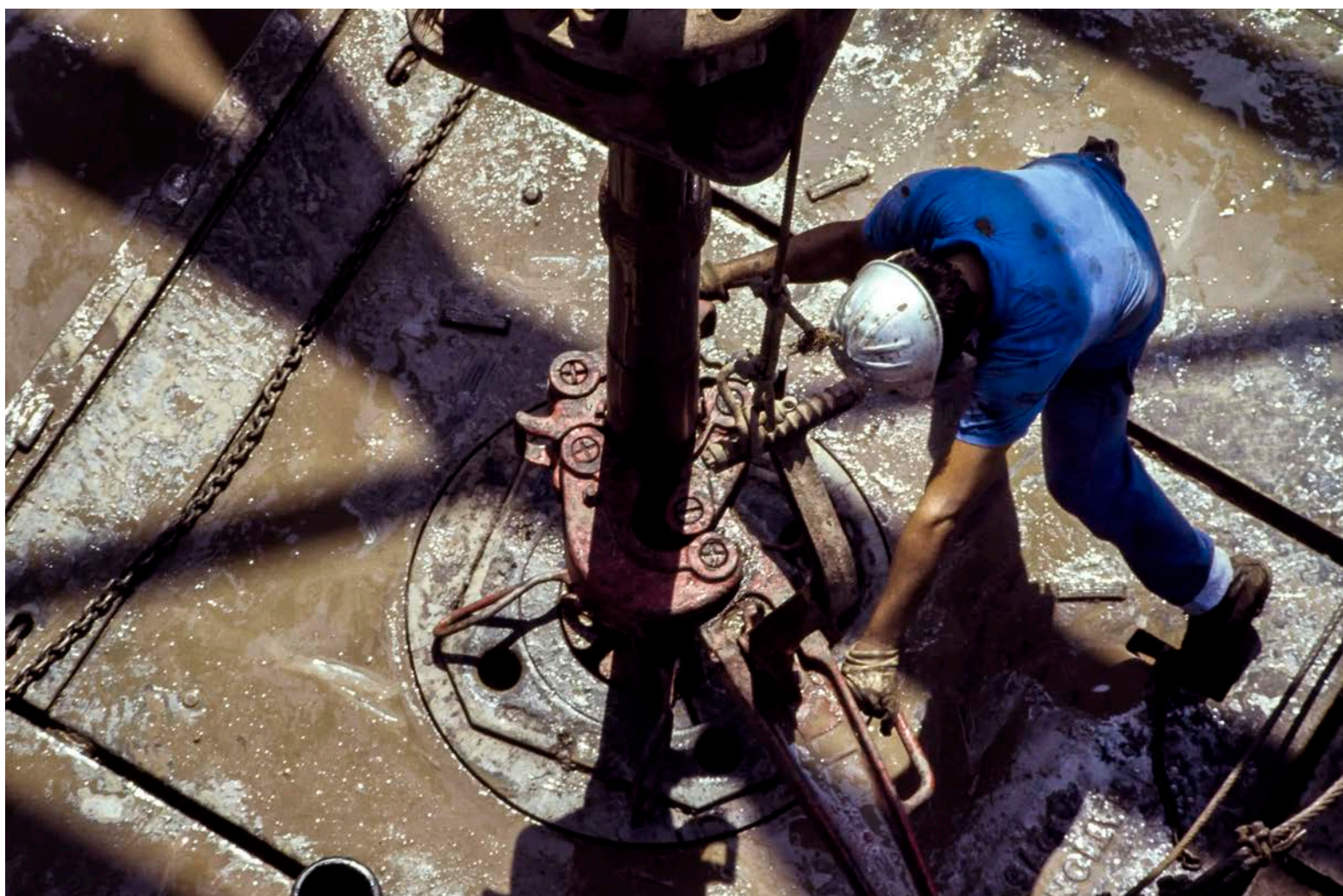


APPLICATION BROCHURE

Installation Products

Corrosion and harsh environment protection



Installation Products Division

- Wire and cable management
- Cable protection systems
- Boxes and fittings
- Connectivity and grounding
- Medium voltage

Thomas & Betts is now part of ABB's Installation Products Division, but our long legacy of quality products and innovation remains the same. From connectors that support wire buildings on Earth to cable ties that help put machines in space, we continue to work every day to make, market, design and sell products that provide a smarter, safer and more reliable flow of electricity, from source to socket.

Table of contents

| | |
|----------------|---|
| 004–005 | Corrosion is eating away at your bottom line |
| 006 | Causes of corrosion |
| 007 | The effects of corrosion |
| 008–009 | Corrosion-resistant materials |
| 010–011 | Designed to perform |
| 012 | Chemical resistance |
| 013 | Material comparison |
| 014 | ABB Stainless steel solutions |
| 015 | ABB PVC-coated solutions |
| 016 | ABB Non-metallic solutions |
| 017 | ABB Aluminum and other solutions |
| 018 | Installation Products for applications |
| 019 | Installation Products for industries |

Corrosion is a natural and inevitable process. It cannot be eliminated, but it can be managed and controlled with the right products.



