

YOUR **PRECISION,**  
OUR **MISSION**

**WALSIN LIHWA CORPORATION (YENSHUI PLANT)**

ADD : NO. 3-10, SHI JOU LIAU, CHIN SHUEI LI, YENSHUI DIST., TAINAN CITY, TAIWAN, R.O.C.  
POSTCODE : 737401  
TEL : 886-6-652-0911  
FAX : 886-6-652-0931

**JIANGYIN WALSIN SPECIALTY ALLOY MATERIALS CO., LTD.**

ADD | NO.677, BINJIANG WEST ROAD, JIANGYIN CITY, JIANGSU, CHINA  
POSTCODE | 214443  
TEL | 86-510-8640-2144  
FAX | 86-510-8668-6036

**YANTAI WALSIN STAINLESS STEEL CO., LTD.**

ADD | **STEELMAKING PLANT** – NO.2, WUZHISHAN ROAD ETDZ YANTAI CITY, SHANDONG  
**ROLLING PLANT** – NO.6, ZHENGZHOU ROAD, ETDZ, YANTAI CITY, SHANDONG  
POSTCODE | 264006  
TEL | 86-535-216-6688  
FAX | 86-535-216-5008 EXT.6259



STEEVAL  
OFFICIAL



WALSIN  
OFFICIAL



LINKEDIN



## COLD-FINISHED BAR CATALOGUE

Your trusted partner in precision machining

ORIGINATED FROM WALSIN LIHWA



## ABOUT STEEVAL™

Walsin Lihwa was founded in 1966 as a wire and cable manufacturer. In the 1990's, Walsin expanded into the stainless steel business by establishing a fully integrated mill that delivers a wide variety of products, including billets, wire rods, bars, flat coil and more.

By 2025, deeper understanding of end-use needs made one thing clear: real value starts with knowing our customers. This insight led us to place cold-finished bars—the main material for precision manufacturing—at the heart of our transformation.

We shifted from a material supplier to a solution provider, pairing disciplined manufacturing with innovation. Through customer collaboration and advanced processing, we deliver cold-finished bars with superior quality, stability, and performance. Guided by six core values—Smart Manufacturing, Product Diversity, Quality Assurance, Accreditations, Service, and Co-development—we continue to strengthen our capabilities.

This commitment shaped Steeval™, our new cold-finished bar brand. Steeval™ delivers an unparalleled stainless steel experience across industries, embodying the limitless potential of Steel & Value. The name reflects our mission to enable precision and our belief that customer success defines our own.

Steeval™ is your trusted precision-machining partner and a key milestone in Walsin Lihwa's move toward high-end, diversified stainless steel solutions.

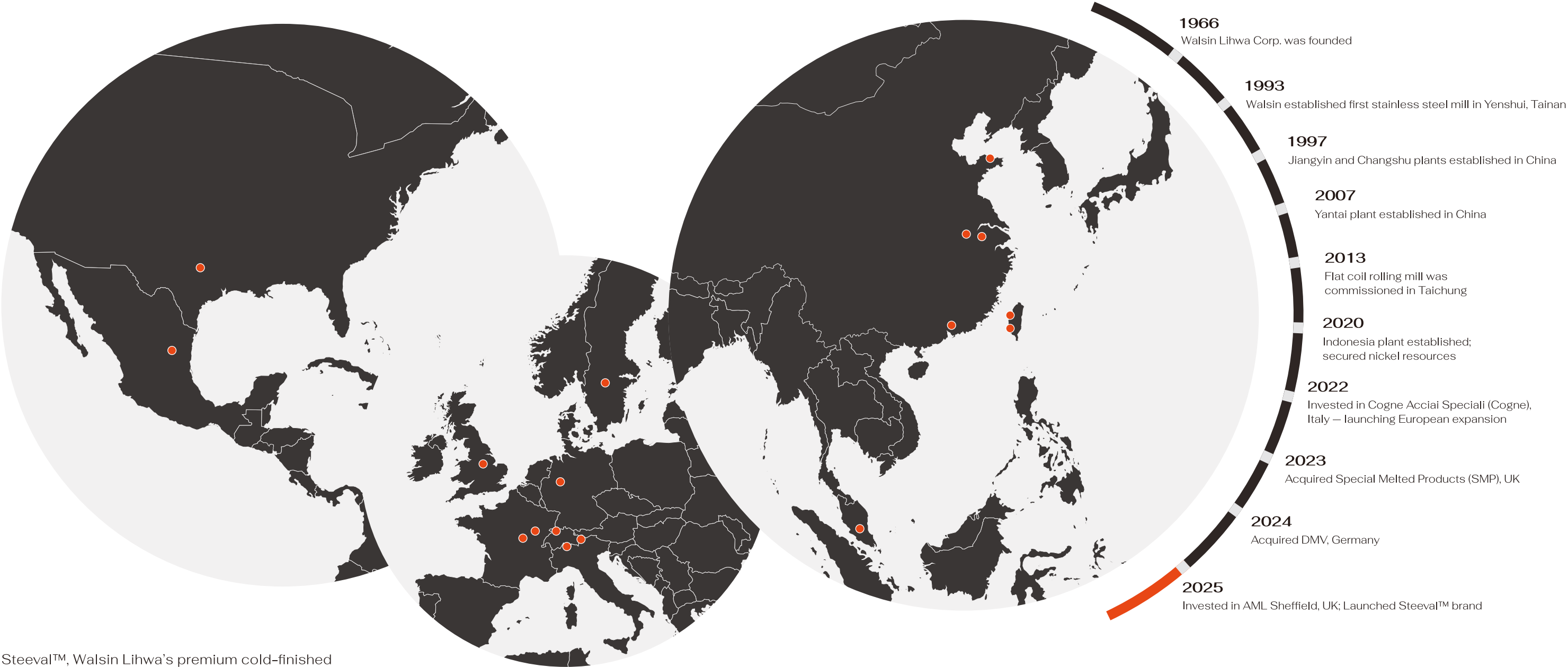


YOUR  
PRECISION,

OUR  
MISSION



# ROOTED IN SUCCESS



Steeval™, Walsin Lihwa’s premium cold-finished bar, builds on decades of technical expertise, delivering reliable, high-quality materials and expert support to customers worldwide.

