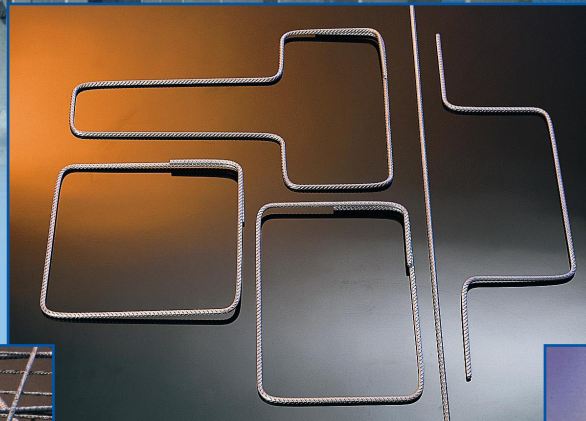




**VALBRUNA**  
UK

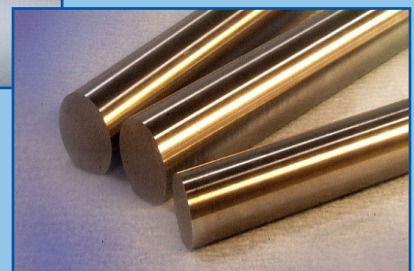
Stainless Steel Reinforcement  
for the Construction Industry



Cut and Bent Reinforcement



Mesh Panels



Dowel Bar

## U.K. Suppliers of Stainless Steel Reinforcement Systems:

Cut and Bent Reinforcement Bar  
Stock Length Reinforcement Bar  
Cut and Stock Length Dowel Bar  
Reinforcement Tying Wire  
Welded Mesh Panels

Valbruna U.K. Ltd is a fully owned subsidiary  
of Acciaierie Valbruna S.p.A - Vicenza, Italy  
Brochure Edition 2025





## A Brief Profile of Valbruna, Italy.



Acciaierie Valbruna is a private and fully integrated Mill based in Italy and operates through two manufacturing operations, one in Vicenza and a second in Bolzano. The company was established over 60 years ago, and is now recognised to be of the world's leading producers of quality standard stainless steel bars and wire together with a comprehensive range of specialist stainless steel products. Valbruna have total commitment to on going investment in order to continually improve production technology and facilities, thereby producing high quality yet competitive stainless bar and wire, a feature that is synonymous with the Valbruna name.

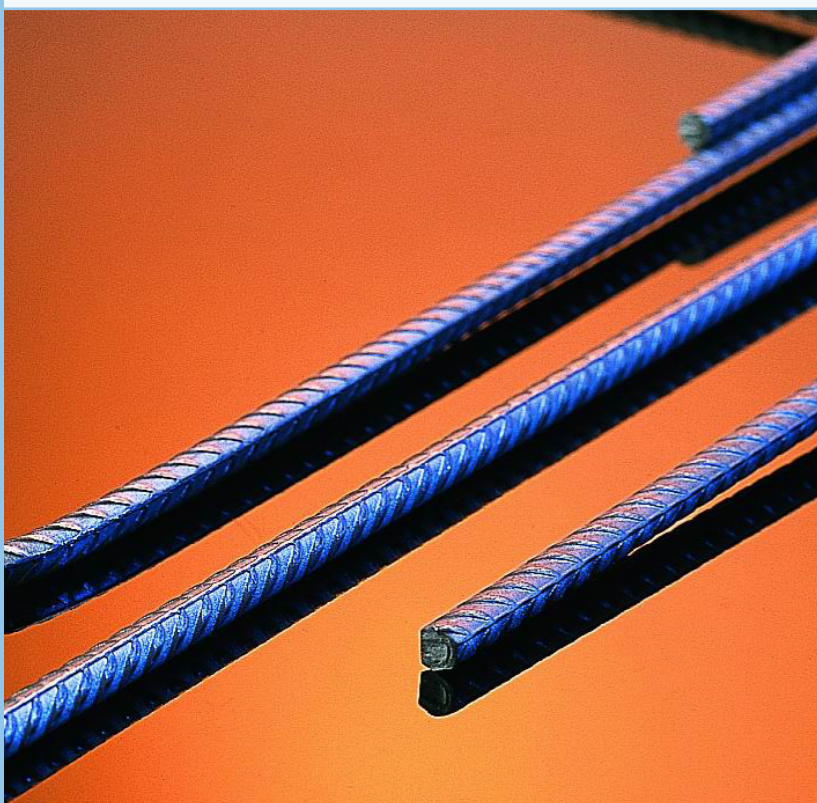
The Mill is ISO 9001:2015.