Corrosion is eating away at your bottom line

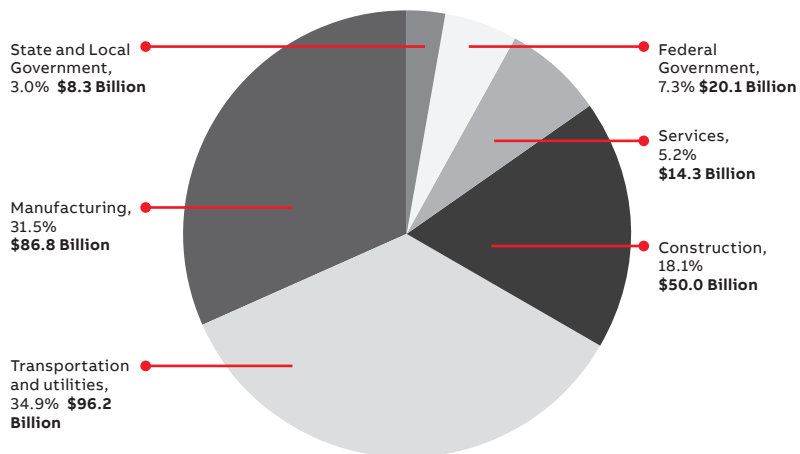
The direct effects of corrosion costs U.S. industry and government \$276 billion annually, according to a study commissioned by the U.S. Federal Highway Administration (FHWA).*

- 01 Drinking water.
- 02 Oil & gas.
- 03 Highways.
- 04 Electrical.
- 05 Pulp & paper.
- 06 Food processing.

This figure reflects only the direct costs of corrosion, such as the expense of repairing a bridge that has become structurally deficient due to steel corrosion or the cost of treated drinking water lost from a corrosion-induced leak in a municipal water pipeline. It doesn't begin to take into account the indirect costs of corrosion, such as the cost of labor related to corrosion-management activities or the loss of revenue due to disruption in product supply. The FHWA study conservatively estimated this as equal to the direct costs.

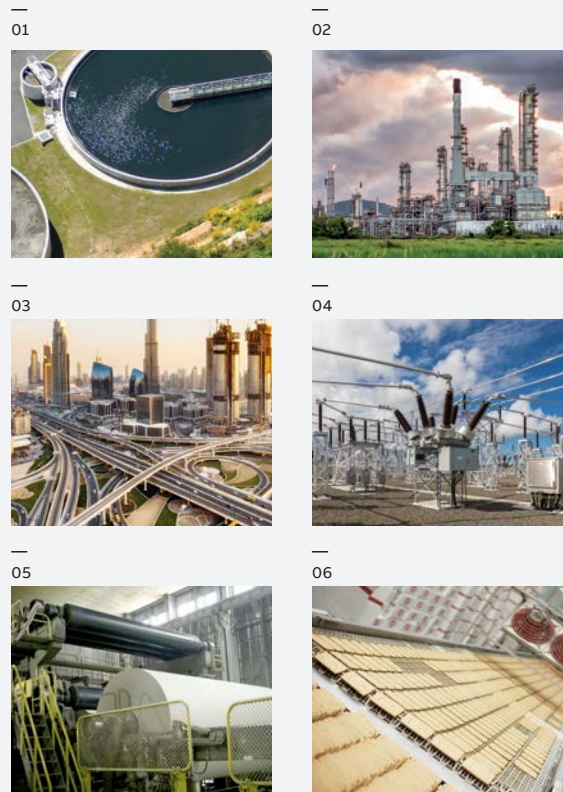
Corrosion is a natural, inevitable process. It cannot be eliminated, but it can be managed and controlled. The FHWA study estimates that the implementation of optimum corrosion management practices could save as much as 25–30% of annual cost of corrosion in the U.S.

Extrapolated corrosion cost: \$276 Billion, 3.1% of GDP



Annual corrosion costs

- Drinking water and wastewater systems \$36.0 billion
- Gas & liquid transmission pipelines \$7.0 billion
- Oil & gas exploration & production \$1.4 billion
- Petroleum refining \$3.7 billion
- Highways and bridges \$8.3 billion
- Electrical utilities \$6.9 billion
- Pulp and paper processing \$6.0 billion
- Food processing \$2.1 billion
- Mining \$0.1 billion



*The "Corrosion Costs and Preventive Strategies in the United States" study (Publication No. FHWA-RD-01-156), released in 2002, was commissioned and funded by the U.S. Federal Highway Administration (DOT), Y. Paul Virmani, project manager; conducted by Gerhardus H. Koch, Michiel P.H. Brongers and Neil G. Thompson of CC Technologies Laboratories, Inc., of Dublin, Ohio, in association with J.H. Payer, Ph.D. of Case Western Reserve University, Cleveland, Ohio; and sponsored by NACE International of Houston, Texas.