Since 2022, we have accelerated our growth through strategic acquisitions across Europe. These investments have strengthened our global network and advanced our metallurgical and mechanical processing capabilities, enabling Walsin Lihwa to evolve from a material manufacturer into a trusted solutions partner.

Looking ahead, Walsin Lihwa will continue offering a comprehensive portfolio—including nickel products and stainless steel—while leading the next phase of transformation. Steeval™ will focus on high-quality cold-finished bars, driving innovative technical solutions, reliable delivery, and agile service for the precision manufacturing industry.

**Walsin**

Integrated production

**Plants** | Yanshui, Taichung (Taiwan); Yantai, Jiangyin, Changshu (China); Malaysia; Indonesia

**DMV**

Leading seamless pipe and tube producer

Facilities in Germany (HQ), France, Italy, and USA

**AML**

Precision machining for aerospace and energy industries

Located in Sheffield, UK

**Cogne**

Integrated production

Based in Italy; cornerstone of Walsin’s European presence

**SMP**

Specializes in aerospace, oil and gas, and nuclear sectors

Located in Sheffield, UK

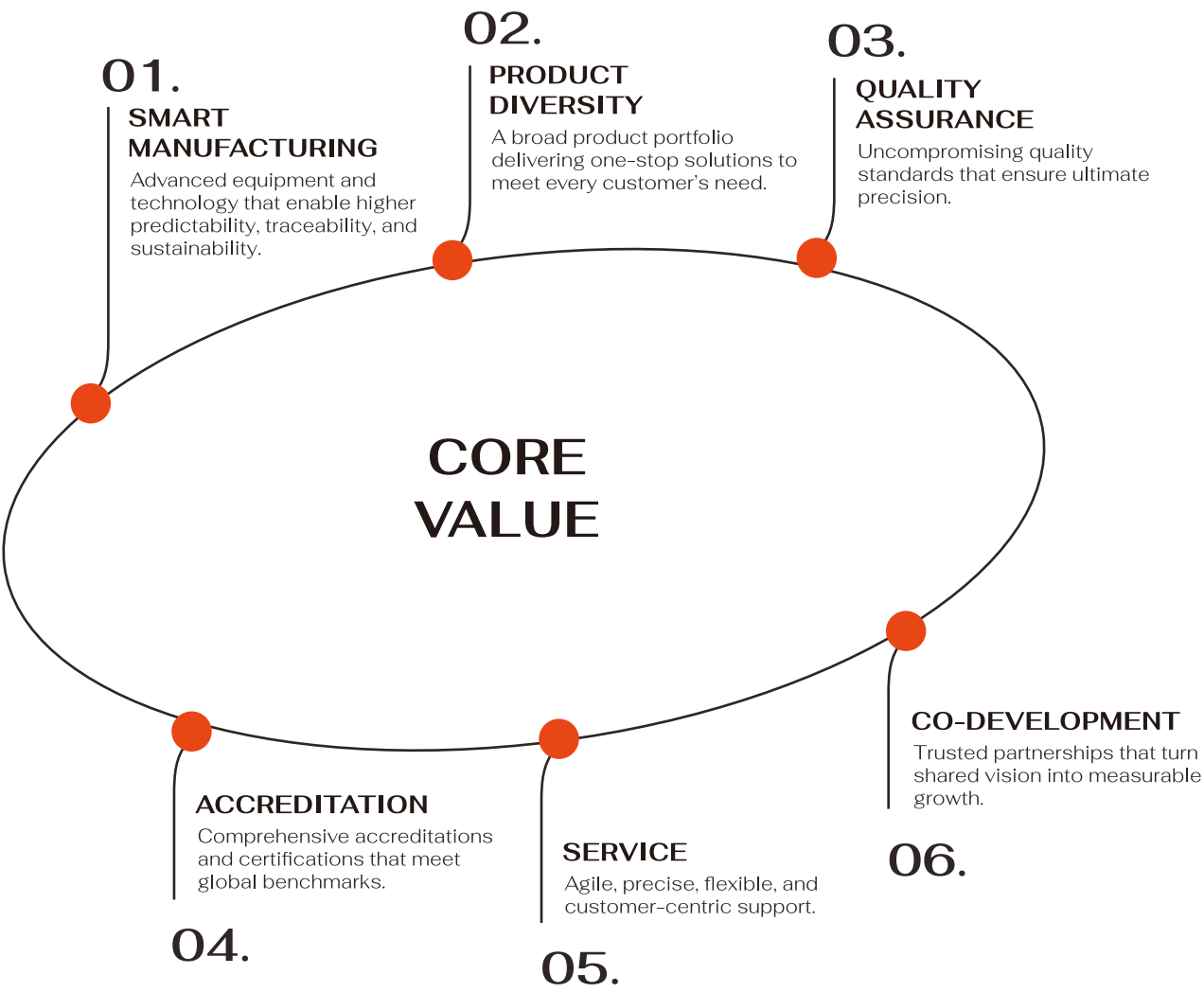
ULTIMATE  
TRUST



INNOVATIVE  
SOLUTIONS

STEEVAL’S VALUE –  
EMPOWERING INDUSTRIAL BREAKTHROUGH

Steeval™ stands for precision with purpose. Supported by rigorous quality standards, full accreditations, advanced facilities, and a diverse product portfolio, Steeval™ offers exceptional flexibility, collaborative co-development, innovative solutions, and the confidence customers can rely on.



