

• **COPPER WIRE**

| APPROXIMATIVE EQUIVALENCE |         |          |             |           |             |
|---------------------------|---------|----------|-------------|-----------|-------------|
| EN DESIGNATION            |         |          | DIN         |           | ASTM DESIG. |
| Symbolic                  | Numeric | Standard | Designation | Standard  |             |
| Cu-ETP                    | CW004A  | EN 13601 | E-Cu58      | DIN 17577 | C11000      |

• **BRASS WIRE**

| APPROXIMATIVE EQUIVALENCE |         |          |             |           |             |
|---------------------------|---------|----------|-------------|-----------|-------------|
| EN DESIGNATION            |         |          | DIN         |           | ASTM DESIG. |
| Symbolic                  | Numeric | Standard | Designation | Standard  |             |
| CuZn15                    | CW502L  | EN 12166 | CuZn15      | DIN 17660 | C23000      |
| CuZn30                    | CW505L  | EN 12166 | CuZn30      | DIN 17660 | C26000      |
| CuZn37                    | CW508L  | EN 12166 | CuZn37      | DIN 17660 | C24000      |
| CuZn39Pb3                 | CW614N  | EN 12166 | CuZn39Pb3   | DIN 17660 | -           |




• **BRONZE WIRE**

| APPROXIMATIVE EQUIVALENCE |         |          |             |           |             |
|---------------------------|---------|----------|-------------|-----------|-------------|
| EN DESIGNATION            |         |          | DIN         |           | ASTM DESIG. |
| Symbolic                  | Numeric | Standard | Designation | Standard  |             |
| CuSn6                     | CW452K  | EN 12166 | CuSn6       | DIN 17682 | C51900      |
| CuSn8                     | CW453K  | EN 12166 | CuSn8       | DIN 17682 | C52100      |

• **NICKEL SILVER WIRE**

| APPROXIMATIVE EQUIVALENCE |         |          |             |           |             |
|---------------------------|---------|----------|-------------|-----------|-------------|
| EN DESIGNATION            |         |          | DIN         |           | ASTM DESIG. |
| Symbolic                  | Numeric | Standard | Designation | Standard  |             |
| CuNi12Zn24                | CW4033  | EN 12166 | CuNi12Zn24  | DIN 17660 | C75700      |
| CuNi18Zn20                | CW4093  | EN 12166 | CuNi18Zn20  | DIN 17660 | C75200      |

• **POSSIBILITIES OF SUPPLY (SECTION)**

|                                                                                    |                   |                                |
|------------------------------------------------------------------------------------|-------------------|--------------------------------|
|  | Round             | 0.10 - 22 mm                   |
|  | Square            | 0.5 x 0.5 - 10 x 10 mm         |
|  | Rectangular       | as per customer's requirements |
|                                                                                    | Special / Profile | as per customer's requirements |

• **SERVICES**

WIRE STRAIGHTENING AND CUTTING

SUPPLY OF WIRE IN ANNEALED CONDITION

• **RECUBRIMIENTOS EN FUNCIÓN DEL TIPO DE ALAMBRE**

- Tin coating
- Copper coating
- PET
- Galvanized
- Electrolytic zinc coating
- Zinc-aluminium coating
- Brass coating
- Nickel coating
- Phosphated coating



**VINCO**

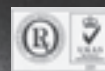
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WIRE DIVISION

The data herein is merely for information purposes and do not imply contractual terms of supply. Unless there is an error or omission.



**VINCO**

VIZCAINA DE INDUSTRIA Y COMERCIO

Further wire grades, coatings and range of diameters are available through the Sales Department.