Causes of corrosion



If left in its raw state, cast iron rapidly oxidizes, forming red rust.

Corrosion is the deterioration of metal caused by a chemical reaction to its surrounding environment. In most cases this means electrochemical oxidation of metals in reaction with an oxidant such as oxygen. Corrosion can be accelerated by the presence of dust, moisture, high relative humidity, high temperatures, salt, acids, solvents and chemicals. How quickly corrosion occurs depends not only on the environment, but also on the specific type of metal. Cast iron, for example, rapidly oxidizes and forms red rust if left in its raw state, simply from exposure to the air, so it requires some form of protective finish. Other metals, such as stainless steel, have an inherently higher resistance to corrosion without the need for special coating.

What corrosion looks like

When we think of corrosion, red rust that forms on iron or steel typically comes to mind. Depending on the metal corrosion may also appear in other forms, depending on the metal. White rust is corrosion of the zinc that is

typically used as a protective coating over iron or steel. The natural green patina on the Statue of Liberty and on copper roofs is also a form of copper corrosion.



01 Red Rust.



02 White Rust.



03 Oxidized Copper.

The effects of corrosion on the electrical system

Corrosion in electrical systems typically represents only a fraction of the direct costs for many industries, but it yields a disproportionately large share of the indirect costs. Corrosion in electrical contacts creates high resistance and unreliable connections, which lead to poor power quality. In production and manufacturing, where downtime can be very costly, failure of a relatively inexpensive electrical component that leads to loss of power and control to production equipment can quickly add up to thousands of dollars in lost productivity. In aircraft, corrosion that causes electrical system failure can result in loss of life.

Electrical systems, therefore, are a prime area in which an upfront investment in corrosion protection returns significant cost savings, as well as increased safety and other benefits, over the long term. This means selecting electrical conduit, fittings, support systems and accessories in corrosion-resistant materials appropriate for the environment in which they'll be installed.

Galvanic corrosion

Galvanic corrosion results from contact between electrochemically dissimilar metals. If you connect bare copper and aluminum – two metals commonly used for electrical wiring and connectors – the aluminum, being the less noble and more anodic of the two metals, will be attacked by galvanic corrosion. However, connectors for code construction are typically tin plated, which prevents galvanic corrosion, and tin-plated aluminum connectors that are UL® Listed as dual-rated may be used safely on either aluminum or copper conductors.

The white rust that forms on galvanized steel is also an example of galvanic corrosion. The more anodic and less noble zinc applied over steel during galvanizing is intended to act as a sacrificial layer to protect the steel underneath. White rust is evidence that the zinc coating is serving its purpose; the appearance of red rust indicates corrosion of the steel.

Corrosion protection options

| Chemical category | Chemical examples | Chemical compatibility rating | | | | | | | |
|---|---|-------------------------------|----------|---------------------|---------------------|----------------|-----------|-------|----------|
| | | PVC | Urethane | 304 Stainless Steel | 316 Stainless Steel | Poly carbonate | Cast Iron | Brass | Aluminum |
| Solvents (excluding alcohols and aliphatic) | Acetone, toluene, ketones, etc. | NR | NR | L | L | NR | L | L | L |
| Fuels | Jet fuel (alcohol based and aliphatic solvent based) | L | L | L | L | L | L | L | L |
| Plating solutions | Chrome, nickel, copper, brass, gold, zinc, etc. | L | F | F | F | F | NR | NR | NR |
| Salts and alkaline materials | Caustic soda, caustic potash, alkaline cleaners, etc. | L | F | L | L | F | NR | NR | NR |
| Mild acids | Low-concentration hydrochloric, sulfuric, fruit acids, glycolic, citric, etc. | L | S | L | L | S | NR | NR | NR |
| Strong or high-purity acids | Nitric, hydrofluoric, etc. | S | S | F | F | S | NR | NR | NR |
| Oxidizing agents | Bleach, chlorine, hydrogen peroxide, etc. | L | S | L | L | S | NR | NR | NR |

L All Fumes, Splash and Liquid **S** Fumes & Splash **F** Fumes only **N** Not recommended

The chart above provides a general guide for the end user to choose the most suitable material for corrosion protection. Compatibility with chemical environment should be thoroughly evaluated for each installation.

Corrosion-resistant materials

- 01 Stainless steel.
- 02 PVC-coated metals.
- 03 Non-metallic materials.
- 04 Aluminum.
- 05 Other options.

Stainless steel

Stainless steel is the household name for metal alloys containing at least 10.5% chromium and more than 50% iron. It provides one of the most hygienic surfaces, because it is very easy to clean as its surface has no pores or cracks to harbor bacteria and other impurities. It resists corrosion, withstands high temperatures and is easily maintained.