STEEVAL™ FUNTIONAL FEATURES

MACHINABILITY

Steeval™ provides high-performance cold-finished bars designated for superior machinability. It minimizes chip deformation, extends tool life and reduce machine downtime and consumable costs. Ideal for high-speed machining operations, Steeval™ ensures production efficiency and increases overall throughput.

| Steeval | AISI | JIS  | DIN    |
|---------|------|------|--------|
| IMS303  | 303  | 303  | 1.4305 |
| IMS304  | 304  | 304  | 1.4301 |
| IMS304L | 304L | -    | 1.4307 |
| IMS316  | 316  | 316  | 1.4401 |
| IMS316F | -    | 316F | -      |
| IMS316L | 316L | -    | 1.4404 |

CLEANLINESS

Steeval™ offers cold-finished bars in various cleanliness levels to serve diverse industries, including automotive, automation, semiconductor, and aerospace. Each grade is engineered to deliver the material quality and cleanliness precisely aligned with the requirements of the end applications.

| Steeval | AISI | JIS   | DIN    |
|---------|------|-------|--------|
| ●       | 304  | 304   | 1.4301 |
| ●       | 304L | -     | 1.4307 |
| ●       | 316  | 316   | 1.4401 |
| ●       | 316L | -     | 1.4404 |
| ●       | -    | 316L  | 1.4435 |
| ●       | 416  | 416   | 1.4005 |
| ●       | 420  | -     | 1.4021 |
| ●       | -    | 420J1 | 1.4021 |
| ●       | -    | 420J2 | 1.4028 |
| ●       | 430F | 430F  | -      |

HEAT RESISTANCE

Heat-resistant stainless steel offers excellent creep and oxidation resistance, ensuring reliable performance under high temperatures. It is widely used in petrochemical equipment, boilers, heat exchangers, furnace tubes, automotive exhaust systems, and power generation facilities.

| Steeval | AISI | JIS  | DIN    |
|---------|------|------|--------|
| ●       | 310S | 310S | 1.4845 |
| ●       | 310H | -    | 1.4845 |
| ●       | 314  | 314  | 1.4841 |

WEAR RESISTANCE

Steeval™ offers wear-resistant cold-finished bars with high strength and hardness, supported by integrated testing for corrosion and wear performance. These materials are widely applied in industries with demanding long-term friction durability, including automotive, tooling, petrochemical, and mechanical transmission.

| Steeval | AISI | JIS   | DIN    |
|---------|------|-------|--------|
| ●       | 410  | 410   | 1.4006 |
| ●       | 416  | 416   | 1.4005 |
| ●       | 420  | -     | 1.4021 |
| ●       | -    | 420F  | -      |
| ●       | -    | -     | 1.4029 |
| ●       | -    | 420J1 | 1.4021 |
| ●       | -    | 420J2 | 1.4028 |
| ●       | 431  | 431   | 1.4057 |
| WLS550  | -    | -     | -      |
| 440M    | -    | -     | -      |
| ●       | 440A | 440A  | -      |
| ●       | 440C | -     | -      |

SOFT MAGNETISM

Soft magnetic stainless steel can be rapidly magnetized and demagnetized under low magnetic fields, offering stable magnetic performance and good machinability. It is widely used in motors, solenoid valves, sensors, relays, and electronic components, serving the electrical and automation industries.

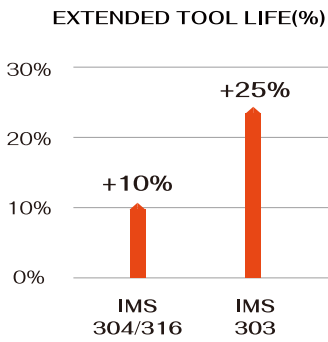
| SPECIFICATION |       |      |            | SOFT MAGNETISM PERFORMANCE |       |
|---------------|-------|------|------------|----------------------------|-------|
| Steeval       | AISI  | JIS  | DIN        | Hc(A/m)                    | μmax  |
| SMA 4003      | -     | -    | 1.4003     | <180                       | >3000 |
| SMA 4016      | 430   | 430  | 1.4016     | <180                       | >2000 |
| SMA 4045      | -     | -    | 1.4045     | <180                       | >2500 |
| SMA 4045M     | -     | -    | 1.4045 Mod | <300                       | >550  |
| SMA 4105      | 430F  | 430F | 1.4105     | <200                       | >1800 |
| SMA 4105M     | -     | -    | 1.4105 Mod | <350                       | >1000 |
| SMA 4105Si    | 430FR | -    | 1.4105Si   | <180                       | >2500 |
| SMA 4106      | -     | -    | 1.4106     | <250                       | >1500 |
| SMA 4106M     | -     | -    | 1.4106 Mod | <300                       | >2000 |
| SMA 4114      | XM34  | -    | 1.4114     | <450                       | >1000 |
| SMA 4511      | -     | -    | 1.4511     | <180                       | >2000 |

STEEVAL™ IMS SERIES – IMPROVED MACHINABILITY

We continuously advance our R&D and deepen our industry expertise, partnering with leading research institutes and universities to enhance machinability of our cold-finished bars. These sustained efforts shaped Steeval™, a new generation of cold-finished bars engineered for higher machinability. Steeval™ boosts machining productivity and delivers superior efficiency, precision, and consistency for all machining shops and end-users alike.

