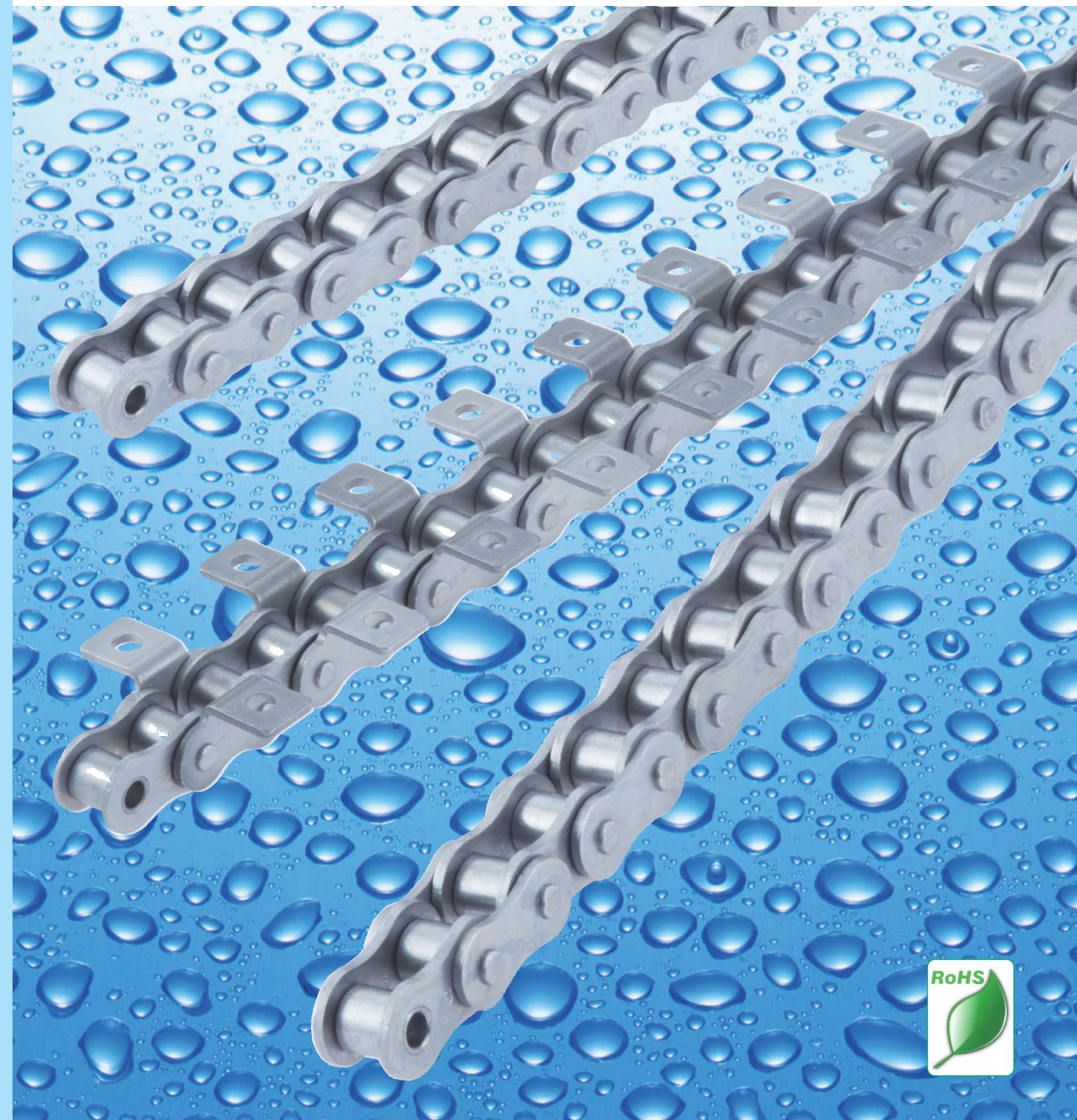


**SUPERIOR  
CORROSION  
RESISTANCE**



# TLH ROLLER CHAIN



## **ORIENTAL CHAIN MFG. CO., LTD.**

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E-mail: [ocm@ocm.co.jp](mailto:ocm@ocm.co.jp)

