

# ENVIRONMENTALLY RESISTANT CHAIN

These are chains with high resistance to corrosion due to special coatings or materials that are specially designed for use in humid and corrosive working environments. Based on different performance requirements and cost considerations, TYC provides several chain options to choose from, including Nickel-plated chain, Zinc-plated chain, Optimum-coated chain & stainless steel chain.

## Nickel-Plated (NP) / Zinc-Plated (ZP)

Nickel or Zinc plated finish gives good corrosion resistant characteristics and is available for all chain sizes. Nickel or Zinc plating of all components is performed prior to chain assembly, which results in excellent coverage during the plating process. Electroless Nickel plating is also available upon request.

## Optimum-Coated

TYC's optimum coating provides excellent corrosion resistance and is highly recommended for use in saltwater applications, outdoor applications, or where high humidity is present. TYC optimum coated chain is proved to withstand 500 hours of salt spray test according to ASTM B117 test method. It is a better choice over stainless steel chains in terms of cost and when tensile strength is required. Optimum coating is not recommended for direct contact with food.

### Anti-corrosive test

Condition: 5% saline solution spray on chain in closed salt spray chamber

After 500 hours of salt spray test, no rust on Optimum-coated parts surface

### Comparison at 500 hours:



OTHER COMMON PLATING METHOD

OPTIMUM COATING

## Stainless Steel (SS)

This chain is made to the same principle dimensions as ANSI and ISO standard roller chains and is made from stainless steel material. Stainless steel roller chain inherently has excellent corrosion resistance and can serve in unusually high or low temperature or corrosive environments.

TYC offers stainless steel chains made from SUS304 grade steel, or SUS316 grade steel for even better corrosion resistance, in places where the chain will be exposed to harsh chemicals. Consult TYC for specific chemical exposure questions.

In addition to SUS304 & SUS316, Precipitation Hardened Stainless Steel (PHSS) is also available. PHSS offers higher strength and hardness level after undergoing a heat-treatment process.

TYC PHSS series roller chains are a combination of SUS304 & SUS600 materials. The link plates are made of SUS304 material and the rollers, pins and bushings are made of hardened SUS600 (with the exception of large rollers, which are to be made of SUS304 material).

Series	Treatment	Available Chain Sizes	Salt Spray Test	Characteristics and Applications
BLK	Black oxide	All sizes	●	1. Economical coating option with no hydrogen embrittlement 2. Stylish finish with slight corrosion resistant ability
NP	Nickel-plated	All sizes	●	See previous page
ZP	Zinc-plated	All sizes	●	See previous page
PZC	Phosphate coating	All sizes	●	Economical coating option with no hydrogen embrittlement
ZYCP	Yellow zinc plating	All sizes Also commonly used for screws, nuts, anchors and sprockets	●	Higher corrosion resistance than nickel plated chains
OPTIMUM	Water based inorganic coating	ANSI 35-200 chain ISO 08B-32B chain	●	See previous page
304SS	—	ANSI 25-140 chain ISO 05B-20B chain	●	1. Anti-corrosive 2. Suitable for food processing, chemical or pharmaceutical related applications
600SS (PHSS)	—	ANSI 35-80 chain	●	1. Heat treatable material. Can sustain high load 2. Can be used in places where strength and corrosion resistance are both required, as well as in applications requiring higher working load and resistance to galling 3. Maximum allowable load is 50% higher than 304SS chain
316SS	—	ANSI 60 & 80 chain ANSI C2050 & C2060H double pitch chains	●	1. High corrosion-resistance 2. Better resistance to extreme temperature than 304SS 3. Maximum allowable load the same as 304SS series

**Corrosion Resistance in Salt Spray Test**  
(According to ASTM B117)

- < 20 hours
- > 24 hours
- > 500 hours
- Rustless