Valbruna U.K. Ltd, fully owned by Acciaierie Valbruna, began operating in 1986 from its head quarters and main warehouse in the West Midlands. With service centres located in strategic locations around the U.K. to ensure Valbruna's high standards of customer care are continually met.

In 2002 Valbruna U.K. Ltd invested in stainless steel Reinforcement Processing Machinery at our head quarters in West Bromwich, which means we can now offer the following stainless steel products for use on Civil Engineering and Building construction projects:

- Cut and Bent Reinforcement Bar
- Reinforcement Tying Wire
- Cut to length Plain Dowel Bars
- Welded Mesh Panels

Additionally we have a dedicated sales team with extensive knowledge of the construction industry and reinforcement products to service your sales and technical enquiries.



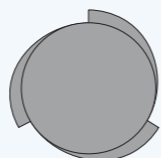
### Focus on Reval® - Stainless Steel Reinforcing Bar

Reval is the trade mark for the three most popular stainless steel grades of re-bar manufactured by Acciaierie Valbruna S.p.A these being:

- 1.4311 (304LN) / 1.4307 (304L)\*
- 1.4429 (316LN) / 1.4404 (316L)\*
- 1.4362 (Alloy 4362 Lean Duplex)
- 1.4462 (Duplex 318)

The quality of the reinforcing bar produced under the Reval trade mark is a result of a very close co-operation between Acciaierie Valbruna and the European Academic world devoted to the problems of concrete structure durability within aggressive corrosion environments.

Reval®  
Stainless Steel  
Reinforcement



\* 1.4307/1.4404 produced for European markets

## Reval® = Long Term Structure Durability due to Exceptional Corrosion Resistance

It is now realised that for many concrete structures durability is of a major importance, and that there is a need to minimise the risk of damage due to reinforcement corrosion in the aggressive environment. The vastly improved anti corrosive performance obtained, and the whole life cost benefits, from the use of stainless steel reinforcement bar can now be more readily recognised. There is a strong technical and economic case for giving consideration to the use of a reinforcement that provides the highest possible levels of long term resistance to corrosion, thus greatly reducing the need for maintenance and repair operations.

The above case has been recently recognised by Government bodies such as the UK Highways Agency which has now issued the "Design Manual for Roads and Bridges" Volume 1, Section 3, Part 15, BA84 / 02. This paper strongly recommends the use of stainless steel reinforcement bar in those elements of the bridges and other concrete highways structures that are at risk from chloride attack.

Reval grades 1.4311 (304LN), 1.4429 (316LN), Lean Duplex (1.4362) and Duplex (1.4462) show an exceptional resistance to corrosion attack from chlorides, salts and atmospheric agents. Reval offers economic advantages in the medium and long term, as the initial costs of Reval is off-set by significant savings in maintenance costs over the life of the concrete structure.

### The benefits of using Reval in concrete on Bridges and other Highways structures, Flood Defence schemes and sensitive buildings are as follows:

- ✓ Excellent corrosion resistance to chlorides.
- ✓ Superior resistance to localised corrosion mechanisms.
- ✓ The corrosive resistance is unaffected by abrasion damage.
- ✓ Higher resistance to seismic and shock loading.
- ✓ Expected service life in concrete of 75 years.
- ✓ Very low life cycle costs.
- ✓ High strength and ductility.
- ✓ Very low magnetic permeability.

