Forever stainless

There is now, more than ever, a powerful need for sustainable and lasting solutions that pass the test of time and can be recycled and used time and again. There is a need for stainless steel.

Outokumpu is the global leader in stainless steel. Our customers use it to create civilization’s basic structures and its most famous landmarks. Stainless steel is sustainable, durable, and designed to last forever.

We aim to be the best value creator in stainless by 2020, through our competitive edge of customer orientation and efficiency. We are constantly inspired by stainless steel and excited by its possibilities. With our expertise, we can tailor it into any form and for almost any purpose.

Our production facilities are located in Finland, Germany, Mexico, Sweden, the UK, and USA, with a sales and service center network close to our customers worldwide.

In 2017, Outokumpu’s sales were 6.4 billion euros with stainless steel deliveries of 2.4 million tonnes. Outokumpu employs 10,000 professionals in more than 30 countries, with headquarters in Helsinki, Finland and shares listed in the Nasdaq Helsinki.
Outokumpu stainless steel rebar

Outokumpu offers a full range of stainless steel rebar with excellent availability and unmatched service.

Our fully integrated capabilities, from melting to testing, enable us to produce stainless rebar with industry-leading consistency, delivery performance, and technical support.

Outokumpu stainless rebar is produced in a wide range of dimensions and is available in coil, lengths, mesh, and bent shapes. Our offering also includes dowel bar and complementary products such as couplers. We have production sites in the UK and US as well as strategically located stainless steel rebar stock to ensure high availability and short lead times.

To help make your project a success, we offer service packages including technical support, long-term pricing, and project management to optimize rebar production, finishing, and delivery according to your schedule.

Our dedicated teams are always easy to get in touch with. Outokumpu experts have in-depth knowledge about the material needs of the construction industry, and we’re here to help you get the best possible result from our stainless steels.

Key benefits

- Product quality
- Delivery reliability
- Expert technical advice
- Easy to deal with

Learn more at outokumpu.com/rebar

Our mills

Sheffield Stainless Bar
Sheffield Stainless Bar is a specialist stainless bar provider for the European market. The product range covers shapes, including round, square, hexagon, and rebar forms in key stainless steel grades.
Outokumpu stainless steel rebar is mainly used in construction, for example coastal barrier walls, concrete piers, and bridges where chloride-induced corrosion is a risk. Using stainless steel rebar in these environments reduces the lifetime cost of the structure, as well as maintenance-related downtime.

There are three main cases where stainless steel is the best choice:

• When concrete is subject to the ingress of chlorides from either marine environments or de-icing salts. Stainless steel rebar can resist the initiation of corrosion with chloride concentration levels more than 10 times higher than that which carbon steel can resist.

• When concrete loses the high alkalinity that protects the carbon steel from corrosion due to carbonation. This can take more than 100 years but ultimately is inevitable, making stainless steel the ideal solution for structures requiring a very long lifespan, for example temples and monuments.

• When equipment is particularly sensitive to magnetic fields, such as hospital MRI machines, and needs non-magnetic reinforcement. Unlike carbon steel, austenitic stainless steel rebar is not magnetic.

In addition, stainless steel rebar has much better ambient and low temperature energy absorption, fatigue resistance, and toughness than carbon or alloy steels, which is important in applications where there are seismic, security, and other impact resistant considerations. It also has improved stiffness and strength retention in fire compared to carbon steel.

For more information, including research papers and our rebar modeling Excel spreadsheet, visit outokumpu.com/rebar
The complete reinforcement package

Outokumpu stainless steel rebar is available from 6–40 mm/#3–#10. We produce rebar in several alloys including the widely used Forta DX 2304 as well as Forta LDX 2101 lean duplex stainless steel, which combines low nickel content with high mechanical strength. In the US we produce stainless steel rebar in Grade 60 and Grade 75 according to ASTM A955, and in the UK we produce Grade 500 per BS 6744.

We also offer a wide variety of bent shapes according to BS 8666:2005. Our rebar finishing facility uses the latest technology in straightening and cut and bend equipment for diameters up to 40 mm/#10 direct from our production site.

We also supply dowel bar and complementary products to offer you a complete stainless steel rebar solution for your project.

Environmental product declarations

Our environmental product declaration (EPD) for stainless steel rebar helps you understand the exact environmental impacts and energy needs of our products and allows you to calculate how these affect the life cycle of your building or other structure.

