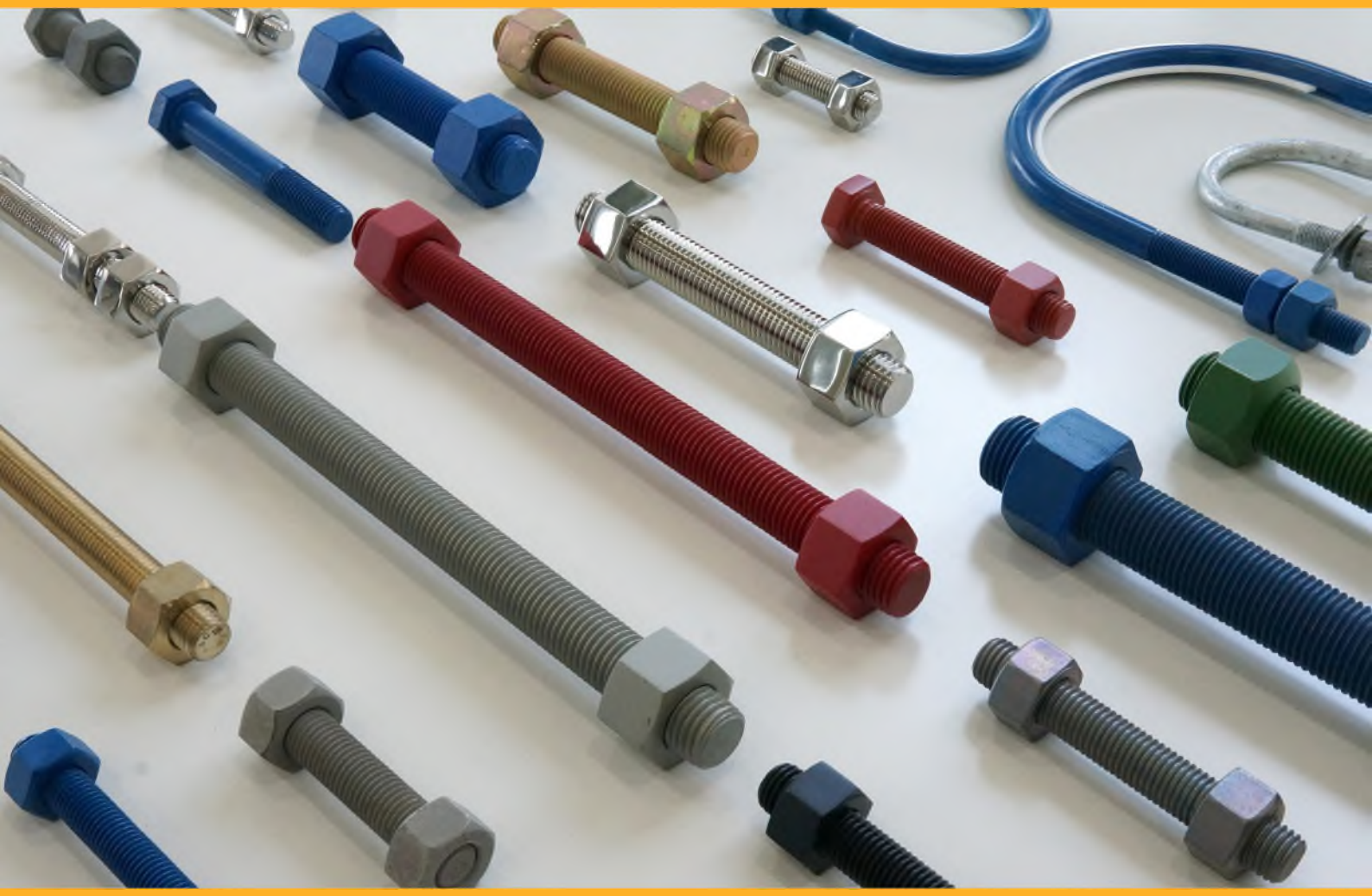
Roc-Master®

Manufacturer & Supply Company



Fasteners • RocCote

Total Piping Solutions

Roc-Master is a leading global supplier of CRA weld overlay clad pipelines, prefabricated pipe spools, subsea pipeline connectors, high pressure pipe fittings, and all types of corrosion-resistant coated fasteners. Meanwhile, we also provide machining, cladding services for valves parts, pressure vessel components and offer turn key solutions for all piping products.