### 60 Year Old Pier Still Going Strong

One of the very best examples of "stainless steel re-bar durability" is the Progresso Pier, Mexico. The pier in the background of the photo is over 60 years old and was built using grade 304 stainless re-bar. The pier in the foreground was built 30 years ago using carbon steel re-bar and has virtually disappeared. In December 1998, Ramboll Consulting Engineers of Denmark inspected the pier and issued a 12 page report, they reported that the pier still performs very well and with no sign of deterioration. They estimated the remaining service lifetime to be at least 20-30 years even without any significant maintenance.



European Standard: EN 10088-3:2005  
British Standard: BS 6744:2023

European Standard	British Standard	Stainless Steel Type	Availability
1 4362		Lean Duplex	Stock UK & Italy
1 4311	304LN	Austenitic	Stock UK & Italy
1 4429	316LN	Austenitic	Stock UK & Italy
1 4462	318 S13	Duplex	On Request

**Stainless Steel Material Grade Selection**

The table below is a guidance on the use of stainless steel reinforcement for different service conditions. This has been extracted from BS 6744:2023

Service Condition	Availability
For structures or components with either a long design life, or which are inaccessible to future maintenance.	1.4311 (304LN)
For structures or components exposed to chloride contamination with no relaxation in durability design.	1.4311 (304LN)
Reinforcement bridging joints, or penetrating the concrete surface and also subject to chloride contamination	1.4429 (316LN) 1.4362 (Lean Duplex)
Structures subject to chloride contamination where reductions in normal durability requirements are proposed	1.4429 (316LN) 1.4362 (Lean Duplex)

**Reval® - Material Strength and Properties**  
Reval Reinforcement Bar conforms to BS 6744:2023

<b>0.2% Proof Strength (N/mm2 minimum)</b>	500
<b>Ultimate Tensile Strength (N/mm2 minimum)</b>	550
<b>Elongation</b>	14%

A high proof Reval is available on certain diameters in all three grades of stainless with a 0.2% proof strength of 650 N/mm2. This material is available on request.

**Reval® - Properties**

Dia. mm	6	8	10	12	16	20	25	32	40
<b>Area mm2</b>	28.3	50.3	78.5	113.1	201.1	314.2	490.9	804.2	1256.6
<b>Mass kg/m</b>	0.234	0.409	0.639	0.920	1.625	2.538	3.965	6.500	10.150

**Reval® - Stock and Cut Lengths**

<b>Stock Lengths</b>	6000 - 6500mm random lengths
<b>Cut Lengths</b>	Any combination from stock lengths

**Reval® - Stock and Cut Lengths**

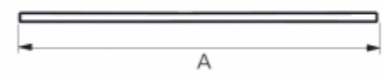
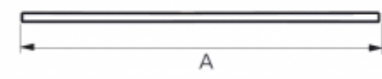
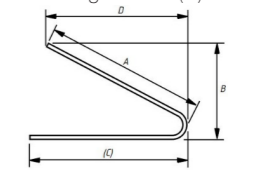
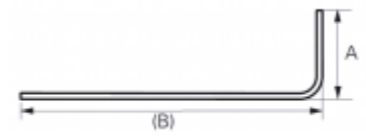
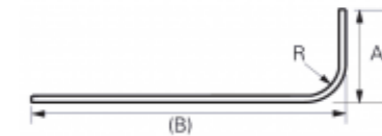
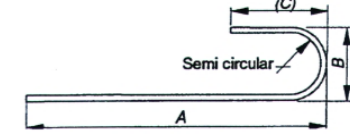
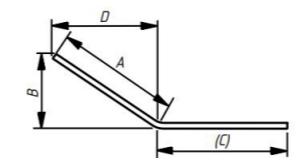