Use our stainless steel for LEED points

Outokumpu is a pioneer in Leadership in Energy and Environmental Design (LEED), the sustainability oriented building certification scheme that recognizes best-in-class building strategies and practices. LEED certification standards apply to buildings that achieve high energy efficiency and use sustainable materials. The sustainable characteristics of Outokumpu stainless steel, such as high recycled content and long service life, are rewarded in this scheme.

We offer LEED documentation for our stainless steel rebar, meaning that designers who select Outokumpu stainless steel can gain LEED points for their building.
Outokumpu stainless steel rebar is available from the UK in metric sizes 6–40 mm and from the US in imperial sizes #3–#10.

In the UK we produce rebar that has a two-sided pattern and in the US we produce rebar that has a three-sided pattern (see diagrams). This three-sided cross-section is due to a unique three-roll design at the mill and is included in ASTM A955-11.

Two-sided pattern

Three-sided pattern

Available alloys

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Note: Other alloys, sizes, and specifications may be available upon request. Please contact Outokumpu for specific requirements.
A = Austenitic
D = Duplex

Available dimensions

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Bent shapes

CARES-certified BS 6744 rebar is available in bent shapes according to BS 8666:2005.

Grade 500 BS 6744:2001+A2:2009 stainless steel rebar can be supplied in straight lengths up to 12 m/40 feet as well as cut and bent shapes in accordance with BS 8666:2005.

Dowel bar

We can produce dowel bars to order in both the US and the UK. Dowel bars are used to transfer shear loads across construction and movement joints in concrete.

The standard Outokumpu dowel system is available in a range of diameters and lengths. Stainless steel and durable plastic de-bonding sleeves are available with integral nail plates for easy fixing to the shuttering. Outokumpu can also assist you in finding local suppliers.
Stainless steel rebar in action

Gateway Bridge, Brisbane, Australia
Outokumpu delivered 200 tonnes of Forta LDX 2101 duplex stainless steel rebar for use in the most critical structures of the bridge. To ensure a 300 year lifespan, stainless rebar was specified for the pile caps located in the splash zones of the two main river pylons of the Brisbane River. Instead of using 316L/1.4404, Outokumpu recommended low-nickel Forta LDX 2101 duplex, which offers superb price stability and is a cost-effective alternative for durable reinforced concrete structures.

Allt Chonoglais Bridge, Scotland
Outokumpu delivered over 7,000 pieces of rebar in Forta DX 2304, a total of 67 tonnes, for refurbishing the bridge. Stainless steel rebar was specified for the areas which are at greater risk from chloride-induced reinforcement corrosion due to the application of de-icing salts during the winter months. This included the bridge deck, abutments, wing walls, and bearing plinths. The customer selected Forta DX 2304 rebar due to its competitive cost and exceptional chloride resistance which helps to give the bridge a 120-year lifespan.

Buddhist temple, Chounbri province, Thailand
The temple committee in Thailand in charge of the development wished to create a sacred place that would last more than 1,000 years. Outokumpu supplied over 23,200 rebar pieces in 90 different sizes and lengths in Forta LDX 2101 duplex stainless steel. Outokumpu’s Rebar Finishing team managed the extremely complex delivery and was able to meet the customer’s request for a very tight length tolerance. In addition, the team managed a tight schedule, achieving 100% on-time delivery.

La Sagrada Família basilica, Barcelona, Spain
Outokumpu has supplied stainless steel for La Sagrada Família basilica since 2013 in stainless steel rebar, bar, machined components, and plasma-cut plate products. The building has exceptional lifecycle expectations and a unique design. When completed, 18 towers of La Sagrada Família will reach heights from 94 to 182 meters above ground level. Stainless steel rebar was the first choice for the tower structures due to its high strength, exceptional corrosion resistance, and reduced lifecycle costs. Outokumpu is the single-supplier for the project, delivering products in Outokumpu Forta DX 2304 and Forta DX 2205 grades in easy-to-assemble sizes and shapes.
Outokumpu delivered 300 tonnes of Forta LDX 2101 duplex stainless steel rebar for use in a major junction in a new motorway around northern Stockholm, Sweden. Roads in northern climates face particularly corrosive environments due to chlorides from de-icing salts. As the junction is meant to be largely maintenance free, stainless steel rebar in 316L/1.4404 was originally specified. Forta LDX 2101 duplex stainless steel was ultimately chosen as the very low nickel content results in good price stability.