Roc-Master group has four production facilities located in Kunshan, Ji'an, Xuancheng and Jiangyin city with total surface area exceeding 110,000 m^2. The group owns an international team of talents in commercial, technical, production, & quality management, some holding master degree, senior professional titles and other qualifications. Our products and services are widely used in Petrochemical & Refinery, Offshore Platform, FPSO, Long-distance pipeline, Seawater desalination, Nuclear, Power, Hydrogen energy, etc. We have domestic sales offices in China major cities, overseas sales office in Abu Dhabi, Qatar and agents in Italy, Singapore, Malaysia, Thailand, Korea, Oman, Kuwait, Abu Dhabi, Qatar, Brazil, etc. Roc-Master is qualified vendor for CNOOC, CNPC, SINOPEC and is in long-term strategic partnership with global top companies as Shell, BP, Petrobras, ADNOC, Woodside, MODEC, SBM, HHI, Saipem, TechnipFMC, Technip Energies, Fluor, Hanwha Ocean, CIMC, Cosco-shipyard, etc.

Roc-Master Xuancheng facility formally known as Roc-Master Corrosion Resistant Technology (Xuancheng) Co., Ltd., is located at No. 20, Anguo East Road, High-tech Industrial Development Zone, Xuancheng City, Anhui Province.The facility has 2 blocks of 10,000m^2 workshops, 2,000m^2 offices and laboratory, as well as a 4,000m^2 building. Block B is specialized in manufacturing of CRA weld overlay clad piping and piping prefabrication, Block A is focused on production, inspection of RocCote Xylan® coated bolts, welded studs, pipe shoes, U bolts, pipe clamps, sliding pipe supports, etc. Xuancheng facility has a team of experienced engineers in material, NDT, coating, welding, quality with production, technical, management total 100 employees. The company conducts standardized management in accordance with ISO 9001 and holds quality certificates as ISO 14001, ISO 18000, product certificates as NORSOK M650, GOST R, FPC(EN14399).

Xuancheng corrosion-resistant fastener workshop digitalized the entire work flow by adopting ERP visual management. The automated production lines include robot spraying Xylan® coatings, disc cutting production line, automatic chamfering, marking, thread rolling and other machining production lines, automatic hydraulic hot forging production line for hex bolts and nuts, U bolts, high-temperature solution production line, tempering heat treatment production line, sherardizing production line and automatic product packaging line, etc. Inspection equipment includes Rockwell hardness tester, King 3000 Brinell hardness tester, coating thickness gauge, salt spray testing machine, NDT testing, raw material chemical composition, mechanical property, impact test, corrosion resistance testing. All tests can be completed in-house.

Roc-Master can perform Whitford® Xylan®, PTFE, FBE, ceramic, sherardizing coating with annual capacity of Xylan® coating over 5,000 tons and 3,000 tons for incoming material coating. We keep over 600 tons regular stock of corrosion-resistance, high temperature resistance materials type as B7, L7, B7M, L7M, S31803, S32750, S32760, 625, 718, A453 GR.660, Inconel 625, 300 tons stock of nuts in full size range, 10 tons of stock for Whitford® commonly used coating series such as Xylar1, Xylan 1014, 1070, 1424, etc. We have rich experience in technical, production, and quality management with high temperatures & high corrosion resistant materials, such as A453 Gr.660, Incoloy® 718, S32750, S32760, Inconel® 600, and Inconel® 625.