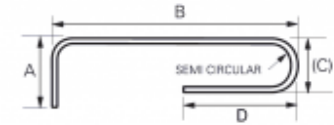
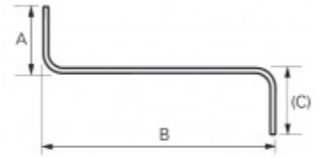
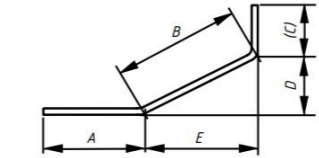
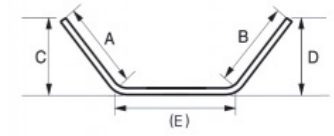
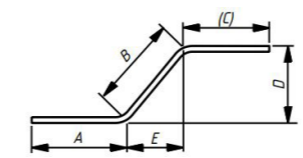
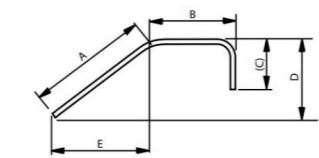
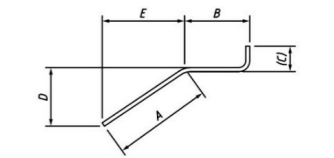
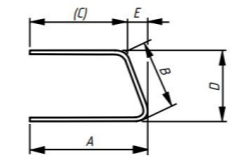
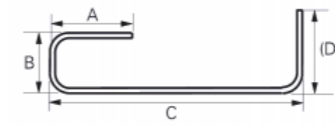
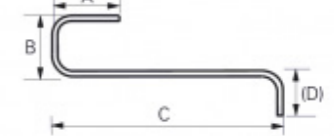
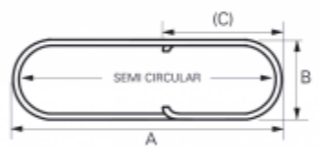
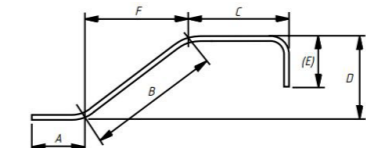
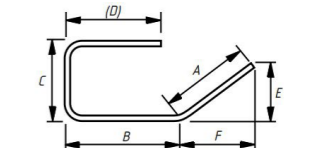
<b>Shape Codes to</b>	BS 8666: 2020
<b>or</b>	BS 4466: 1986

Reval can be supplied up to 12,000mm long to order



Clients can specify UK CARES approved products such as Reval stainless steel reinforcing bar with confidence, as they will always comply with the relevant UK and European standards.

# Focus on Shape Codes to BS8666: 2020 Page 1

<p><b>Shape Code 00</b> Length = A (Cut to Length)</p> 	<p><b>Shape Code 01</b> Length = A (stock lengths)</p> 	<p><b>Shape Code 14</b> Length = A + (C)</p> 
<p><b>Shape Code 11</b> Length = A + (B) - 0.5r - d</p> 	<p><b>Shape Code 12</b> Length = A + (B) - 0.43r - 1.2d</p> 	<p><b>Shape Code 13</b> Length = A + 0.57B + (C) - 1.6d</p> 
<p><b>Shape Code 15</b> Length = A + (C)</p> 	<p><b>Shape Code 21</b> Length = A + B + (C) - r - 2d</p> 	<p><b>Shape Code 22</b> Length = A + B + 0.57C + (D) - 0.5r - 2.6d</p> 
<p><b>Shape Code 23</b> Length = A + B + (C) - r - 2d</p> 	<p><b>Shape Code 24</b> Length = A + B + (C)</p> 	<p><b>Shape Code 25</b> Length = A + B + (E)</p> 
<p><b>Shape Code 26</b> Length = A + B + (C)</p> 	<p><b>Shape Code 27</b> Length = A + B + (C) - 0.5r - d</p> 	<p><b>Shape Code 28</b> Length = A + B + (C) - 0.5r - d</p> 
<p><b>Shape Code 29</b> Length = A + B + (C)</p> 	<p><b>Shape Code 31</b> Length = A + B + C + (D) - 1.5r - 3d</p> 	<p><b>Shape Code 32</b> Length = A + B + C + (D) - 1.5r - 3d</p> 
<p><b>Shape Code 33</b> Length = 2A + 1.7B + 2(C) - 4d</p> 	<p><b>Shape Code 34</b> Length = A + B + C + (E) - 0.5r - d</p> 	<p><b>Shape Code 35</b> Length = A + B + C + (E) - 0.5r - d</p> 