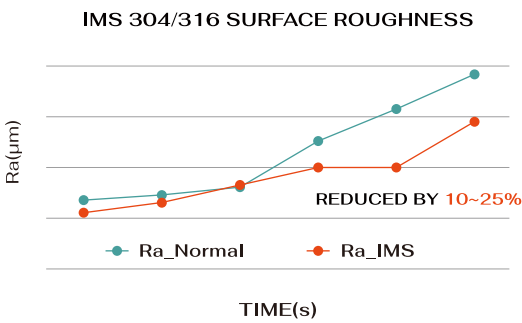
EXTENDED TOOL LIFE

IMS303 increases tool life by 25%, while IMS304 and IMS316 deliver 10% improvement.



IMPROVED SURFACE ROUGHNESS

Turning performance achieves a 10–25% reduction in surface roughness.



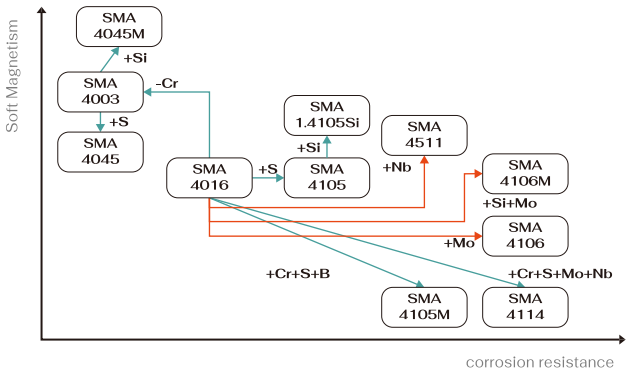
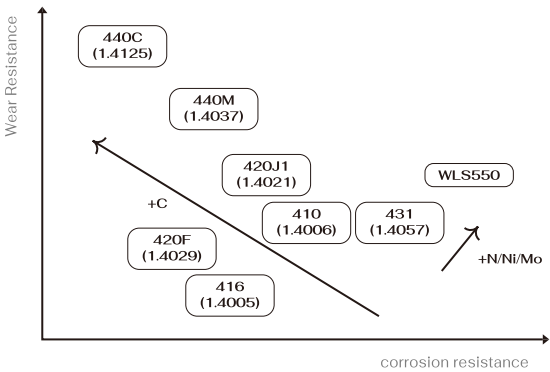
ENHANCED CORROSION RESISTANCE

As part of this upgrade, we also addressed the corrosion inherent to high sulfur content 303 grades. The enhanced IMS303 delivers 50% improvement in corrosion resistance, effectively extending component service life and reducing defects from corrosion.

IMPROVED CHIP CONTROL

Shorter, well-broken chips effectively reduce tool wrapping and chip entanglement, enhancing process stability and minimizing downtime.

\*The data shown are for reference only and do not constitute performance guarantees. Actual results may vary by process and application conditions. Only the official Material Certificate data shall be considered valid.