Xuancheng facility is Whitford® QAC facility. The base coat of the fasteners can be zinc-plating, zinc phosphating, manganese phosphating, zinc-nickel plating, Xylar®2, sherardizing, etc. and the top coat is applied with Whitford®1000, 1400 series. The salt spray test can withstand over 2000 hours for products with zinc-plating+Xylan®1424 coated, 5000 hours for zinc-nickel plating, 5000 hours for Zn-Ni+Xylan® coated and 5000 hours for RocCote® sherardizing coated.

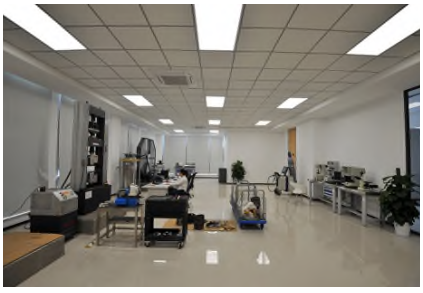













Main Long-term Customers:

Type of Fasteners:

- Hex head bolts and screws, high strength bolts for structural application, full thread stud bolts, double-end stud bolts , socket head cap/set screws, welded stud, anchor bolts, U bolts sets, clamp sets, insulation clamp sets
- Hex nuts, heavy hex nuts, high strength nuts for structural application, lock nuts
- Plain washer, spring washer, square taper washer, DTI
- Non standard fasteners
- API 20E BSL1, BSL2, BSL3 Bolts and Nuts

Coating:

- RocCote® base coating:

  Zinc plating, Zinc Phosphate, Manganese Phosphate, Zn-Ni plating, Whitford® Xylar®2, Whitford® Xylan® 4090 Sheradizing and etc.

- Top coating:

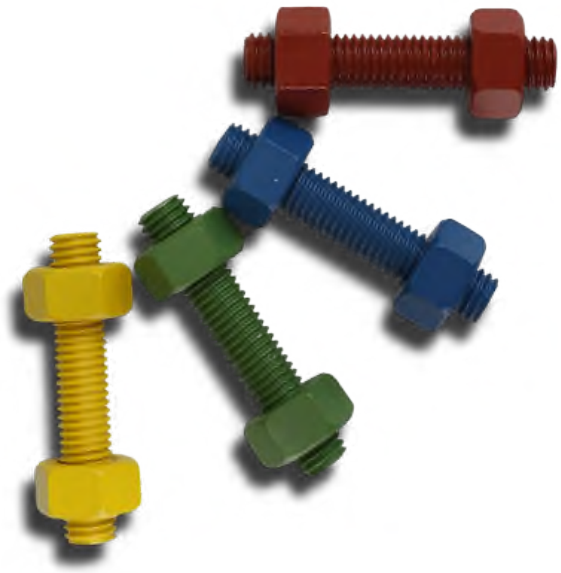
  Whitford® Xylan® 1424, 1014, 1070, 1052

- Color of coating:

  Blue, green, yellow, red, black and etc.

Dimension Standards:

- American standard:
  ASME B18.2.1, ASME B18.2.2
- ISO:
  ISO 4016, ISO 4017, ISO 4032, ISO 4033
- Germany standard:
  DIN 933, DIN 934
- Russia standard :
  GOST R 52643, GOST R 52644, GOST R 52645
- China standard:
  GB, HG, SH, NB, JB



Material:

- Carbon and Alloy Steel

  Bolts:

  A193 Gr.B7, B7M, B16
  A320 Gr.L7, L7M, L43
  A307 Gr.A, B
  A325/A325M TYPE 1
  A490/A490M TYPE 1
  F1554 Gr.36, 55, 105
  A540 Gr.B21, B22, B23, B24
  ISO 898-1/GB 3098-1/GOST R 52627
  Gr.4.8, 5.6, 5.8, 8.8, 10.9, 12.9
  GB/T 1231 Gr.8.8, 10.9
  30CrMo/35CrMo

  Nuts:

  A194 Gr.2H, 2HM, 4, 7, 7M
  A563 Gr.O, A, B, C, D, DH, DH3
  A563M Gr.5, 9, 8S, 10S, 12, 8S3, 10S3
  ISO 898-2/GB3098-2/GOST R
  52628 Gr.4, 5, 8, 10, 12
  GB/T 1231 Gr.8, 10

- Stainless Steel

  Bolts:

  A193 Gr.B8 (S30400), B8C (S34700), B8M (S31600), B8T (S32100), B8MLCuN (S31254)

  A320 Gr.B8 (S30400), B8C (S34700), B8M (S31600), B8T (S32100)

  ISO 3506-1/GB 3098.6 Gr.A2-70, A4-70, A2-80, A4-80

  F593 S304, S304L, S316, S316L
  A453 Gr.660A, 660B, 660C, 660D

  Nuts:

  A194 Gr.8 (TP304), 8C (TP347), 8M (TP316), 8T (TP321), 8MLCuN (S31254)

  ISO 3506-2/GB 3098.15 Gr.A2-70, A4-70, A2-80, A4-80

  F594 S304, S304L, S316, S316L

- Duplex Stainless Steel

  A1082 S31803, S32760

- Nickel and Nickel-Base Alloys

  A1014 (B637) N07718
  B572 N06002
  F468/F468M N06625, N04400
  F467/F467M N06625, N04400
  B572 N06002

- Copper and Copper-Base Alloys

  Aluminum Bronze
  F468/F468M C63000, F467/F467M C63000
  Brass
  F468/F468M C27000, F467/F467M C27000
  H65


Qualification Test Record (QTR)
NORSOK M-650

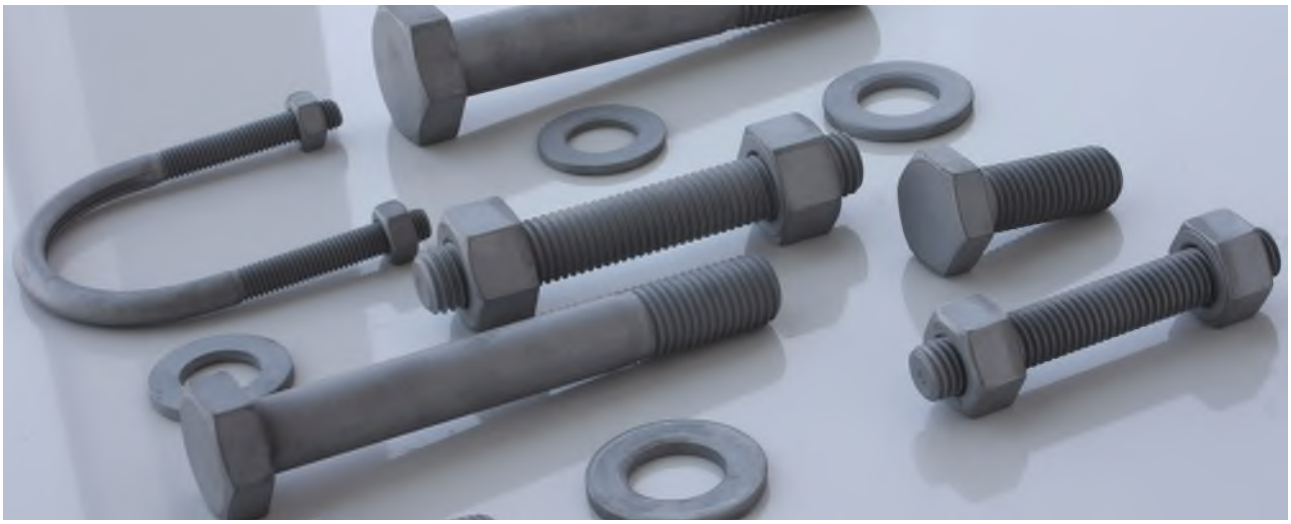

CERTIFICATE OF REGISTRATION
Roc-Master Piping Solutions Ltd.
ISO 9001:2015


CERTIFICATE OF REGISTRATION
Roc-Master Piping Solutions Ltd.(Xuancheng)
ISO 9001:2015