## Focus on Shape Codes to BS8666: 2020 Page 2

<p><b>Shape Code 36</b> Length = <math>A + B + C + (D) - r - 2d</math></p>	<p><b>Shape Code 41</b> Length = <math>A + B + C + D + (E) - 2r - 4d</math></p>	<p><b>Shape Code 44</b> Length = <math>A + B + C + D + (E) - 2r - 4d</math></p>
<p><b>Shape Code 46</b> Length = <math>A + 2B + C + (E)</math></p>	<p><b>Shape Code 47</b> Length = <math>2A + B + 2C + 2q - 3r - 6d</math></p>	<p><b>Shape Code 48</b> Length = <math>2A + B + 2(C) - r - 2d</math></p>
<p><b>Shape Code 51</b> Length = <math>2(A + B + (C)) - 2.5r - 5d</math></p>	<p><b>Shape Code 52</b> Length = <math>2(A + B) + 2(C) - 1.5r - 3d</math></p>	<p><b>Shape Code 56</b> Length = <math>A + B + C + D + 2(E) - 1.5r - 3d</math></p>
<p><b>Shape Code 63</b> Length = <math>2A + 3B + 2(C) - 3r - 6d</math></p>	<p><b>Shape Code 64</b> Length = <math>A + B + C + 2D + E + (F) - 3r - 6d</math></p>	<p><b>Shape Code 67</b> Length = A</p>
<p><b>Shape Code 75</b> Length = <math>\pi(A - d) + B</math></p>	<p><b>Shape Code 77</b> Length = <math>C \cdot \pi(A - d)</math></p>	<p><b>Shape Code 98</b> Length = <math>A + 2B + C + (D) - 2r - 4d</math></p>

Type of steel reinforcement	Notation
For diameters ≤12 mm, Grade B500A, Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016 For diameters >12 mm, Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016	H
Grade B500A conforming to BS 4449:2005+A3:2016	A
Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016	B
Grade B500C conforming to BS 4449:2005+A3:2016	C
Smooth plain round bar, straight shape code 00, for dowel bars only conforming to BS EN 13877-3	D
The specific grade(s) and steel designation number(s) of ribbed stainless steel conforming to BS 6744 and BS EN 10088 shall be stated on each relevant bending	S
Reinforcement of a type not included in the above list having material properties that are defined in the design or contract specification	X

NOTE 1 In the Grade description B500A, etc., "B" indicates reinforcing steel.

NOTE 2 Within the ranges given, the grade(s) supplied for notations H and B are at the supplier's discretion.

NOTE 3 A specific grade(s) and type(s) of ribbed stainless steel conforming to BS 6744 and BS EN 10080 should be stated on each relevant bending schedule

## Typical Civil Projects using Reval®



**Top Picture:**

Diameter 16-40mm grade 1.4301 Reval was used to construct a new central bridge pier on the A1M Barton Bridge at Richmond, North Yorkshire

**Main Contractor:** John Mowlem PLC

**Right Picture:**

Grade 1.4301 Reval used in the repair and strengthening of Cowside Bridge North Yorkshire.

**Main Contractor:** J.N Bentley Ltd



**Bottom Picture:**

Nuclear Plant, France.

If reinforcement corrodes rust will form which causes the surrounding concrete to either crack or burst away from the 'steel'.

In the construction of these Ferro Concrete Drums for the disposal of nuclear waste, grade 304L was used to ensure avoidance of this problem.