<https://www.ocm.co.jp/en/>  
<http://www.rollerchain.com>



**ISO 9001**

JQA-1248



**ISO 14001**

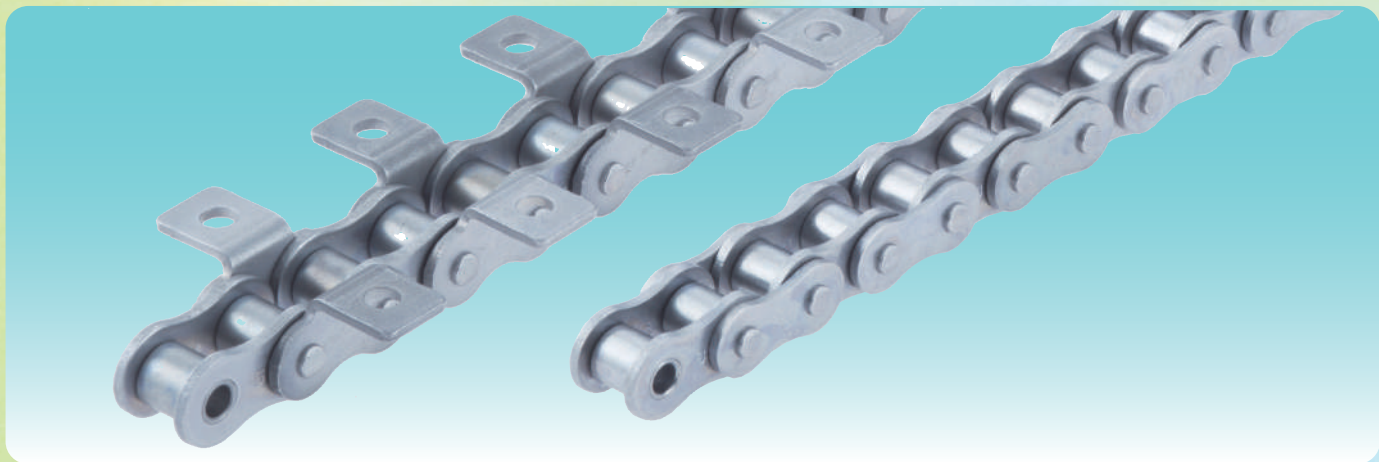
JQA-EM7460





# TLH Roller Chain has Excellent Corrosion Resistance, even under Severe Conditions.

Applying a special three-layered coating to standard roller chain, TLH roller chain is superior to chains surface-treated with conventional methods, providing significantly improved corrosion resistance.



## SURFACE COATING AND SELF-REPAIRING PROPERTIES

The superior corrosion-resistance TLH roller chain consists of three layers of special coating. Each layer blocks water and oxygen, thereby preventing corrosion. An interdiffusion surface is bonded tightly in the boundary between the second and third layers. This prevents red rust for a prolonged period of time. The third coat, or the top coat, has a self-repairing effect, by which the coating molecules gather around the scratch and cover it over.

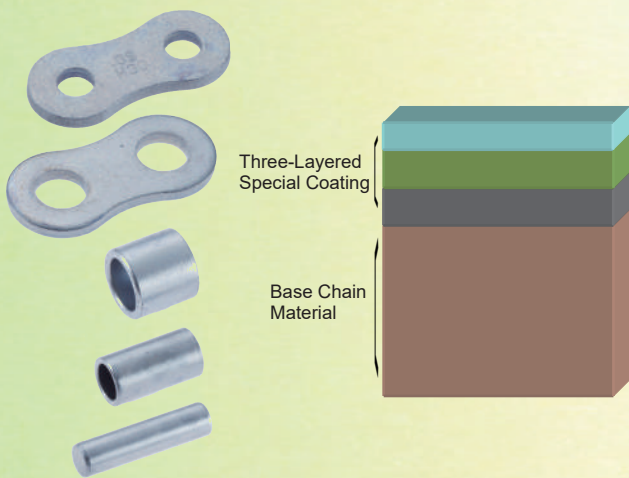
## OPERATING TEMPERATURE RANGE

From -10°C to +150°C (14°F to 302°F)  
NOTE: Please consult with us if the ambient temperature is 60°C (140°F) or higher, as special specifications are required.