Type 304 stainless steel contains primarily iron, chromium and nickel. Sometimes referred to as marine-grade, Type 316 stainless steel is similar in formula to Type 304, but molybdenum is added to strengthen the stainless steel against surface pitting and other deterioration.

For electrical conduit systems, stainless steel offers performance that's hard to match, combining high corrosion and chemical resistance with strength, durability, ease of installation and low maintenance. Generally speaking, when compared to using standard galvanized steel conduit in corrosive environments, stainless steel offers three to five times the lifespan for Type 304 and four to eight times the lifespan for Type 316.

PVC-coated metals

One method to improve the corrosion resistance of standard galvanized steel or iron, as well as aluminum, is to coat the metal in PVC (polyvinyl chloride). Numerous industry standards, including UL6, ANSI C80.1 and NEMA RN-1, cover the manufacture and testing of PVC-coated conduit systems. Compliance with these standards, combined with installation by a contractor experienced with the special requirements of working with PVC-coated conduit, helps to ensure a quality system that will withstand corrosive environments. In general, PVC-coated metal provides strong resistance to most chemicals and will typically last nearly twice as long as standard galvanized steel conduit in corrosive environments.

Non-metallic materials

One way to avoid corrosion is to eliminate the use of metal. While complete elimination of metal is usually not practical in real-world applications, there are plenty of alternative materials for electrical raceway system components and accessories. These include PVC, polycarbonate, nylon, fiberglass and others. PVC conduit and fittings provide excellent protection when wiring systems need to be embedded in concrete, for example.

Because different non-metallic material properties and characteristics vary so widely, you should always check the specifications of any material you're considering for compatibility with the environment in which you are planning to use it. In addition, most non-metallic materials have limitations for maximum operating temperature that must be taken into consideration to avoid softening or melting of components in high heat areas.



01



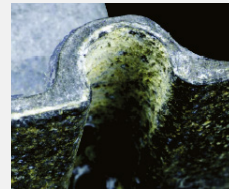
02



03



04



The edge of an A360 aluminum alloy conduit box after an industry-standard salt spray test.



The edge of a CorroStall® aluminum alloy conduit box after the same salt spray test.

Aluminum

Aluminum provides the advantages of high strength-to-weight ratio, superior resistance to certain corrosive environments and ease of installation. Aluminum typically weighs about 50% less than steel and requires no maintenance after installation. It offers excellent resistance to solvents and fuels, but is not recommended for exposure to other types of chemicals, including salt, bleach, acid or chlorine.

Proper use of specialty aluminum alloys provide a reliable, higher degree of protection in corrosive applications. This includes the ABB CorroStall® aluminum alloy, which offers excellent corrosion resistance as cast, without the need for protective coating, and up to 300% longer life. However, certain specialty aluminum alloys have been developed to provide a higher degree of corrosion protection. These include the ABB CorroStall® aluminum alloy, which offers excellent corrosion resistance as cast, without the need for protective coating, and up to 300% longer life.

Other Options

In addition to PVC coating, other protective finishes and coatings have been developed to give galvanized cast iron or steel superior protection against corrosion.

One example is the ABB BlueKote® finish for cast iron alloy conduit bodies. The BlueKote® finish starts with the electro-zinc plating with chromate

finish that most ferrous conduit bodies feature, but then adds a baked-on layer of powder-coated epoxy, followed by another baked-on layer of epoxy paint. Last, the signature BlueKote® finish is applied to and baked on the interior of the conduit body.

As another example, the ABB Galv-Krom® finish for Kindorf® Modular Metal Framing is a gold trivalent finish applied over electro-galvanized steel to provide superior corrosion resistance as compared to industry-standard pre-galvanized G90 steel strut. The trivalent Galv-Krom® finish is OSHA and RoHS (Restriction of Hazardous Substances) compliant.



05

After a 500-hour 5% salt fog test, the standard galvanized iron conduit body has severe salt adhesion and significant rusting.

The BlueKote® conduit body still has a glossy sheen and no evidence of salt adhesion or penetration after the same salt fog test.

Designed to perform

Installation Products business line

Thomas & Betts is now ABB Installation Products business line, but our long legacy of quality products and innovation remains the same. From connectors that help wire buildings on Earth to cable ties that help put machines in space, we continue to work every day to make, market, design and sell products that provide a smarter, safer and more reliable flow of electricity, from source to socket.