• STEEL WIRE

HIGH-CARBON STEEL

| APPROXIMATE EQUIVALENCE                                        |            |                              |             |           |
|----------------------------------------------------------------|------------|------------------------------|-------------|-----------|
| EN                                                             |            | DIN DESIG.                   | ASTM DESIG. |           |
| Designation                                                    | Standard   |                              |             |           |
| <b>Non-alloyed and Cold-drawn Steel for Mechanical Springs</b> |            |                              |             |           |
| SL                                                             | EN 10270-1 | CLASSE A                     |             |           |
| SM                                                             | EN 10270-1 | CLASSE B                     |             | A 227     |
| SH                                                             | EN 10270-1 | CLASSE C                     |             |           |
| DM                                                             | EN 10270-1 | -                            |             |           |
| DH                                                             | EN 10270-1 | CLASSE D                     |             | A 228     |
| -                                                              | -          | CLASS #<br>(DIN 1723:1964-1) |             |           |
| <b>Steel for Oil-hardened and Drawn Springs</b>                |            |                              |             |           |
| FDC                                                            | EN 10270-2 | FD                           |             | A 229-1   |
| TDC                                                            | EN 10270-2 | -                            |             | A 229-2   |
| VDC                                                            | EN 10270-2 | VD                           |             | A 230     |
| FDSiCr                                                         | EN 10270-2 | FDSiCr                       |             | -         |
| TDSiCr                                                         | EN 10270-2 | -                            |             | A 401     |
| VDSiCr                                                         | EN 10270-2 | VDSiCr                       |             | A 877     |
| <b>Annealed Steel wire Rods for Springs</b>                    |            |                              |             |           |
| 51CrV4                                                         | -          | 51CrV4                       |             | 6145.6150 |

LOW-CARBON STEEL

| APPROXIMATE EQUIVALENCE |            |             |           |                 |
|-------------------------|------------|-------------|-----------|-----------------|
| EN                      |            | DIN         |           | AISI/SAE DESIG. |
| Designation             | Standard   | Designation | Standard  |                 |
| C 7 D                   | EN 10016-2 | D8-2        | DIN 17140 | 1008            |
| C 15E 2E                | EN 10263-3 | Cq 15       | DIN 1654  | 1015            |
| 2282                    | EN 10263-4 | 22 B 2      | DIN 1654  | -               |
| 35B2                    | EN 10269   | 35 B 2      | DIN 1654  | -               |
| 11 SMn 30               | EN 10087   | 9SMn28      | DIN 1651  | 1213            |

• STAINLESS STEEL WIRE
















| APPROXIMATE EQUIVALENCE               |          |               |          |  |
|---------------------------------------|----------|---------------|----------|--|
| EN                                    |          | AISI          |          |  |
| Designation (includes DIN standard)   | Standard |               |          |  |
| <b>Ferritic Stainless Steel</b>       |          |               |          |  |
| X6Cr17                                | 1.4016   | EN 10088-3    | 430      |  |
| <b>Martensitic Stainless Steel</b>    |          |               |          |  |
| X20Cr13                               | 1.4021   | EN 10088-3    | 420      |  |
| <b>Austenitic Stainless Steel</b>     |          |               |          |  |
| X2CrNi18-9                            | 1.4307   | EN 10088-3    | 304 L    |  |
| X3CrNiCu18-9-4                        | 1.4567   | EN 10088-3    | 304 Cu   |  |
| X5CrNi18-10                           | 1.4301   | EN 10088-3    | 304      |  |
| X5CrNiMo17-12-2                       | 1.4401   | EN 10270-3(*) | 316      |  |
| X6CrNiMoTi17-12-2                     | 1.4571   | EN 10088-3    | 316 Ti   |  |
| X7CrNiAl17-7                          | 1.4568   | EN 10270-3(*) | 631      |  |
| X8CrNiS18-9                           | 1.4305   | EN 10088-3    | 303      |  |
| X10CrNi18-8(NS)                       | 1.4310   | EN 10270-3(*) | 302      |  |
| X10CrNi18-8(HS)                       | 1.4310   | EN 10270-3(*) | 302 HLS  |  |
| X8CrMnCuNb17-8-3                      | 1.4597   | EN 10088-3    | 204 Cu   |  |
| <b>Stainless Steel for Welding</b>    |          |               |          |  |
| X2CrNi19-9                            | 1.4316   | DIN 17145     | 308 L-Si |  |
| X2CrNiMo19-12                         | 1.4430   | DIN 17145     | 316 L-Si |  |
| <b>Heat-resistant Stainless Steel</b> |          |               |          |  |
| X15CrNiSi25-21                        | 1.4841   | EN 10095      | 314      |  |

(\*): Grades as per EN 10270-3 are also to be found in the EN 10088-3 standard. These qualities are specifically for springs.