# AVAILABLE STAINLESS STEEL GRADES & CHEMICAL COMPOSITION

FOR STAINLESS STEEL COLD - FINISHED BAR

|            | SPECIFICATION |       |            |         |                           |           | CHEMICAL COMPOSITION (%)^ |           |       |           |              |             |           |           |           |                              |
|------------|---------------|-------|------------|---------|---------------------------|-----------|---------------------------|-----------|-------|-----------|--------------|-------------|-----------|-----------|-----------|------------------------------|
|            | AISI          | JIS   | DIN        | Steeval | Improved<br>Machinability | C         | Si                        | Mn        | P     | S         | Ni           | Cr          | Mo        | Cu        | N         | Other                        |
| AUSTENITIC | 204Cu         | -     | -          | ●       |                           | 0.15      | 1.00                      | 6.50-9.00 | 0.060 | 0.030     | 1.50-3.50    | 15.50-17.50 | -         | 2.00-4.00 | 0.05-0.25 |                              |
|            | -             | -     | 1.4597     | ●       |                           | 0.10      | 2.00                      | 6.50-8.50 | 0.040 | 0.030     | 2.00         | 16.00-18.00 | 1.00      | 2.00-3.50 | 0.15-0.30 | B:0.0005-0.0050              |
|            | XM-19         | -     | -          | ●       |                           | 0.06      | 1.00                      | 4.00-6.00 | 0.045 | 0.030     | 11.50-13.50  | 20.50-23.50 | 1.50-3.00 | -         | 0.20-0.40 | Nb:0.10-0.30 V:0.10-0.30     |
|            | 301           | 301   | 1.4310     | ●       |                           | 0.15      | 1.00                      | 2.00      | 0.045 | 0.030     | 6.00-8.00    | 16.00-18.00 | -         | -         | 0.10      |                              |
|            | 302           | 302   | 1.4325     | ●       |                           | 0.15      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-10.00   | 17.00-19.00 | -         | -         | 0.10      |                              |
|            | 303           | 303   | 1.4305     | ●       | IMS                       | 0.15      | 1.00                      | 2.00      | 0.20  | 0.15 min. | 8.00-10.00   | 17.00-19.00 | -         | -         | -         |                              |
|            | -             | 303Cu | -          | ●       | IMS                       | 0.15      | 1.00                      | 3.00      | 0.20  | 0.15 min. | 8.00-10.00   | 17.00-19.00 | -         | 1.50-3.50 | -         |                              |
|            | 304           | 304   | 1.4301     | ●       | IMS                       | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-10.50   | 18.00-20.00 | -         | -         | 0.10      |                              |
|            | S30432        | -     | -          | ●       |                           | 0.07-0.13 | 0.30                      | 1.00      | 0.040 | 0.010     | 7.50-10.50   | 17.00-19.00 | -         | 2.50-3.50 | 0.05-0.12 | Al:0.003-0.030 B:0.001-0.010 |
|            | 304L          | -     | 1.4307     | ●       | IMS                       | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-12.00   | 18.00-20.00 | -         | -         | -         |                              |
|            | -             | 304L  | -          | ●       | IMS                       | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-13.00   | 18.00 20.00 | -         | -         | -         |                              |
|            | -             | -     | 1.4306     | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-12.00  | 18.00-20.00 | -         | -         | -         |                              |
|            | -             | 304N1 | -          | ●       |                           | 0.08      | 1.00                      | 2.50      | 0.045 | 0.030     | 7.00-10.50   | 18.00-20.00 | -         | -         | 0.10-0.25 |                              |
|            | -             | 304N2 | -          | ●       |                           | 0.08      | 1.00                      | 2.50      | 0.045 | 0.030     | 7.50-10.50   | 18.00-20.00 | -         | -         | 0.15-0.30 | Nb:0.15max.                  |
|            | -             | 304J3 | -          | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-10.50   | 17.00-19.00 | -         | 1.00-3.00 | -         |                              |
|            | -             | -     | -          | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-10.50   | 17.00-19.00 | -         | 2.00-3.00 | -         |                              |
|            | 302HQ         | -     | -          | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.00-10.00   | 17.00-19.00 | -         | 3.00-4.00 | -         |                              |
|            | -             | XM7   | 1.4567     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 8.50-10.50   | 17.00-19.00 | -         | 3.00-4.00 | -         |                              |
|            | 305           | 305   | -          | ●       |                           | 0.12      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.50-13.00  | 17.00-19.00 | -         | 1.00      | -         |                              |
|            | -             | 305J1 | 1.4303     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 11.00-13.50  | 16.50-19.00 | -         | -         | -         |                              |
|            | 310S          | 310S  | 1.4845     | ●       |                           | 0.08      | 1.50                      | 2.00      | 0.045 | 0.030     | 19.00-22.00  | 24.00-26.00 | -         | -         | -         |                              |
|            | 310H          | -     | 1.4845     | ●       |                           | 0.04-0.08 | 1.50                      | 2.00      | 0.045 | 0.030     | 19.00-22.00  | 24.00-26.00 | -         | -         | -         |                              |
|            | 314           | 314   | 1.4841     | ●       |                           | 0.25      | 1.50-3.00                 | 2.00      | 0.045 | 0.030     | 19.00-22.00  | 23.00-26.00 | -         | -         | -         |                              |
|            | 316           | 316   | 1.4401     | ●       | IMS                       | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-14.00  | 16.00-18.00 | 2.00-3.00 | -         | -         |                              |
