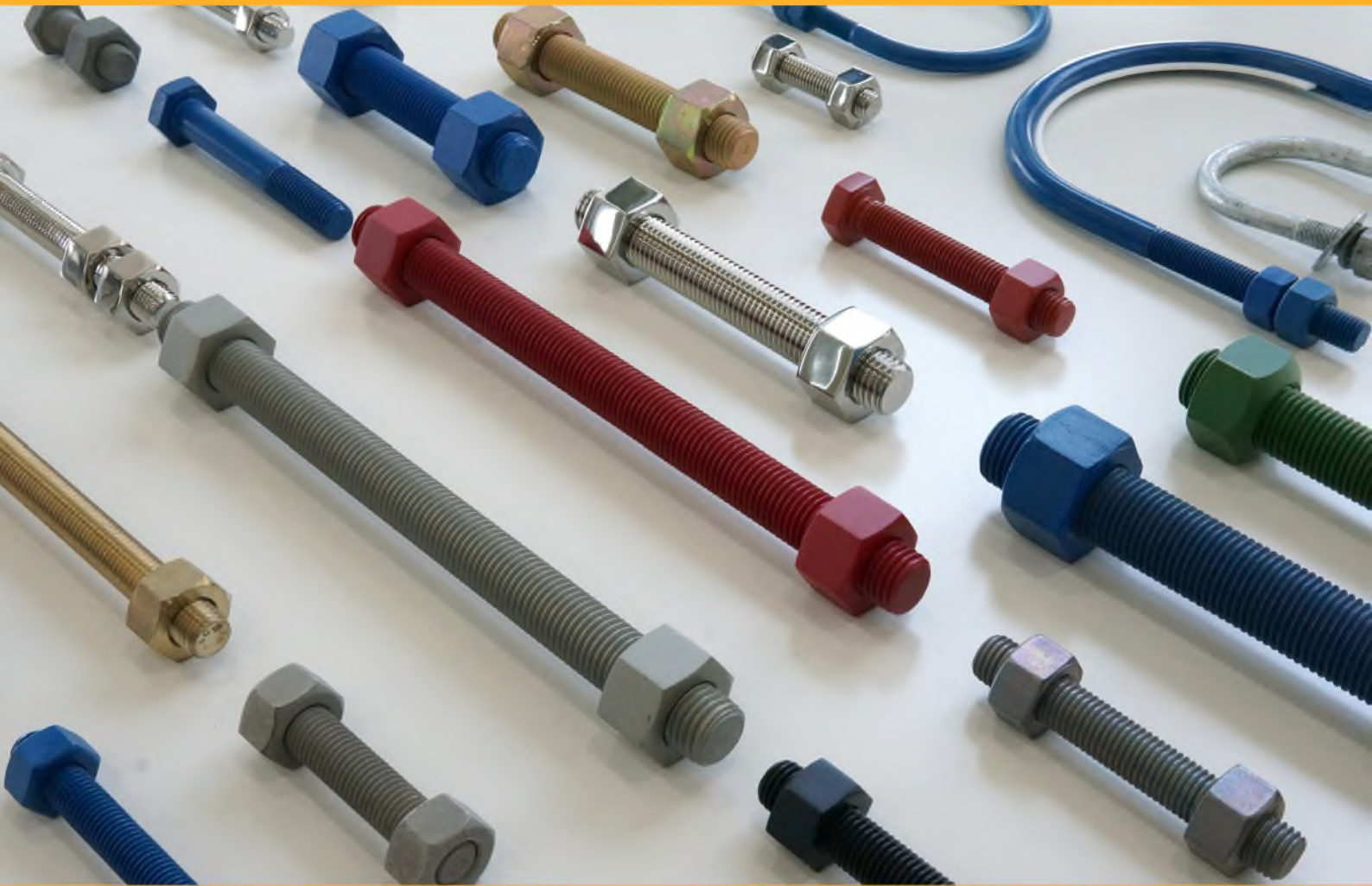




Roc-Master[®]

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 m². 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 10,000m² workshops, 2,000m² offices and laboratory, as well as a 4,000m² 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 Xylan1, 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

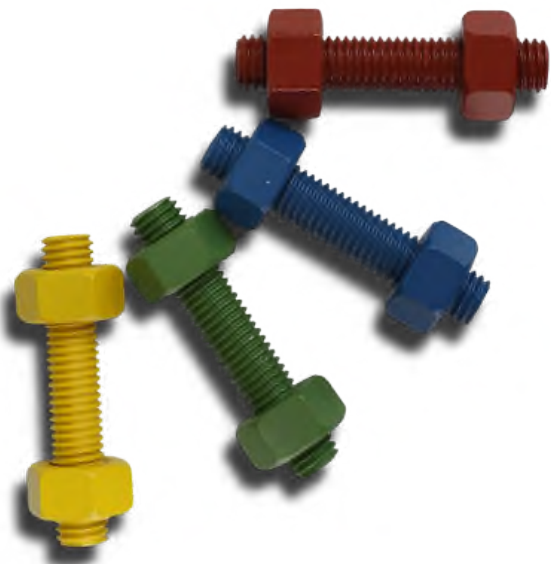


Coating:

- 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

Roc-Master		Qualification Test Record (QTR)		QTR No.																									
Type: NORSOK M-650		QTR No.		Rev. No. 01																									
Manufacturer Name: Roc-Master Piping Solutions Ltd.		Address: No.25, Anguo East Road, Ruian High-tech Industrial Development Zone, Ruian City, Zhejiang, P.R. China		Web Page: www.roc-master.com																									
Reference standard: NORSOK M-650 Edition 4, September 2011		NORSOK M-650 Edition 4, September 2011		NORSOK M-650 Edition 4, September 2011																									
Material designation and MSN No.		MSN No.		Rev. No.																									
Manufacturer Summary data:		MSN No. S32750		Rev. No. C06																									
Products and manufacturing processes:		- Heavy hex nut and Bolt - Manufacturing Process: see Manufacturing Summary and Process Flowchart																											
Mandatory conditions and sub-conditions:		- Heat treatment: Heat treated to specified yield strength and hardness in accordance with the required mechanical properties. - Solution treatment: Heat treated in the solution treatment furnace. The heating temperature shall be below 400°C and the holding temperature is 1025°C ±15°C. - Quenching: in cold water with the temperature not exceed 40°C and transferring materials from heat treatment furnace into quenching bath with a maximum of 60 seconds. - External heat treatment: See Heat Treatment Summary and Chemical Testing Service Co. Ltd. (CNAS) 6501033, accredited test lab, CNAS No. L5307 - Approved heat treatment furnace: Resistance furnace No. RZJ-355-11 - Evaluation report for acceptance of QTR: Q200812795 (V06) A193 - QTR795 (Solution annealed rod from hardened)																											
Other information:		Variety of the application in the system.																											
Qualification expires:		Validity of the application in the system.																											
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The manufacturer and the QTR are evaluated and have to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and services. This acceptance data and every purchase from the responsibility of the manufacturer is valid for 12 months within the specified conditions of NORSOK M-650. Qualification/acceptance by TUV AUSTRIA (Shanghai) Co., Ltd. Address: 101, No. 144, East Road, Changning District, Shanghai, P.R. China Signature: [Signature] Date: September 24, 2022																													

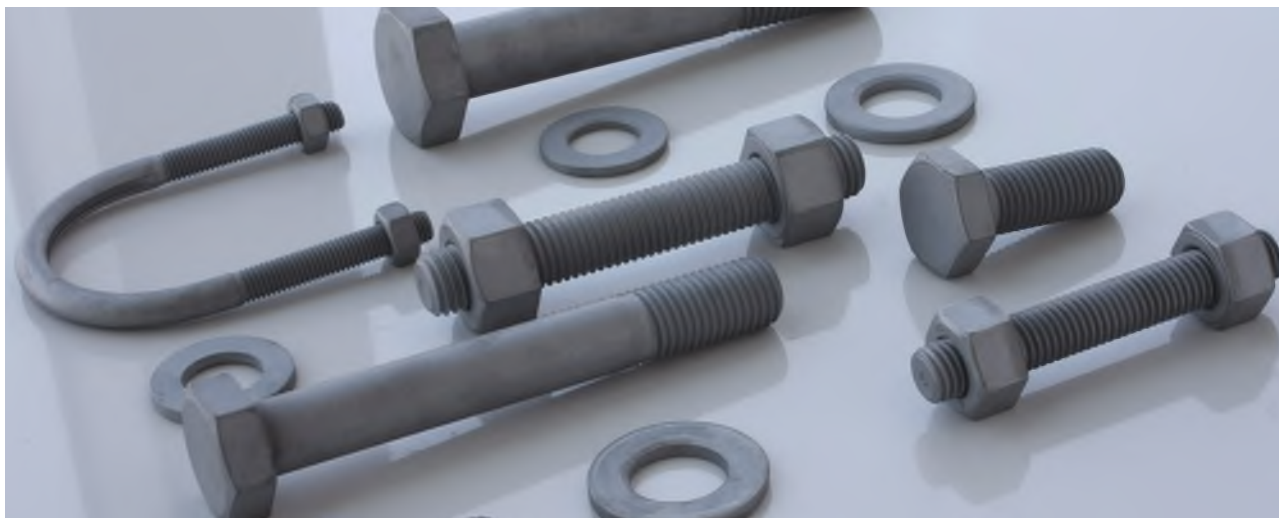
intertek	
CERTIFICATE OF REGISTRATION	
This is to certify that the management system of: Roc-Master Piping Solutions Ltd. Registered Address: Area A, Block 6, No. 528, Anguo East Road, Minghang District, Shanghai, P. R. China Business Address: Room 657-658, Block 35, No. 1213 Kailang Road, Minghang District, Shanghai, P. R. China has been registered by Intertek in conformity to the requirements of: ISO 9001:2015 The management system is applicable to: Sales of pipes, fittings, flanges, fasteners, valves and welding fabrication products for offshore and long distance pipelines. (The other rules and scope covered by the certificate can be found in the sub-conformity.)	
Unified Social Credit Identifier: 91310115MA28J2929C Certificate Number: 020304 Initial Certification Date: 09 August 2022 Date of Certification Decision: 14 July 2024 Issuing Date: 14 July 2024 Valid until: 07 August 2025 Intertek Certification Limited, 55A Victoria Park, Victoria Road, Derby DE1 1AB, United Kingdom Calin Moldovan, President, Business Assurance Intertek Certification Limited is a UKAS accredited body under schedule 4 of accreditation no. 014	