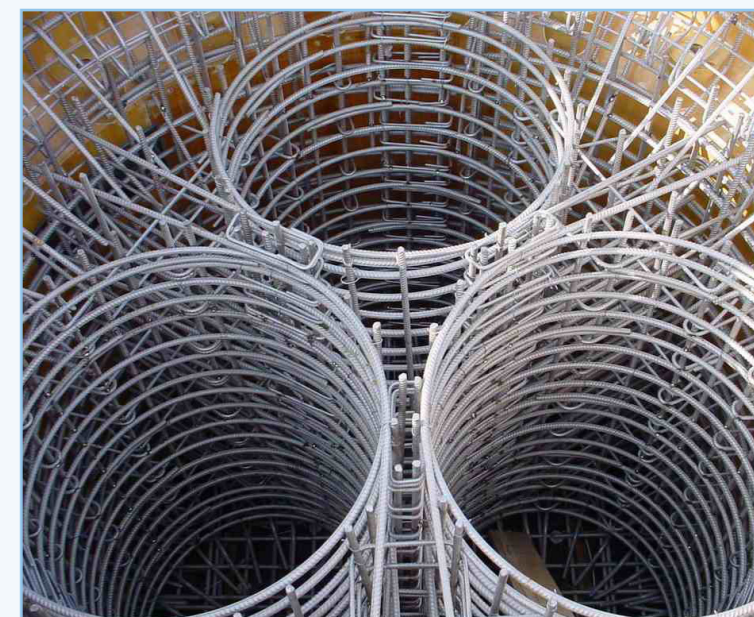
One of the most common uses for Reval in the United Kingdom is for the repair and strengthening of existing decaying Highway structures. Designers and Clients alike are now realising the long term structural and financial benefits of using a reinforcement that provides long term resistance to corrosion.



**Left Picture:**

Swimming Pool, San Francisco, California.

Over 10 tonnes of stainless grade 1.4436 Reval was used in the construction of a concrete lined swimming pool. Grade 1.4436 Reval provides very high corrosive resistance to concrete surface penetration of chlorides, high moisture and humidity levels.



# Typical Civil Projects using Reval®



Melting Shop Building Extension, Italy

**Right Picture:**  
Grade 32-40mm 1.4429 Reval  
Pier Strengthening  
M4 Elevated Section Phase 1



**Left Picture:**  
Bencoolen Bridge, Bude, Cornwall

20 tonnes of 1.4301 and 1.4362 stainless steel complete with lenton threads and couplers were supplied to replacing the aging bridge



**Bottom Picture:**  
Dawlish Sea Defence repairs

Grade 1.4436 and 1.4362 supplied to aid repair of the Dawlish railway line after the devastating storm in early 2014



# Typical Civil Projects using Reval®



**Top Picture:**  
"naked" wave wall type 1 unit showing stainless steel used along side of carbon reinforcement.

**Right Picture:**  
Finished wave wall type 1 unit for Blackpool and Cleveleys Sea Defence  
**Main Contractor:** Birse Civils

Blackpool and Cleveleys sea defence projects required over 1000 tonnes of grade 1.4301 stainless steel supplied over 3 years.

Valbruna offered the project the option to procure all material ahead of schedule and store for the duration of the work.

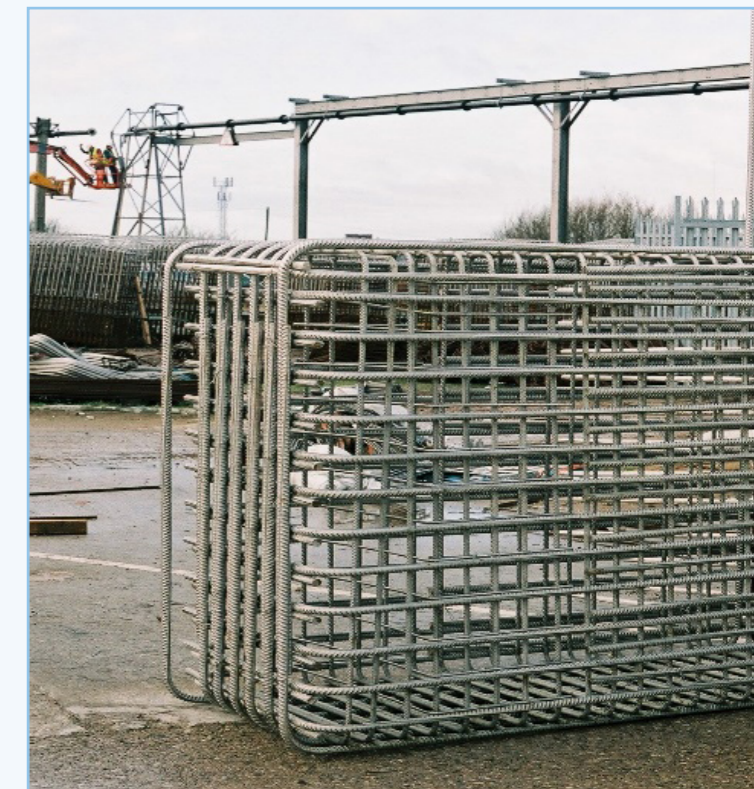
This gave a unique opportunity to the project of fixed pricing and guarantee material supply.