## CHAIN STRENGTH

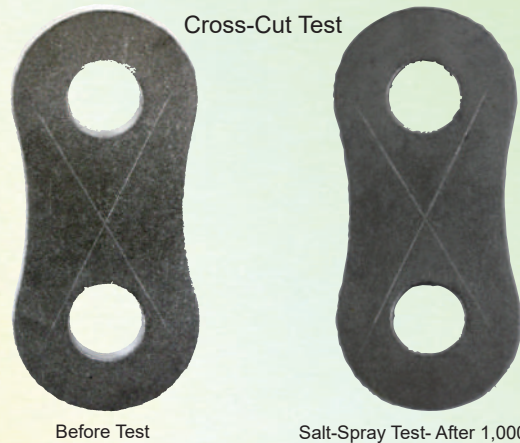
The standard roller chain surface treated with conventional methods has a decreased strength versus TLH roller chain. TLH has no decrease in strength and has the same levels of tensile strength and allowable tension versus standard roller chain.

## CONSTRUCTION OF SURFACE COATING



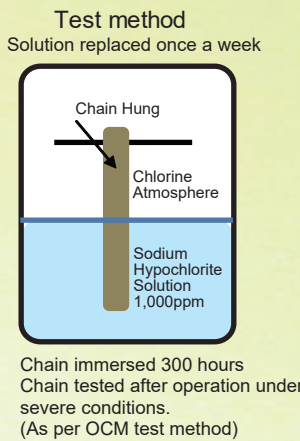
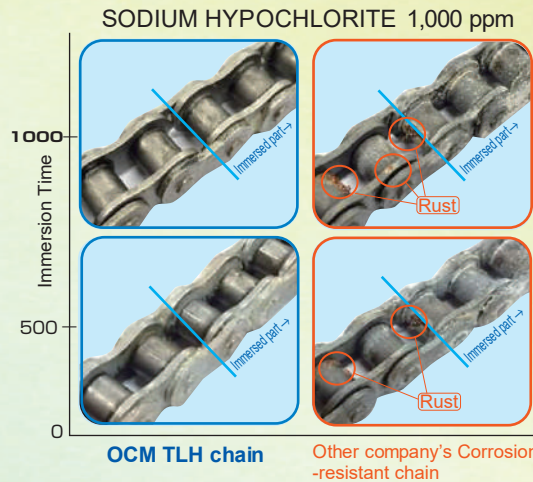
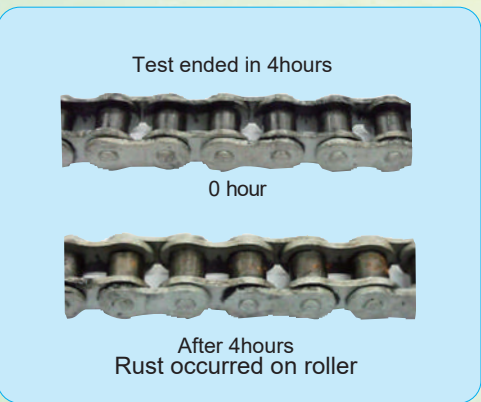
## SELF-REPAIRING PROPERTIES

Even if a scratch or crack is formed, it is covered by the special coating, thereby inhibiting rust.