intertek	
CERTIFICATE OF REGISTRATION	
This is to certify that the management system of: Roc-Master Piping Solutions Ltd.(Xuancheng) 35, East Anguo Road, Ruian High-tech Industrial Development Zone, Ruian City, Zhejiang, P. R. China has been registered by Intertek in conformity to the requirements of: ISO 9001:2015 The management system is applicable to: Spinning Processing of Teflon, Processing of Pipeline Support parts, Production of Corrosion-resistant Fasteners (This sub-conformity is linked to the Main Certificate 020304 and cannot be shown nor reproduced without it.)	
Unified Social Credit Identifier: 91330326MA28J2929C Certificate Number: 020304 Initial Certification Date: 08 August 2022 Date of Certification Decision: 14 July 2024 Issuing Date: 14 July 2024 Valid until: 07 August 2025 Intertek Certification Limited, 55A Victoria Park, Victoria Road, Derby DE1 1AB, United Kingdom Calin Moldovan, President, Business Assurance Intertek Certification Limited is a UKAS accredited body under schedule 4 of accreditation no. 014	

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 sheradized 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 sheradising 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 sheradising 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

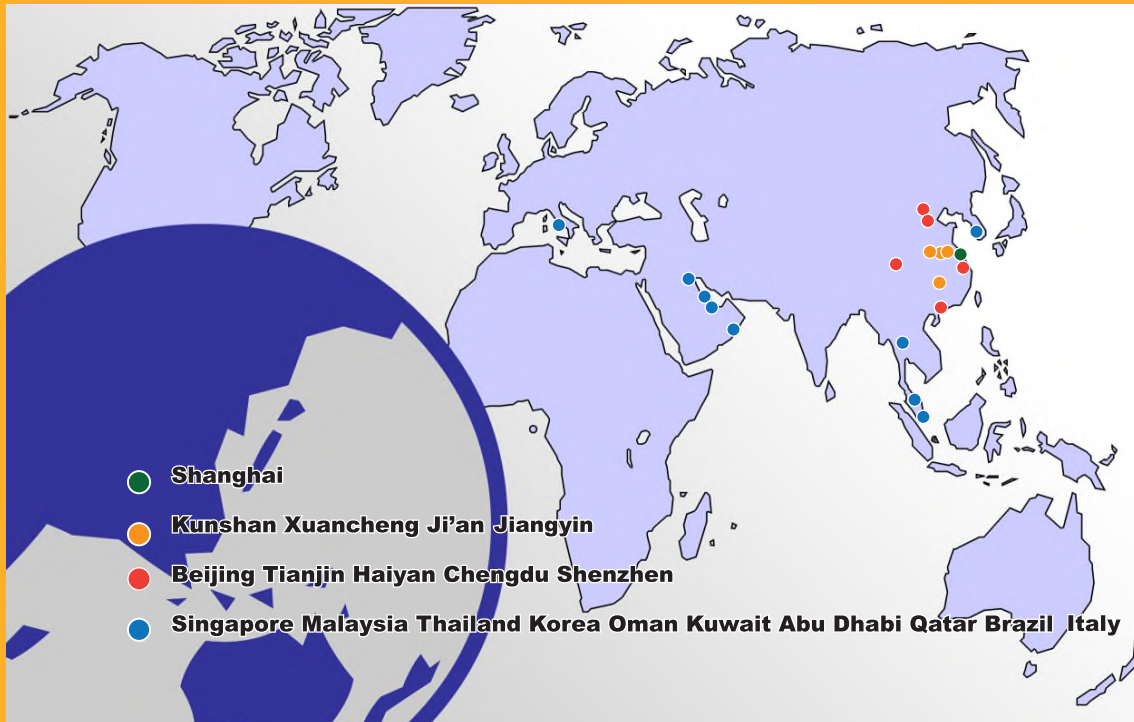
- Visual inspection
- Acid-base testing:
5% sulfuric acid
5% acetic acid
5% sodium bicarbonate
- 100% bolt and nut compatibility testing
- Curing test
- Adhesion test
- Dry film thickness measurement
- Coating hardness test
- Salt spray test



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



www.roc-master.com



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Service Line: + 86 133 0188 1506 E-mail: sales@roc-master.com