|            | -             | 316F  | -          | ●       | IMS                       | 0.08      | 1.00                      | 2.00      | 0.045 | 0.10 min. | 10.00-14.00  | 16.00-18.00 | 2.00-3.00 | -         | -         |                              |
|            | 316L          | -     | 1.4404     | ●       | IMS                       | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-14.00  | 16.00-18.00 | 2.00-3.00 | -         | -         |                              |
|            | -             | 316L  | 1.4435     | ●       | IMS                       | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 12.00-15.00  | 16.00-18.00 | 2.00-3.00 | -         | -         |                              |
|            | -             | -     | 1.4578     | ●       |                           | 0.04      | 1.00                      | 2.00      | 0.045 | 0.015     | 10.00-11.00  | 16.50-17.50 | 2.00-2.50 | 3.00-3.50 | 0.10      |                              |
|            | 316N          | -     | 1.4406     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-14.00  | 16.00-18.00 | 2.00-3.00 | -         | 0.10-0.16 |                              |
|            | -             | 316N  |            | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-14.00  | 16.00-18.00 | 2.00-3.00 | -         | 0.10-0.22 |                              |
|            | 316LN         | -     |            | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00-13.00  | 16.00-18.00 | 2.00-3.00 | -         | 0.10-0.16 |                              |
|            | -             | 316LN |            | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.50-14.50  | 16.50-18.50 | 2.00-3.00 | -         | 0.12-0.22 |                              |
|            | -             | 316Ti | 1.4571     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 10.00- 14.00 | 16.00-18.00 | 2.00-3.00 | -         | -         | Ti =5XC min.                 |
|            | 317           | 317   | -          | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 11.00-15.00  | 18.00-20.00 | 3.00-4.00 | -         | 0.10      |                              |
|            | 317L          | 317L  | -          | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.045 | 0.030     | 11.00-15.00  | 18.00-20.00 | 3.00-4.00 | -         | 0.10      |                              |
|            | 321           | -     | -          | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-12.00   | 17.00-19.00 | -         | -         | -         | Ti =5X(C+N)-0.70             |
|            | 321           | 321   | 1.4541     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-13.00   | 17.00-19.00 | -         | -         | -         | Ti =5XC min.                 |
|            | 321H          | -     | -          | ●       |                           | 0.04-0.10 | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-12.00   | 17.00-19.00 | -         | -         | -         | Ti =4X(C+N)-0.70             |
|            | 347           | -     | 1.4550     | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-12.00   | 17.00-19.00 | -         | -         | -         | Nb =10XC-1.10                |
|            | -             | 347   |            | ●       |                           | 0.08      | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-13.00   | 17.00-19.00 | -         | -         | -         | Nb =10XC min.                |
|            | 347H          | -     | -          | ●       |                           | 0.04-0.10 | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-12.00   | 17.00-19.00 | -         | -         | -         | Nb =8XC-1.10                 |
|            | 347HFG        | -     | -          | ●       |                           | 0.06-0.10 | 1.00                      | 2.00      | 0.045 | 0.030     | 9.00-12.00   | 17.00-19.00 | -         | -         | -         | Nb =8XC-1.10                 |
| FERRITE    | 409Cb         | -     | -          | ●       |                           | 0.06      | 1.00                      | 1.00      | 0.045 | 0.040     | 0.50         | 10.50-11.70 | -         | -         | -         | Nb=10XC-0.75                 |
|            | S40976        | -     | -          | ●       |                           | 0.03      | 1.00                      | 1.00      | 0.040 | 0.030     | 0.75-1.0     | 10.50-11.70 | -         | -         | 0.04      | Nb=10X(C+N)-0.80             |
|            | -             | -     | 1.4003     | ●       |                           | 0.03      | 1.00                      | 2.00      | 0.040 | 0.030     | 0.30-1.00    | 10.50-12.50 | -         | -         | 0.030     |                              |
|            | 430           | 430   | 1.4016     | ●       |                           | 0.12      | 0.75                      | 1.00      | 0.040 | 0.030     | -            | 16.00-18.00 | -         | -         | -         |                              |
|            | -             | -     | -          | 430Cu   |                           | 0.08      | 1.00                      | 2.00      | 0.040 | 0.030     | -            | 16.00-18.00 | -         | 0.50-1.50 | -         |                              |
|            | -             | -     | 1.4045     | ●       |                           | 0.025     | 2.00                      | 1.50      | 0.045 | 0.25-0.35 | -            | 12.00-12.50 | 0.30-0.60 | -         | 0.025     |                              |
|            | -             | -     | 1.4045 Mod | ●       |                           | 0.06      | 2.00                      | 1.50      | 0.040 | 0.030     | -            | 12.00-14.00 | 1.00      | -         | -         |                              |
|            | 430F          | 430F  | 1.4105     | ●       |                           | 0.08      | 1.00                      | 1.50      | 0.040 | 0.15-0.35 | -            | 16.00-18.00 | 0.20-0.60 | -         | -         |                              |
|            | 430F          | 430F  | -          | ●       |                           | 0.12      | 1.00                      | 1.25      | 0.060 | 0.15min   | -            | 16.00-18.00 | -         | -         | -         |                              |
|            | -             | -     | 1.4105 Mod | ●       |                           | 0.02      | 1.00                      | 1.00      | 0.040 | 0.15-0.35 | -            | 18.00-20.00 | 0.20-0.60 | 0.10-0.50 | -         |                              |
|            | 430FR         | -     | 1.41045Si  | ●       |                           | 0.065     | 1.00-1.50                 | 0.80      | 0.030 | 0.25-0.40 | 0.60         | 17.25-18.25 | 0.50      | -         | -         |                              |