**Left Picture:**  
In-situ end wave wall unit



**Bottom Picture:**  
"naked" wave wall unit assembled and ready for formwork placement and pouring.



# Typical Civil Projects using Reval®



# Reval® - Reinforcement Couplers

Valbruna U.K. Ltd can supply metric threaded couplers for Reval reinforcement for bar diameters 12mm to 40mm. The couplers are manufactured from either grade 1.4401 or 1.4301 stainless steel with a minimum U.T.S of 650 N/mm<sup>2</sup>.

### Reval Threaded Bar Dimensional Data:

Reval Bar Diameter	12mm	16mm	20mm	25mm	32mm	40mm
Thread Size and Pitch - mm	M12 x 1.75	M16 x 2	M20 x 2.5	M24 x 3	M30 x 3.5	M36 x 4
Thread Length - mm	17	21	25	30	37.5	50

Threading will be ISO Metric to BS 3643, tolerance class 8g

### Reval Coupler Dimensional Data:

Coupler Diameter - mm	18	25	30	33	42	60
Coupler Length - mm	37	45	53	63	81	107



Czech Bridge



Viaduct Sieve



The Pearl, Doha, Qatar



Brixham Fish Quay



Pont Adolphe



### Left / Below Picture:

Hutton Rudby Highway Bridge repairs North Yorkshire. A total of 260 number SCA16 Reval Couplers were used with the 13 tonnes of Reval reinforcement on this contract. The couplers were used as "reinforcement continuity" as the new concrete structure was produced in several pours.



# Stainless Steel Reinforcement References

- DB57/01 "Design for durability", Design Manual for Road and Bridges, Volume 1 Section 3 Highways Agency 2001.
- BA84/02 "Use of stainless steel reinforcement in highways structures", Design Manual for Roads and Bridges, Volume 1, Section 3 Highways Agency 2002.
- Concrete Society Technical Report 51 "Guidance on the use of stainless steel reinforcement"
- BS 6744:2023 "Stainless Steel bars for the reinforcement of and use in concrete - requirements and test methods", BSI 2001.
- BS 8666:2020 "Specification for scheduling, dimensioning, bending and cutting of steel reinforcement for concrete", BSI 2001.

# Focus on Stainless Steel Tying Wire

The Department of Transport Specification for Highway Works specifies 1.2mm diameter stainless steel tying wire for use on all exposed faces on road and bridge structures. In general it is a sensible practise to always use stainless steel tying wire with stainless steel reinforcement bar, this is to ensure that if the tying wire encroaches too close to the surface of the concrete cover, the chances of any rust staining are eliminated. Valbruna offer a standard 1.2mm diameter grade 304 stainless steel tying wire which has been soft annealed.



### Tying Wire Technical Data

<b>European Standard</b>	EN 10088-3. 1995
<b>Stainless Steel Grade</b>	AISI 304
<b>Tying Wire Diameter</b>	1.2mm - h9 tolerance
<b>Wire Tensile Strength</b>	680 N/mm2 maximum
<b>Coil Size</b>	15kg catch weight random coils



# Focus on Stainless Steel Dowel Bar

Acciaierie Valbruna S.p.A manufacture a comprehensive range of Plain Round Dowel Bars from 3mm to 250mm diameter, however in the construction industry the size range is typically 12mm to 50mm diameter. Dowel bars are often used to provide a corrosive free connection within concrete structures, or at movement joints within that structure, where the dowel bars are debonded via the use of a plastic sleeve.