RocCote® HIGH QUALITY Sheradizing

RocCote® sheradizing is a surface protection process where zinc powder forms a zinc-iron alloy layer on the surface of steel using a thermal diffusion method. As a barrier layer, it separates the steel substrate from the surrounding environment, protecting it from radiation. When applied in humid or marine environments, the sherardized layer acts as a sacrificial anode material, providing excellent electrochemical protection for the steel substrate. RocCote® Sherardised fasteners find wide applications in marine, petroleum, chemical, steel structure, bridge construction, and other fields.

RocCote® sherardised coatings offers several advantages, including uniform thickness, high hardness, excellent wear, scratching resistance, strong base metal adhesion, and high corrosion resistance. The coating exhibits good bonding properties. The sherardising process is conducted at a low temperature, ensuring that it does not affect the mechanical properties of the components or result in hydrogen embrittlement. Furthermore, the sherardising process is environmentally friendly and does not cause pollution.



Compare RocCote® sheradizing with other coatings

Item	Zn-plating	Zinc+ Xylan®	Zn-Ni plating	Zn-Ni+Xylan®	Xylar® 2 +Xylan®	HDG	Mechanical zinc plating	Sheradizing
Thickness um	8~13	23~38	8~13	23~38	35~55	45~120	25~110	15~85
Corrosion resisting life	Short	Comparatively long	Long	Comparatively long	Comparatively long	Long	Normal	Long
Hydrogen embrittlement	Yes	No	Yes	No	No	Less	No	No
Effect on component strength	No	No	No	No	No	Yes	Yes	Yes
Effect on component fitness	Less	Less	Less	Less	Less	Large	Less	Less
Level of adhesion	Good	Good	Good	Good	Good	Good	Poor	Good
Uniformity of coating	Good	Preferably	Good	Preferably	Preferably	Very Poor	Normal	Good
The utilization of zinc	High	High	High	High	-	Lower	High	High
Producing efficiency	Comparatively high	Comparatively high	Comparatively high	Comparatively high	Comparatively high	High	Comparatively high	Comparatively high
U-bolt applicability	Good	Preferably	Preferably	Preferably	Preferably	Poor	Poor	Good
Salt spray test time	96	2500	5000	5000	5000	2500	2500	5000
Price level	Cheap	Modest	Expensive	Expensive +	Expensive + +	Cheap	Cheap	Cheap

RocCote® HIGH QUALITY Xylan® COATING

Since 2002, Roc-Master has developed the RocCote® series of high quality anti-corrosion coated fasteners, which are widely used in the Oil & Gas industry. Thanks to the excellent corrosion resistance, wear resistance, and self-lubricating properties of Whitford's high quality Xylan® series coatings, RocCote® bolt products have become a more effective and economical alternative to material types of stainless steel, nickel-based alloy steel, titanium alloy, etc.

RocCote® Advantage

- Reduce friction
- Dry film/self-lubrication
- Scratch resistance
- Corrosion resistance
- Chemical corrosion resistance
- Resistance to temperature changes
- Non-stick/easy to clean
- Environmentally friendly coating

Advanced equipment

- UK Devilbiss Spray gun
- Zahn 3 viscosity cup
- Temperature and humidity meter
- Environmentally friendly spraying equipment
- Circulating drying oven
- Continuous energy-saving oven

Inspection and testing

- Visual inspection
- Acid-base testing:
  5% sulfuric acid
  5% acetic acid
  5% sodium bicarbonate
- 100%bolt and nut compatibility testing
- Curing test
- Adhesion test
- Dry film thickness measurement
- Coating hardness test
- Salt spray test

Effects of using RocCote coating at the Sinopec Puguang Project site: Simplified project management

www.roc-master.com

Roc-Master®

Piping Solutions

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