Wire and cable management

- Industry's broadest range of innovative solutions for bundling, securing and routing wire and cable
- Designed to perform in the most demanding conditions
- Overview in fastening, bundling and managing wires
- For electrical installers, panel builders, OEM professionals and many more

Connectivity and grounding

- Covering IEC/EN, NFC, UL and NFPA projects
- Reliable and high quality manufactured components
- Low installed costs through intelligent design
- Design services support and technical advice
- Protecting people, assets and electrical equipment

Boxes and fittings

- Highest quality, most versatile, innovative range of boxes, fittings and enclosures
- Comprehensive line of boxes – metallic/non-metallic, indoor/outdoor, weatherproof and floor
- Fast and flexible enclosure solutions
- Specified in the industrial, construction and utility markets

Cable protection systems

- Unsurpassed protection for wire and cables in the most demanding applications
- Customized specific solutions – through innovation & material science expertise
- Conform all international certifications – such as IRIS and end user approvals
- Comprehensive support service – worldwide close to the customer
- Over 12.000 high performance products – for outdoor & indoor, static & dynamic

Medium voltage

- Intelligent control and reliable connection of electrical power
- Reducing maintenance, repair and operational costs in the field – overhead or underground
- Cable accessories, apparatus, distribution and substation connectors
- Specified Industrial, construction and utility markets



ABB has the products you need
for demanding applications
in harsh and highly corrosive
environments.



Chemical resistance

Performance rating

| | Overall Chemical Resistance | Phosphoric Acid (Crude) | Phosphoric Acid (>40%) | Sodium Hydroxide (50%) | Sodium Chloride | Sodium Carbonate | Sodium Metasilicate | Diethylene Glycol | Sodium Silicate | Hydrogen Peroxide (30%) | Acetic Acid (20%) | Sulfuric Acid (10-75%) | Citric Acid | Fruit Juice | Chlorine, Anhydrous Liquid | Chlorine Water | CLOROX® Bleach |
|---------------|-----------------------------|-------------------------|------------------------|------------------------|-----------------|------------------|---------------------|-------------------|-----------------|-------------------------|-------------------|------------------------|-------------|-------------|----------------------------|----------------|----------------|
| 316 Stainless | A | B | D | B | B | A | A | A | B | B | B | D | A | A | C | C | A |
| 304 Stainless | A | D | D | B | B | A | A | A | A | B | B | D | B | A | C | C | A |
| Aluminum | B | C | C | D | C | D | D | B | A | A | B | D | C | A | D | D | A |
| Brass | D | N/A | D | D | D | B | N/A | N/A | D | N/A | D | N/A | D | D | D | D | N/A |
| Cast Iron | D | D | D | D | D | B | A | A | B | B | D | D | D | D | D | N/A | D |
| Nylon | B | B | B | A | A | B | N/A | A | A | D | D | D | A | A | D | C | A |
| PVC | A | B | B | A | A | A | A | C | A | A | D | A | B | A | D | A | A |
| PVC Coated | A | B | B | A | A | A | A | C | A | A | D | A | B | A | D | A | A |
| Kynar® | A | A | B | A | A | A | N/A | A | A | A | A | A | A | A | A | B | A |
| Polycarbonate | B | A | A | D | A | A | N/A | B | N/A | A | A | B | A | N/A | C | N/A | N/A |



























A Best B Better C Good D Poor

The information in this chart has been supplied to ABB by other reputable sources and is to be used ONLY as a guide in selecting equipment for a appropriate chemical compatibility. ABB does not warrant that the information in this chart is accurate or complete or that any material is suitable for any purpose.

Material Comparison

More knowledge, less costs.

Food and beverage processing plants consume over 370,000 tons of stainless steel each year. You can achieve savings up to 33% through careful selection of appropriate materials for your specific application.

| | | | | | | |
|---------------|---|---|---|---|--|--|
| 316 Stainless | A |  ABB® hub |  Silver Grip® tray cord fitting |  Superstrut® channel |  Ty-Rap® cable ties | |
| 304 Stainless | A |  Superstrut® channel |  ABB liquidtight fitting |  Steel City® conduit strap |  Ty-Rap® cable ties |  Silver Grip® tray cord fitting |
| Aluminum | B |  ABB aluminum liquidtight fitting |  Red-Dot® FS box |  ABB aluminum erickson cord fitting |  ABB aluminum Ranger® cord fitting |  ABB aluminum chase hub |
| Brass | D | NOT RECOMMENDED | | | | |
| Cast Iron | D | NOT RECOMMENDED | | | | |
| Nylon | B |  PMA® flexible nylon conduit systems |  T&B® Type A conduit fitting |  ABB Ranger® cord fitting |  Ty-Rap® nylon cable ties | |
| PVC | A |  ABB Type A conduit |  ABB Type B conduit |  ABB PVC liquidtight flexible conduit | | |
| PVC Coated | A |  PVC-coated liquidtight hub |  Ocal® PVC-coated fittings |  Ocal® PVC-coated conduit | | |
| Kynar® | A |  Hazlux® Lighting Fixtures |  ABB fittings Type 316 stainless steel form 8 conduit codies | | | |
| Polycarbonate | B |  DuraGard® pin-and-sleeve connectors | | | | |

Before permanent installation, test the equipment with the chemicals and under the specific conditions of your application. Ratings of chemical behavior listed in this chart apply at a 48-hour exposure period. ABB has no knowledge of possible effects beyond this period.