Plain Dowel Bar is available in grades 304 and 316 stainless steel as standard and the properties of the bar in general accordance to BS 6744:2009



### Material Grades and Strength

<b>0.2% Proof Strength</b>	200 N/mm2 minimum
<b>Ultimate Strength</b>	500 N/mm2 minimum

### Dowel Bar Properties of popular sizes

Dia. mm	12	16	20	25	30	32	40	50
<b>Area mm2</b>	113.1	201.1	314.2	490.9	706.8	804.2	1256.6	1963.5
<b>Mass kg/m</b>	0.920	1.625	2.538	3.965	5.710	6.500	10.150	15.861

### Dowel Bar Stock and Cut Lengths

<b>Stock Lengths</b>	3000 - 3200mm random lengths in general
<b>Cut Lengths</b>	Any combination from stock lengths

### Plastic Debonding Sleeves & Dowel Expansion Caps

Bar Dia mm	12	16	16	20	25	32
<b>Sleeve Length mm</b>	450	200	450	300	300	375
<b>Cap Length mm</b>	100	100	100	100	100	100



### Cut and Bent Dowel Bar

Valbruna U.K. Ltd can produce cut and bent dowel bar generally in line with BS 8666:2005.

Project: Brighton Costal Protection Scheme  
 Client: Brighton and Hove City Council  
 Main Contractor: Volker Stevin Ltd  
 Engineers: Posford Haskoning

Approximatly 34 tonnes of cut and bent grade 304 dowel bar was supplied to this project. The dowel bar was fixed into the existing concrete sea wall and used to "key" the new 550mm deep structural concrete backing wall.



## Focus on Stainless Steel Mesh Panels

The addition of mesh fabrics to new concrete is a practice that has been used for several years in the construction industry. This helps to improve the tensile strength and / or the cracking behaviour of the concrete. Stainless steel mesh fabrics are typically used where the concrete cover to the steel is minimal, or where chloride concentrations are considered to be a threat to the overall structural durability. They also find their use in aesthetic situations e.g. where rust spots on the concrete surface are not acceptable.

Valbruna manufacture square and structural mesh panels from Reval® Reinforcement Bar to the following specifications:

### Dowel Bar Stock and Cut Lengths

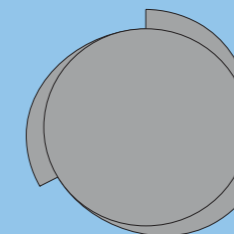
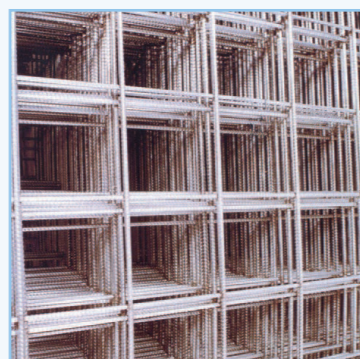
Mesh fabrics conform to BS8666:2020 table 2

Fabric Type	Longitudinal Wire Data			Cross Wire Data			Mass kg/m <sup>2</sup>	Wire Overhang
	Bar Dia mm	Pitch mm	Area mm <sup>2</sup> /m	Bar Dia mm	Pitch mm	Area mm <sup>2</sup> /m		
<b>Square mesh:</b>								
A393	10	200	393	10	200	393	6.28	100mm
A252	8	200	252	8	200	252	4.02	100mm
A193	7	200	193	7	200	193	3.08	100mm
A142	6	200	142	6	200	142	2.26	100mm
A98	5	200	98	5	200	98	1.57	100mm
<b>Structural mesh:</b>								
B1131	12	100	1131	8	200	252	11.06	50mm
B785	10	100	785	8	200	252	8.29	50mm
B503	8	100	503	8	200	252	6.03	50mm
B385	7	100	385	7	200	193	4.62	50mm
B283	6	100	283	7	200	193	3.80	50mm
B196	5	100	196	7	200	193	3.11	50mm

Mass in kg/m<sup>2</sup> is based on grade 1.4436 Stainless Steel Reinforcement Bar  
Standard Mesh Panel size is 4000mm x 2000mm (8m<sup>2</sup>)

### Material Grades and Strength

Euro EN 10088	Bar Strength 0.2% Proof Strength
1.4311	500 N/mm <sup>2</sup>
1.4429	500 N/mm <sup>2</sup>



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