## COMPARISON OF CORROSION RESISTANCE 1. Sodium Hypochlorite Test

Internal Test result with Super Shield Chain



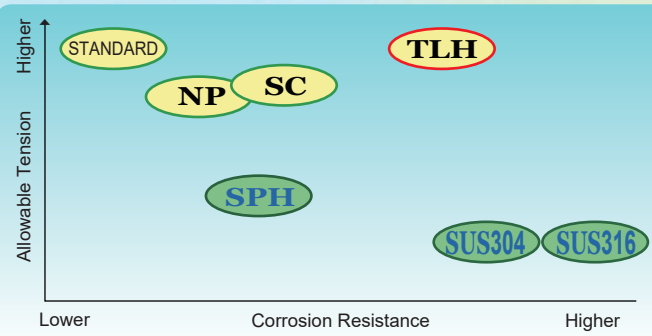
## COMPARISON OF CORROSION RESISTANCE 2. Salt-Spray Test(as per JIS Z 2371)

No rust occurred after 1,000 hours, thanks to high corrosion resistance provided by Self-Repairing properties. Chain tested after operation under severe conditions.

Chain Type \ Time	0 hour	500 hours	1000 hours
Nickel Plated Roller Chain [NP]			
Super Shield Chain [SC]			
TLH Roller Chain [TLH]			

## Corrosion Resistance and Allowable Tension

Comparison between TLH Roller Chain and other models



- Standard: Standard Roller Chain  
- NP: Nickel Plated Roller Chain  
- SC: Super Shield Chain

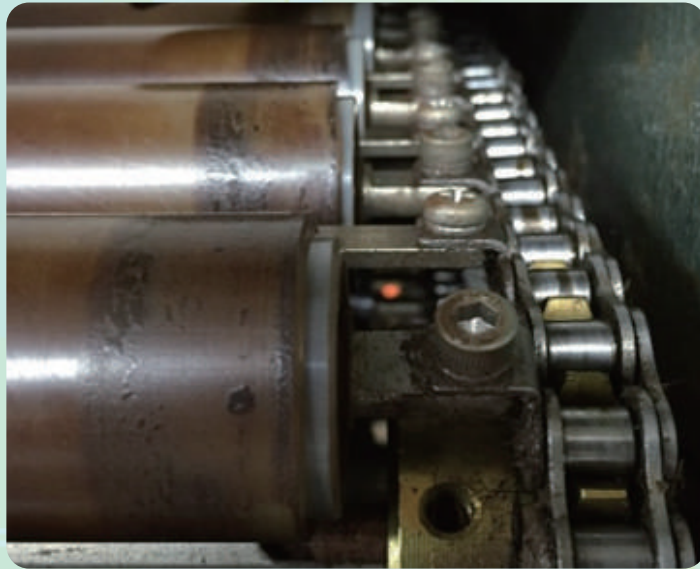
- SUS: Stainless Steel Chain  
- SAC: Stainless Steel Chain  
- SPH: Stainless Steel Chain

- Standard Roller Chain  
Standard Carbon Steel
- Nickel Plated Roller Chain [NP]  
Special nickel plating is applied to each part.  
Nickel Plated Roller Chain has lower allowable tension than standard roller chain by approximately 20%.
- Super Shield Chain [SC]  
Special coating is applied to standard roller chain.  
Super Shield Chain [SC] has lower allowable tension than standard roller chain by approximately 10%.
- Stainless Steel Roller Chain [SUS]  
Stainless steel equivalent to SUS304 is used.
- Stainless Steel Roller Chain [SAC]  
Stainless steel equivalent to SUS316 is used.
- Stainless Roller Chain [SPH]  
Precipitation-hardened stainless steel is used for the pins, bushings, and rollers. The plates are SUS304 or equivalent.

TLH chain provides no decrease in allowable tension, as low coating temperature does not affect the hardness of parts.