ABB Stainless steel solutions

T&B® Fittings

T&B® Fittings

Type 316 stainless steel Form 8 conduit bodies

- Marine-grade Type 316 stainless steel construction in rugged Form 8 design for the harshest environments
- Available in shapes LB, T, TB and the versatile new LU® Universal Conduit Elbow
- Ship complete with covers, gaskets and screws
- Hub sizes from ½" to 2"
- UL® Listed and CSA Certified



T shape



LU® shape



TB shape

T&B® Fittings

Stainless steel conduit fittings

- Type 304 stainless steel fittings in straight, 45° and 90° versions for liquidtight flexible metal conduit
- Type 316 stainless steel fittings for Type A liquidtight flexible non-metallic conduit
- Type 316 stainless steel Bullet® hub connectors for rigid or intermediate metal conduit



T&B® Fittings

Stainless steel cord fittings

- Type 304 stainless steel Ranger® liquidtight fittings for flexible cord and cable
- Type 316 stainless steel STAR TECK® fittings for jacketed metal-clad and teck cables
- Type 316 stainless steel Silver Grip® fittings for tray cable and portable cord in hazardous locations



Kindorf®

Stainless steel modular framing channel and accessories

- Available in both Type 304 and Type 316 stainless steel
- 11/2" x 11/2" channel dimension reduces installation costs & waste
- Innovative Trapnut® Strut Fastener reduces time by up to 43% on retrofit applications
- Full line of fittings and accessories



T&B® Cable Tray

T&B® Cable tray Type 316 stainless steel cable tray

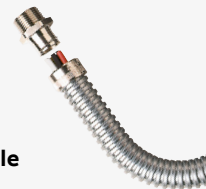
- Ladder, ventilated & solid trough designs
- Full range of classes and associated loading capacities
- Complete selection of fittings & covers



Adaptaflex®

Adaptaflex Stainless steel flexible conduit systems

- High flexibility and high fatigue life
- Operating temperatures up to 660° F in static applications and 480° F in moving applications
- Also available in stainless steel overbraid for EMI screening and in versions designed for use in hazardous locations



Ty-Rap®

Ty-Rap® Stainless steel cable ties

- Uncoated Type 302/304 and Type 316 stainless steel
- Also available in polyester-coated Type 316 stainless steel
- Secure, heavy-duty ball locking mechanism



ABB PVC-coated solutions



Ocal® PVC-coated liquidtight conduit connectors

- Genuine T&B® liquidtight conduit fittings – straight, 45° and 90°
- Nominal 40 mils PVC coating bonded to exterior
- Pressure-sealing sleeves protect connections



Ocal®

Ocal-Blue® Double-coated UL® Listed Type 4X Form 8 conduit bodies

- UL® Listed Type 4X and NEMA 4X rating for excellent protection against washdown, moisture, rain, ice or snow
- Cast iron bodies and covers coated inside and out with 2 mils blue urethane, then exterior coated with minimum 40 mils PVC in gray (standard), blue, white or custom colors
- Ship complete with cover with integral O-ring seal and stainless steel screws
- Available in all popular shapes in hub sizes from ½" to 2"

Ocal-Blue® Standard/large-radius elbows

- Fabricated from Ocal® PVC-coated conduit
- Factory bent to save time
- Standard radius 30°, 45°, 60° and 90° and large-radius 90°
- Special radius and other angles available upon request



Ocal-Blue® Conduit



- Hot-dipped galvanized steel or aluminum conduit
- Hot-dipped galvanized threads (steel conduit only)
- Nominal 2 mils blue urethane coating on interior
- Minimum 40 mils PVC coating on exterior

Ocal-Blue® Double-coated Star Teck Extreme® fittings



- Aluminum fittings for jacketed metal-clad and teck cables
- Nominal 2 mils blue urethane coating on both interior and exterior
- Nominal 40 mils PVC coating bonded to exterior
- For use in ordinary and hazardous locations

Ocal-Blue® Double-coated GUA series conduit boxes



- Ductile iron bodies with O-ring gasketed cast aluminum covers
- Nominal 2 mils blue urethane coating on both interior and exterior
- Nominal 40 mils PVC coating bonded to exterior
- For use in hazardous locations



Elastimold® Switchgear

- Standard and custom applications that improve distribution system's reliability
- Switchgear components are fully sealed and submersible
- EPDM rubber construction with stainless steel hardware and mechanism boxes
- No oil or gas to lead, the solid dielectric switchgear is maintenance free



- Deadfront construction insulates, shields and eliminates exposed live parts

Ocal® PVC-coated strut, straps and clamps



- Steel strut with nominal 15 mils PVC coating
- Full line of PVC-coated beam clamps, pipe straps, conduit hangers and threaded rod also available