^Maximum, unless range or minimum is indicated.

# AVAILABLE STAINLESS STEEL GRADES & CHEMICAL COMPOSITION

## FOR STAINLESS STEEL COLD - FINISHED BAR

|                              | SPECIFICATION |         |            |         |                           |           | CHEMICAL COMPOSITION (%)^ |           |       |           |             |             |           |           |           |                                                              |
|------------------------------|---------------|---------|------------|---------|---------------------------|-----------|---------------------------|-----------|-------|-----------|-------------|-------------|-----------|-----------|-----------|--------------------------------------------------------------|
|                              | AISI          | JIS     | DIN        | Steeval | Improved<br>Machinability | C         | Si                        | Mn        | P     | S         | Ni          | Cr          | Mo        | Cu        | N         | Other                                                        |
| FERRITE                      |               |         | 1.4106     | ●       |                           | 0.03      | 2.00                      | 1.00      | 0.040 | 0.25-0.35 | -           | 17.00-19.00 | 1.00-2.50 |           |           |                                                              |
|                              | -             | -       | 1.4106 Mod | ●       |                           | 0.02      | 1.00-1.50                 | 0.50      | 0.020 | 0.005     | 0.20        | 17.00-18.00 | 1.00-1.50 |           |           |                                                              |
|                              | XM34          | -       | 1.4114     | ●       |                           | 0.08      | 1.00                      | 2.50      | 0.040 | 0.15-0.35 | 0.75        | 17.50-19.50 | 1.50-2.50 | -         | -         | Nb:12XC-1.00                                                 |
|                              | -             | -       | 1.4511     | ●       |                           | 0.05      | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 16.00-18.80 | -         | -         | -         | Ti=10XC -1.1                                                 |
|                              | -             | -       | -          | 439Ti   |                           | 0.04      | 0.80                      | 0.80      | 0.030 | 0.030     | 0.60        | 17.00-19.00 | -         | 0.75      |           |                                                              |
|                              | 44600         |         |            | ●       |                           | 0.20      | 1.00                      | 1.50      | 0.040 | 0.030     | 0.75        | 23.00-27.00 |           |           | 0.25      |                                                              |
| MARTENSITIC                  | 410           | 410     | 1.4006     | ●       |                           | 0.15      | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 11.50-13.00 | -         | -         | -         |                                                              |
|                              | 403           | 403     | 1.4006     | ●       |                           | 0.15      | 0.50                      | 1.00      | 0.040 | 0.030     | -           | 11.50-13.00 | -         | -         | -         |                                                              |
|                              | -             | 410J1   | 1.4024     | ●       |                           | 0.08-018  | 0.60                      | 1.00      | 0.040 | 0.030     | -           | 11.50-14.00 | 0.30-0.60 | -         | -         |                                                              |
|                              | -             | -       | 1.4418     | ●       |                           | 0.06      | 0.70                      | 1.50      | 0.040 | 0.030     | 4.00-6.00   | 15.0-17.0   | 0.80-1.50 |           | 0.02min.  |                                                              |
|                              | 416           | 416     | 1.4005     | ●       |                           | 0.15      | 1.00                      | 1.25      | 0.060 | 0.15min   | -           | 12.00-14.00 | -         | -         | -         |                                                              |
|                              | 420           | -       | 1.4021     | ●       |                           | 0.15 min. | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 12.00-14.00 | -         | -         | -         |                                                              |
|                              | -             | -       | 1.4034     | ●       |                           | 0.43-0.50 | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 12.5-14.5   | -         | -         | -         |                                                              |
|                              | -             | 420F    | -          | ●       |                           | 0.26-0.40 | 1.00                      | 1.25      | 0.060 | 0.15min.  | 0.60        | 12.00-14.00 | 0.60      | -         | -         |                                                              |
|                              | -             | -       | 1.4029     | ●       |                           | 0.25-0.32 | 1.00                      | 1.50      | 0.040 | 0.15-0.25 | -           | 12.00-13.50 | 0.60      | -         | -         |                                                              |
|                              | -             | 420J1   | 1.4021     | ●       |                           | 0.16-0.25 | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 12.00-14.00 | -         | -         | -         |                                                              |
|                              | -             | 420J2   | 1.4028     | ●       |                           | 0.26-0.40 | 1.00                      | 1.00      | 0.040 | 0.030     | -           | 12.00-14.00 | -         | -         | -         |                                                              |
|                              | 430F          | 430F    | -          | ●       |                           | 0.12      | 1.00                      | 1.25      | 0.060 | 0.15min   | -           | 16.00-18.00 | -         | -         | -         |                                                              |
|                              | -             | -       | 1.4104     | ●       |                           | 0.10-0.17 | 1.00                      | 1.50      | 0.040 | 0.15-0.35 | -           | 15.50-17.50 | 0.20-0.60 | -         | -         |                                                              |
|                              | 431           | 431     | 1.4057     | ●       |                           | 0.20      | 1.00                      | 1.00      | 0.040 | 0.030     | 1.25-2.50   | 15.00-17.00 | -         | -         | -         | B:0.001-0.003                                                |
|                              | -             | -       | -          | WLS550  |                           | 0.19-0.21 | 0.20-0.40                 | 0.20-0.40 | 0.025 | 0.003     | 1.10-1.35   | 13.00-13.40 | 1.90~2.10 | 0.20      | 0.07~0.09 |                                                              |
|                              | -             | -       | -          | 440M    |                           | 0.56-0.65 | 0.80                      | 0.80      | 0.035 | 0.015     | 0.60        | 12.50-14.50 | 0.25-0.60 | 0.25      | -         |                                                              |
|                              | 440A          | 440A    | -          | ●       |                           | 0.60-0.75 | 1.00                      | 1.00      | 0.040 | 0.030     | 0.60        | 16.00-18.00 | 0.75      | -         | -         |                                                              |
|                              | 440C          |         |            | ●       |                           | 0.95~1.2  | 1.00                      | 1.00      | 0.040 | 0.030     |             | 16.00~18.00 | 0.75      |           |           |                                                              |
| PRECIPITATION -<br>HARDENING | 630           | 630     | 1.4542     | ●       |                           | 0.07      | 1.00                      | 1.00      | 0.040 | 0.030     | 3.00-5.00   | 15.00-17.50 | -         | 3.00-5.00 | -         | Nb=0.15-0.45                                                 |
|                              | 631           | 631     | -          | ●       |                           | 0.09      | 1.00                      | 1.00      | 0.040 | 0.030     | 6.50-7.75   | 16.00-18.00 | -         | -         | -         | Al:0.75-1.50                                                 |
|                              | -             | -       | 1.4568     | ●       |                           | 0.09      | 0.70                      | 1.00      | 0.040 | 0.015     | 6.50-7.80   | 16.00-18.00 | -         | -         | -         | Al:0.70-1.50                                                 |
|                              | -             | 631J1   | -          | ●       |                           | 0.09      | 1.00                      | 1.00      | 0.040 | 0.030     | 7.00-8.50   | 16.00-18.00 | -         | -         | -         | Al:0.75-1.50                                                 |
|                              | 660           | SUH 660 | 1.4980     | 1.4980  |                           | 0.08      | 1.00                      | 2.00      | 0.040 | 0.030     | 24.00-27.00 | 13.50-16.00 | 1.00-1.50 | -         | -         | Ti 1.90-2.35 , V 0.10-0.50 ,<br>Al 0.35 max. , B 0.001-0.010 |
| DUPLEX                       | 2205          | -       | 1.4462     | 1.4462  |                           | 0.03      | 1.00                      | 2.00      | 0.030 | 0.020     | 4.50-6.50   | 22.00-23.00 | 3.00-3.50 | -         | 0.14-0.20 |                                                              |

^Maximum, unless range or minimum is indicated.