# Application Examples of TLH Roller Chain



**Industry: Linen Supply Industry**

**Equipment: Automatic wet hand towel counting and packing machine.**

**Use Environment: Chlorine gas**

Rust was generated from Super Shield Chain used in one year of chlorine gas atmosphere. The rust flakes caused the air conditioner to break down. After replacing to TLH Roller Chain, the chain has not been rusted for three plus years and the air conditioner has not broken down since.



**Industry: Papermaking Industry**

**Equipment: Paper packaging line**

**Use Environment: Paper dust atmosphere without lubrication**

Degreased chains were used to transfer paper so that no oil would attach to the product. However, the degreased chains rusted, and the rust attached to the paper. By adopting a non-lubricated TLH Roller Chain, the problem never recurred.



**Industry: Steel Industry**

**Equipment: Iron-making line**

**Use Environment: Vapor and Dust atmosphere**

In a high-temperature of 200°C to 400°C (392°F to 752°F) environment, where the chains were exposed to dust containing iron oxide vapor, the conventional standard chain had a usable life of only one year. TLH Roller Chain was adopted, extending the service limit beyond one year.



**Industry: Food Industry**

**Equipment: Vegetable transfer line**

**Use Environment: Muddy water**

Exposed to muddy water, the stainless steel chains elongated quickly due to wear and were subject to maintenance four times a year. The conventional stainless steel chains were replaced with TLH Roller Chain, which went beyond one year without maintenance.



**Industry: Fertilizer Industry**

**Equipment: Chemical fertilizer transfer system**

**Use Environment: Fertilizer powder scatter**

Chemical fertilizer dust, made of nitrogen, phosphate, and potassium, accumulated on the chains, which rusted and reached the service limit in half a year. TLH Roller Chain did not reach the service limit even after 19 months of use without maintenance.



**Industry: Fisheries Industry**

**Equipment: Clam washing system**

**Use Environment: Seawater**

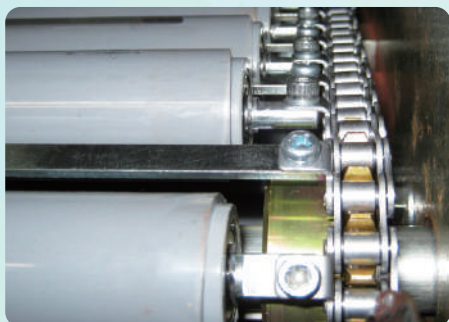
Exposed to seawater, special stainless steel chains became worn and elongated quickly. TLH Roller Chain was adopted and did not rust, wear, or elongate, even after five months of use.



# Monitoring after installation and Test Data

## Linen Supply Industry / Automatic wet hand towel counting and packing machine

Super Shield Chain was used in a sodium hypochlorite environment, rusting in six months or so, which was a problem. It was replaced with TLH Roller Chain, which did not rust after 54 months of use and is still operating normally even after 66 months of use.



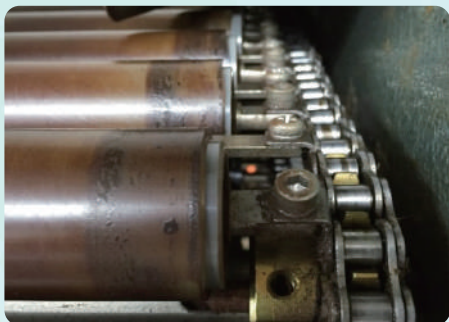
After 0 month



After 18 months



After 30 months



After 42 months



After 54 months



After 66 months

- Sodium hypochlorite environment  
Chlorine gas is generated if a mild  
acidic solution, with strong bactericidal  
power, is used.

Super Shield Chain - After 12 months



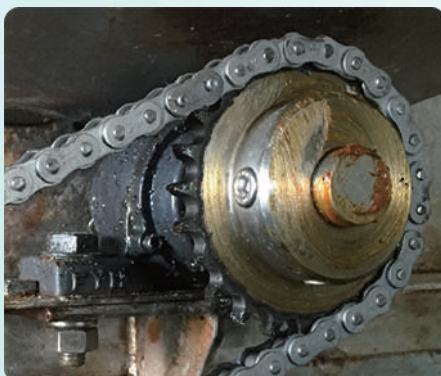
TLH Roller Chain -  
After 66 months

## Fisheries Industry / Drive chains

Under the clam seawater washing process stainless steel chains wore and elongated quickly, which was a problem. This problem did not recur after the chains were replaced with TLH Roller Chain.