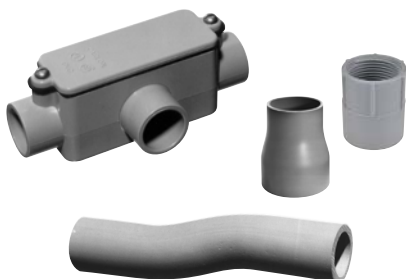
ABB Non-metallic solutions



PMA

PMA

- Wide selection of flexible polyamide conduit provides excellent flexing and fatigue life in extreme operating temperature ranges
- Excellent resistance to highly corrosive chemicals
- Complete line of easy-to-install straight and angled fittings
- IP66, IP68 and IP69K liquid ingress protection



Carlon®

Carlon® PVC conduit fittings and accessories

- One of the most comprehensive lines of PVC conduit and fittings available in the industry
- Full selection of PVC Schedule 40 and 80 elbows, conduit bodies and more
- Polycarbonate enclosures provide excellent corrosion and impact resistance



T&B® Cable Tray

T&B® cable tray Fiberglass cable tray

- Ladder, ventilated and solid trough designs
- Full range of classes and associated loading capacities
- Complete selection of fittings and covers

T&B® Fittings

T&B® fittings Non-metallic conduit and fittings

- Type A PVC flexible conduit and chemical-resistant, non-burning thermoplastic fittings
- XTRA FLEX® PVC Liquidtight Type B conduit and Bullet® non-metallic liquidtight fittings
- Variety of other non-metallic conduit and cord fittings available



Kindorf®

Kindorf® Non-metallic modular framing channel and accessories

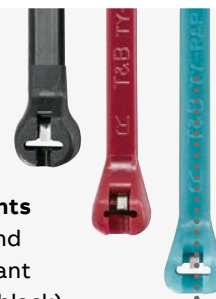
- Rugged polyester and vinylester construction
- 1½" x 1½" channel dimension reduces installation costs and waste
- Full range of non-metallic fittings, pipe clamps and hardware



Ty-Rap®

Ty-Rap® Cable ties for harsh environments

- Weather-, UV- and chemical-resistant polypropylene (black)
- Flame-retardant, low-smoke density, UL94V-0 fluoropolymer (maroon)
- Radiation-resistant, UL94V-0 fluoropolymer (aqua)



T&B® Cable Tray Aluminum cable tray

- Ladder, ventilated and solid trough designs
- Full range of classes and associated loading capacities
- Complete selection of fittings & covers

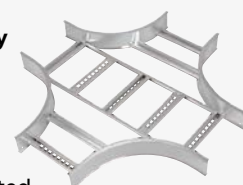


ABB Aluminum and other solutions



T&B® Fittings

T&B® Fittings

CorroStall® aluminum conduit boxes

- Special copper-free aluminum alloy provides superior corrosion resistance compared to standard copper-free aluminum
- Designed and tested to withstand prolonged exposure to corrosive agents and extreme temperatures
- Available in single- and double-gang sizes with a variety of outlet configurations



T&B® Fittings

Aluminum liquidtight conduit & fittings

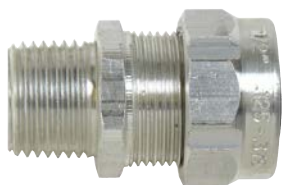
- Conduit features a lightweight aluminum core with sunlight-, acid- and oil-resistant PVC jacket
- Aluminum liquidtight fittings available in straight and 90° configurations
- Fittings available with optional Revolver® rotating ground lug



T&B® Fittings

BlueKote® conduit bodies

- Triple-layer protection over ferrous conduit body- including two layers of epoxy coating-stops corrosion in its tracks
- BlueKote® internal surface coating provides an additional layer of corrosion protection and reduces force required to pull wires
- Available in Forms 7 and 8 in all popular conduit body shapes and sizes -plus the new LU® Universal Conduit Elbow
- Your choice of iron or stainless steel covers



T&B® Fittings

Ranger® series aluminum liquidtight cord connectors

- Available in straight or 90° designs
- Designed to accept a wide range of cables, offering nine fittings that cover cord ranges from .125" through .950"
- Slotted design gland nut to accommodate securing in tight spaces

Kindorf®

Kindorf®

Galv-Krom®

and aluminum modular framing channel and accessories

- Galv-Krom® gold trivalent finish provides superior corrosion protection over electro-galvanized steel
- Also available in 6063 extruded aluminum
- Full range of fittings and accessories available in both Galv-Krom® finish and aluminum



Sta-Kon®

Sta-Kon®

Corrosion-resistant nickel-plated wire terminals



- High-performance solderless crimp terminals
- Complete line of ring and fork terminals, splices and disconnects
- Vinyl-insulated, nylon-insulated and non-insulated styles
- Variety of corrosion-resistant finishes and materials

Russellstoll®

Russellstoll®

DuraGard®

waterproof pin-and-sleeve connections

- Not just watertight, but waterproof, mated or unmated
- Tested to 1,000 psi for washdown applications
- Full line of 20A to 60A connectors, plugs and receptacles in UL94V-0, corrosion-resistant thermoplastic housings