• ALUMINIUM WIRE

| APPROXIMATE EQUIVALENCE |                 |          |             |          |             |
|-------------------------|-----------------|----------|-------------|----------|-------------|
| DESIG. EN               |                 |          | DIN         |          | ASTM DESIG. |
| Numeric                 | Symbolic        | Standard | Designation | Standard |             |
| EN AW-1050 A            | EN AW-AI99.5    | EN 573   | Al 99.5     | DIN 1745 | 1050A       |
| EN AW-2011              | EN AW-AICu6BiPb | EN 573   | Al Cu Bi Pb | DIN 1745 | 2011        |
| EN AW-5052              | EN AW-AIMg2.5   | EN 573   | Al Mg 2.5   | DIN 1745 | 2052        |
| EN AW-5754              | EN AW-AIMg3     | EN 573   | Al Mg 3     | DIN 1745 | 5754        |

• CONDITIONING FOR THE DIFFERENT TYPES OF WIRE

| TYPE OF CONDITIONING                                                                                                | QUALITY |            |            |         |        |        |   | 51CrV4 | 308 L-Si<br>316 L-Si | □<br>□ | Maximum weights<br>kg |
|---------------------------------------------------------------------------------------------------------------------|---------|------------|------------|---------|--------|--------|---|--------|----------------------|--------|-----------------------|
|                                                                                                                     | SL-SM   | FDC        | 302        | 303-304 | D8-2   | CuZn   |   |        |                      |        |                       |
|                                                                                                                     | SH      | TDC        | 316        | 304L    | Cq15   | Cu-ETP |   |        |                      |        |                       |
|                                                                                                                     | DM      | VDC/VDSiCr | 316 Ti     | 304 Cu  | 22B2   | CuSn   |   |        |                      |        |                       |
|                                                                                                                     | DH      | FDSiCr     | 304-631    | 430-420 | 35B2   | Al     |   |        |                      |        |                       |
| II                                                                                                                  | TDSiCr  | 302HLS     | 204 Cu-314 | 9SMn28  | CuNiZn |        |   |        |                      |        |                       |
|  COIL                            | ✓       | ✓          | ✓          | ✓       | ✓      | ✓      | ✓ |        |                      |        | 500                   |
|  Z SPOOL                         | ✓       | ✓          | ✓          |         |        | ✓      |   |        |                      |        | 800                   |
|  SPOOLED COIL                    | ✓       |            |            | ✓       | ✓      |        |   |        | ✓                    |        | 2000                  |
|  ORBIT                           |         |            |            | ✓       | ✓      | ✓      |   |        |                      |        | 1200                  |
|  BREMER COIL                     |         |            |            |         |        |        |   |        | ✓                    |        | 400                   |
|  DIN 160 PLASTIC SPOOL           |         |            |            |         | ✓      | ✓      |   |        |                      |        | 7                     |
|  DIN 200 PLASTIC SPOOL           | ✓       |            | ✓          |         |        |        |   |        |                      |        | 10                    |
|  DIN 300 PLASTIC SPOOL           |         |            | ✓          |         | ✓      |        |   |        |                      |        | 17                    |
|  DIN 355 PLASTIC SPOOL           | ✓       |            |            |         | ✓      |        |   |        |                      |        | 45                    |
|  SH 390 PLASTIC SPOOL<br>SH 460 |         |            | ✓          |         | ✓      |        |   |        | ✓                    |        | 45                    |
|  G240/40 METAL REEL<br>G360/40 | ✓       |            | ✓          |         | ✓      |        |   | ✓      |                      |        | 400                   |
|  WOODEN SPOOL                  |         |            | ✓          |         | ✓      |        |   |        | ✓                    |        | 400                   |
|  SPIDER / CARRIER              | ✓       | ✓          |            | ✓       | ✓      | ✓      |   |        |                      |        | 2.000                 |
|  CARDBOARD DRUM                |         |            |            |         | ✓      | ✓      |   |        | ✓                    |        | 400                   |
|  CUT-TO-LENGTH BARS            | ✓       | ✓          | ✓          | ✓       | ✓      |        | ✓ | ✓      |                      |        |                       |



• AXIAL DISPLACEMENT (HELIX/ PITCH)

CONTROL OF RESIDUAL TORSION

For a turned wap (cast) the condition of non-existence of residual tension in wires with a diameter of less than 5.00mm is respected if:

$$f_{\text{real}} < \frac{0.2 \cdot D}{\sqrt[4]{d}}$$