After 1 month



After 2 months



After 3 months



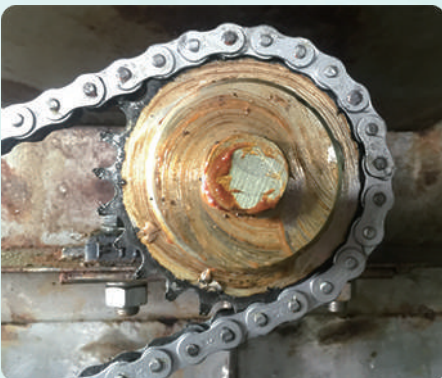
After 4 months



After 5 months



After 6 months



After 7 months



After 8 months



After 9 months



After 10 months



After 11 months



After 12 months

## Beverage Industry / Carton filling and transfer line

Stainless steel chains were used for the beverage filling system but they wore and elongated quickly, which was a problem. They were replaced with TLH Roller Chain, which has not elongated or rusted, even after six months of use without maintenance



After 0 month



After 4 months



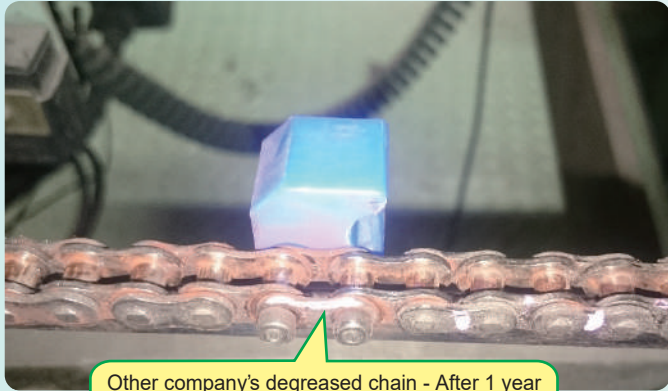
After 6 months



# Monitoring after installation and Test Data

## Papermaking Industry / Paper packaging line

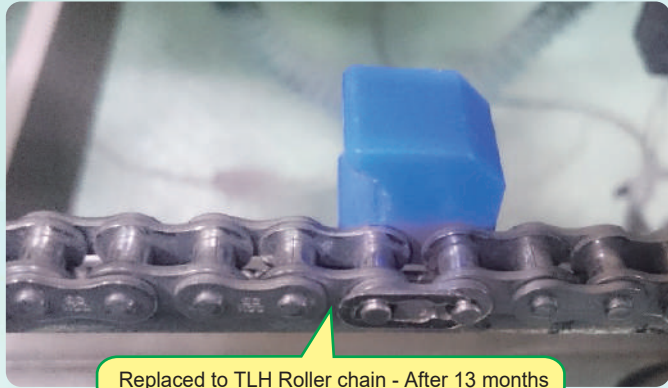
In the paper packaging line, the degreased chains were used so that they were free of oil or paper dust, but they rusted, causing a problem. They were replaced with TLH Roller Chain, which has not rusted even after 13 months of use.