Sheikh Jaber al-Ahmad Al-Sabah Bridge, Kuwait

Stainless steel is the ideal material for infrastructure projects in maritime environments due to its high corrosion resistance and low life-cycle costs. Outokumpu provided 1,600 metric tons of Forta DX 2304 stainless steel rebar for the Sheikh Jaber al-Ahmad Al-Sabah project in Kuwait. The 36 km long causeway project is one of the largest infrastructure projects to be constructed in the region.

Coast protection scheme, Cromer, UK

Outokumpu delivered 335 tonnes of Forta DX 2304 stainless steel rebar for the Cromer coast protection scheme. Cromer sea defenses have protected the area against the North Sea for over 150 years. The project includes refacing sea walls with concrete and replacing the timber groynes which protect the beach. The goal of the project is not to just maintain current defenses, but also withstand predicted sea level rises over the next 50 years.

Mega Reservoir project, Qatar

The Qatar mega reservoirs projects include five primary reservoir and pumping station packages with a capacity of 100 million gallons each, making them the largest reinforced concrete reservoirs in the world. Outokumpu provided 350 metric tonnes of smooth round stainless steel dowel bar for the project. Outokumpu Supra 316L/4404 stainless steel dowel bars are used in expansion joints for the movement of lateral loads and to manage stress within the joint. They were selected for their high corrosion resistance and low life-cycle costs.
Ensuring quality with end-to-end production

From melting to bar finishing

**Melting shop**
Consistently produced high quality semis are made at SMACC in 130-tonne melts.

**Billet casting**
We use a combination casting machine for slab or bloom, or a six-strand billet casting machine.

**Preheating**
Billets are reheated before rolling into wire rod.

**Rolling**
A highly responsive digital control system tracks the rod through the mill to ensure quality.

**Wire rod coiling**
Wire rod of up to 10 mm is coiled on a laying a head. Rod in larger diameters is coiled in garrett coilers.

**Straightening**
Rebar coils are straightened before cutting to lengths to remove tension in the material.

**Shape bending**
Rebar can be bent to a number of shapes according to customer specifications.

**Packing**
Rebar shapes and lengths are carefully packed before delivery to their final destination.

High quality according to international standards

We offer rebar according to BS 6744, BS 8666, and ASTM A955. Outokumpu supplies mill test certificates with every bundle delivered and our mills are accredited to recognized international standards, including:
- ISO 9001 - TÜV Nord
- CARES Certificate of Approval for production of rebar
- CARES Certificate for sustainable reinforcing steel
- Kontrollrådet product type approval
Handling stainless steel rebar

To get the best results when using stainless steel rebar, we suggest the following handling, storage, and transport guidelines:

• In general, always avoid carbon steel contamination
• Do not place stainless steel rebar directly on the ground
• Ensure that stainless steel is packed in proper packing material if transported together with carbon steel
• Do not expose stainless steel rebar to marine environments and de-icing salt prior to casting in concrete
• Pack stainless steel rebar in appropriate packing material if stored in aggressive environments
• Slings and bundling wire should be made of nylon or other materials that do not contain, or have not been in contact with, carbon steel
• Movement of long lengths of stainless steel rebar must be performed with even and sufficient support along the length of the reinforcement
• If stainless steel rebar is heated above 400 °C/750 °F, a heat tint or oxide scale may be formed that requires pickling

If contamination occurs:

• Clean the surface with water
• Staining can be removed by using a passivating cleaner such as Avesta Cleaner 401, available from Avesta Finishing Chemicals

For more detailed guidelines, contact outokumpu.com

Correct method for moving rebar

Incorrect method for moving rebar

Services

Outokumpu has over 100 years of technical expertise in both production and use of stainless steel. We can offer support during materials selection, processing, and end use to help you get the most out of our materials.

We offer full-service rebar packages and work closely with you to ensure the optimal schedule for producing, finishing, and delivering rebar. We have production sites in the US and the UK, and hold strategically located rebar stock for fast delivery and materials testing needs.

Outokumpu services can include:

• Materials selection advice
• Rebar cut to length and cut and bend
• Rebar project management
• Delivery flexibility with short lead times
• Technical support
• Training
• Long-term pricing for larger contracts
A world that lasts forever

We believe in a world that is efficient, sustainable, and designed to last forever. The world deserves innovations that can stand the test of time and are ready to be born again at the end of their life cycle. Stainless steel is vital in enabling a sustainable world with economic prosperity.

Contact us
For all enquiries contact:
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sales.bar@outokumpu.com
Tel +44 114 261 6144

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