## SIZE TOLERANCE

### DIMENSION TOLERANCES OF COLD FINISHED STAINLESS STEEL BARS OF JIS G4318 / EN 10278

Unit : mm

| Diameter, side length,<br>width across flats,<br>thickness and width | Class of Tolerance           |                 |                 |                   |                   |                   |                   |
|----------------------------------------------------------------------|------------------------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|
|                                                                      | Class 7 <sup>A</sup><br>(h7) | Class 8<br>(h8) | Class 9<br>(h9) | Class 10<br>(h10) | Class 11<br>(h11) | Class 12<br>(h12) | Class 13<br>(h13) |
| 3 max                                                                | 0~-0.010                     | 0~-0.014        | 0~-0.025        | 0~-0.040          | 0~-0.060          | 0~-0.100          | 0~-0.140          |
| Over 3 up to and incl. 6                                             | 0~-0.012                     | 0~-0.018        | 0~-0.030        | 0~-0.048          | 0~-0.075          | 0~-0.120          | 0~-0.180          |
| Over 6 up to and incl. 10                                            | 0~-0.015                     | 0~-0.022        | 0~-0.036        | 0~-0.058          | 0~-0.090          | 0~-0.150          | 0~-0.220          |
| Over 10 up tp and incl.18                                            | 0~-0.018                     | 0~-0.027        | 0~-0.043        | 0~-0.070          | 0~-0.110          | 0~-0.180          | 0~-0.270          |
| Over 18 up to and incl. 30                                           | 0~-0.021                     | 0~-0.033        | 0~-0.052        | 0~-0.084          | 0~-0.130          | 0~-0.210          | 0~-0.330          |
| Over 30 up tp and incl. 50                                           | 0~-0.025                     | 0~-0.039        | 0~-0.062        | 0~-0.100          | 0~-0.160          | 0~-0.250          | 0~-0.390          |
| Over 50 up to and incl. 80                                           | 0~-0.030                     | 0~-0.046        | 0~-0.074        | 0~-0.120          | 0~-0.190          | 0~-0.300          | 0~-0.460          |
| Over 80 up to and incl. 120                                          | 0~-0.035                     | 0~-0.054        | 0~-0.087        | 0~-0.140          | 0~-0.220          | 0~-0.350          | 0~-0.540          |
| Over 120 up to and incl. 180 <sup>B</sup>                            | 0~-0.040                     | 0~-0.063        | 0~-0.100        | 0~-0.160          | 0~-0.250          | 0~-0.400          | 0~-0.630          |

<sup>A</sup>The dimension tolerances of h6 and h7 depends on EN 10278.

<sup>B</sup>The dimension tolerance of this range for h6-h11 depend on EN 10278.

### PERMITTED VARIATIONS IN SIZE OF COLD-FINISHED ROUND BARS

Unit : mm

| Specified Size                   | Permitted Variations from Specified Size <sup>A,B</sup> |       |
|----------------------------------|---------------------------------------------------------|-------|
|                                  | Over                                                    | Under |
| 1.50 to 8.00                     | 0.03                                                    | 0.03  |
| Over 8.00 to 13.00               | 0.04                                                    | 0.04  |
| Over 13.00 to 25.00              | 0.05                                                    | 0.05  |
| Over 25.00 to 38.00              | 0.06                                                    | 0.06  |
| Over 38.00 to 83.00 <sup>C</sup> | 0.08                                                    | 0.08  |
| Over 83.00 to 100 <sup>C</sup>   | 0.13                                                    | 0.13  |

<sup>A</sup>Unless otherwise specified, size tolerances are over and under as shown in the above table. When required, however, they may be specified all over and nothing under, or all under and nothing over, or any combination of over and under, if the total spread in size tolerance for a specified size is not less than the total spread shown in the table.

<sup>B</sup>When it is necessary to heat treat or heat treat and pickle after cold finishing, size tolerances are double those shown in the table

<sup>C</sup>Cold-finished bars over 4 in. (100mm) in diameter are produced; size tolerances for such bars are not included herein.



# INDUSTRY APPLICATIONS

APPLICATIONS



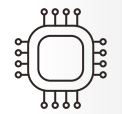
**AEROSPACE**  
turbine engine components, actuator, fastener



**OIL & GAS**  
refinery, storage tank, oil well tubing, drill string & drill bit



**AUTOMOTIVE**  
fuel rail, fuel injector, exhaust system flange, pressure sensor, cooling and heating circulation system, engine fasteners



**INFORMATION AND COMMUNICATION TECHNOLOGY INDUSTRY**  
**Semiconductor** : gas and liquid flow control valve  
**3C Electronics** : HDD shaft, electromagnetic water valve for coffee machines  
**AI Server** : water-cooling system connector / liquid-cooling fitting

**LIQUID-COOLING APPLICATION**

| Steeval | AISI | JIS | DIN    |
|---------|------|-----|--------|
| LCS303  | 303  | 303 | 1.4305 |
| LCS304  | 304  | 304 | 1.4301 |
| LCS316L | 316L | -   | 1.4404 |

## QUALITY SYSTEM CERTIFICATIONS



## MARINE CERTIFICATIONS



## PRODUCT & OTHER CERTIFICATIONS



Your trusted partner in precision machining