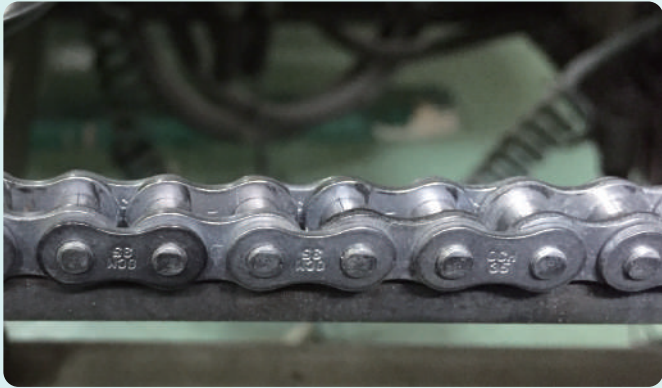
Other company's degreased chain - After 1 year



Replaced to TLH Roller chain - After 0 month




Replaced to TLH Roller chain - After 13 months




Replaced to TLH Roller chain - After 4 months


## 35TLH Appearance check (after washing)



Pin



Bush O.D.




Bush I.D.

Wear Status

	35-TLH
Pin O.D.	0.005 mm or less
Bush O.D.	0.005 mm or less
Bush I.D.	0.005 mm or less

After use, the amount of wear on the pin outside diameter, bushing outside diameter, bushing hole diameter, etc. was 0.005 mm or less, and the TLH layer remained. Thanks to the TLH layer, no rust was observed. In addition, the tensile strength did not decrease and was within the internal standard range.



35-TLH

Tensile Strength Test

	35-TLH
JIS Standard Value	7.9(kN)
Measured value	10.9(kN)
Cut Point	Inner Plate
Judgment	Within the Standard Range

Wear Resistance

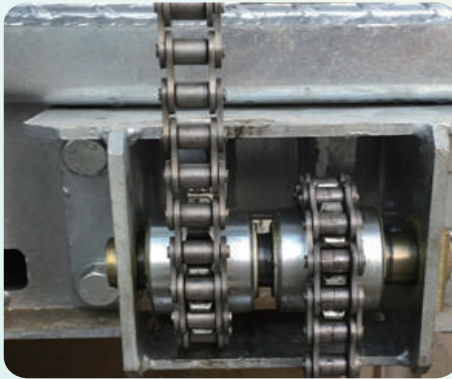
35-TLH
Elongation: 0.07% (without initial antirust oil application)

## Multistory Parking Industry / Drive Chain

In the multi-story car park, the chains were used outdoors, where they were exposed to high humidity with rain, mud, dust, etc.



Outdoor multi-story car park



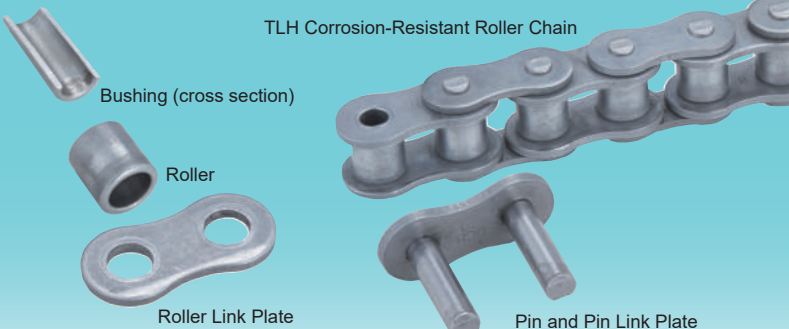
Drive Chain



Hoisting Chain

## Hoisting Test

The TLH Roller Chain did not rust after 26,000 hoisting test cycles (outdoors) for 8 months.



TLH Corrosion-Resistant Roller Chain

Bushing (cross section)

Roller

Roller Link Plate

Pin and Pin Link Plate

Chain Parts After Use (After Washing)

## RoHS-Compliant

Corrosion-resistant Roller Chain TLH Series is environmentally friendly and does not contain hazardous substances, such as hexavalent chromium, lead, cadmium, or mercury.

## Available with Various Models

TLH treatment is available with various models.

Please note that TLH series is unavailable under the following conditions.

- a) If the chain is in direct contact with food, or there is a possibility that abrasion powder may be mixed into the food.
  - b) If the chain is used where the TLH coating can be scraped off, such as with an abrasive powder. The coating flakes can fall into the food and cause a problem.
- Please feel free to contact us when using a chain in cases such as a) and b) above.