Installation Products for applications

01 Continuous operation and sustainability.

02 Corrosion and harsh environment protection.

03 Safety and contamination.

04 Emergency electrical solutions.

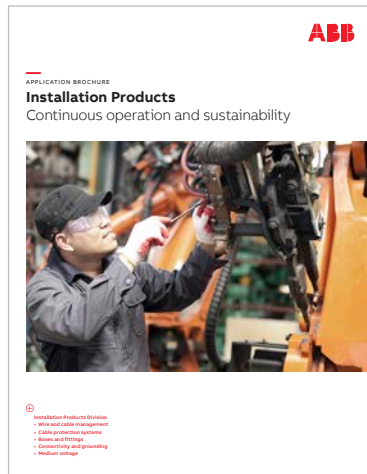
05 Total project cost reduction.

06 Liquid ingress protection.

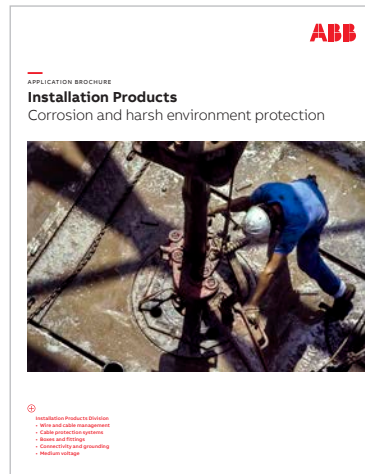
07 Extreme temperature protection.

08 Grounding and bonding.

09 SKU Reduction.



01



02



03



04



05



06



07



08



09

Installation Products for industries

01 Commercial and institutional buildings.

02 Data centers.

03 Food and beverage industry.

04 Food and beverage industry - plant assessment.

05 Utility industry.

06 Power generation industry.

07 Chemical industry.

08 Oil and gas industry.

09 Wind power industry.

10 Renewable energy industry.

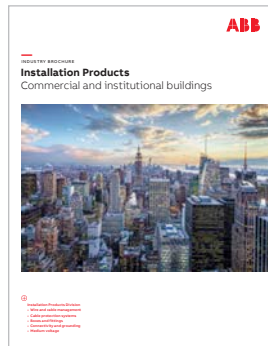
11 Water and wastewater treatment industry.

12 Single and multi-family housing industry.

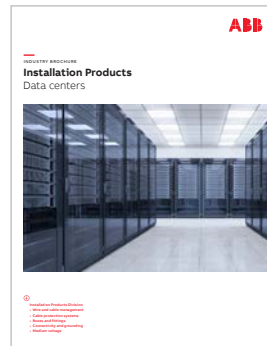
13 Rail industry.

14 Civil infrastructure industry.

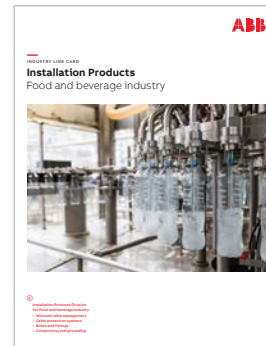
15 Metals and mining industry.



01



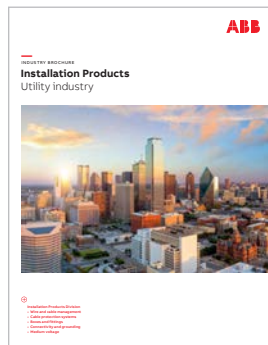
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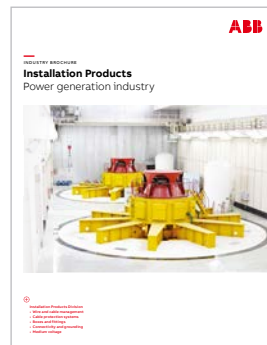
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04



05



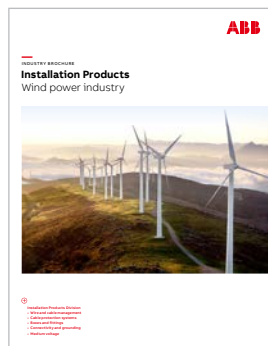
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07



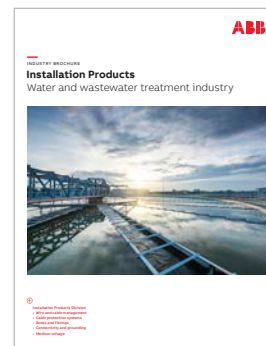
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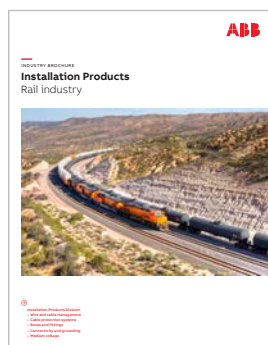
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