

WHEN YOU NEED TO BE SURE

## STEEL REBARS



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202HO 101 DONG HANSHIN VILLAT 258-29 HOWON DONG UIJEONG BU SHI GYEOUNGI DO SOUTH KOREA.

**STEEL REBARS**

**THERMIC PRODUCTS PRODUCTION IN ACCORDANCE BS 4449:2005+A3:2016**

THERMIC PRODUCTS PRODUCTION IN ACCORDANCE BS 4449:2005+A3:2016. MECHANICAL PROPERTIES, DIMENSIONS, MASS PER UNIT LENGTH, NOMINAL CROSS-SECTIONAL AREA AND CHEMICAL ANALYSIS ARE IN ACCORDANCE )BS 4449:2005+A3:2016( AND IT IS CHANGEABLE BASED ON CUSTOMER REQUIREMENTS AND ORDERS.

| NO | NOMINAL DIAMETER (MM) | NOMINAL CROSS-SECTIONAL | MASS PER UNIT LENGTH (KG/M) | MIN MASS PER UNIT LENGTH (KG/M) | MAX MASS PER UNIT LENGTH (KG/M) | MAX HEIGHT LONGITUDINA L RIB (MM) | HEIGHT TRANSVERS RIB (MM) |      |
|----|-----------------------|-------------------------|-----------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------|------|
|    |                       |                         |                             |                                 |                                 |                                   | MIN                       | MAX  |
| 1  | 8                     | 50.3                    | 0.395                       | 0.371                           | 0.419                           | 0.8                               | 0.24                      | 1.2  |
| 2  | 10                    | 78.5                    | 0.617                       | 0.589                           | 0.645                           | 1                                 | 0.3                       | 1.5  |
| 3  | 12                    | 113                     | 0.888                       | 0.848                           | 0.928                           | 1.2                               | 0.36                      | 1.8  |
| 4  | 16                    | 201                     | 1.58                        | 1.509                           | 1.651                           | 1.6                               | 0.48                      | 2.4  |
| 5  | 20                    | 314                     | 2.47                        | 2.359                           | 2.581                           | 2                                 | 0.6                       | 3    |
| 6  | 25                    | 491                     | 3.85                        | 3.677                           | 4.023                           | 2.5                               | 0.75                      | 3.75 |
| 7  | 32                    | 804                     | 6.31                        | 6.026                           | 6.594                           | 3.2                               | 0.96                      | 4.8  |
| 8  | 40                    | 1257                    | 9.86                        | 9.416                           | 10.304                          | 4                                 | 1.2                       | 6    |
| 9  | 50                    | 1963                    | 15.4                        | 14.707                          | 16.093                          | 5                                 | 1.5                       | 7.5  |

**CHEMICAL COMPOSITION OF STEEL RIBBED BARS: (A4-AJ500)-ACCORDING TO INSO 3132**

| NO | GRADE         | DIN   | %C   |      | %SI  |     | %MN |      | %P   | %S   | %CR | %NI | %CU |
|----|---------------|-------|------|------|------|-----|-----|------|------|------|-----|-----|-----|
|    |               |       | MIN  | MAX  | MIN  | MAX | MIN | MAX  | MAX  | MAX  | MAX | MAX | MAX |
| 1  | GOST 380      |       | MIN  | MAX  | MIN  | MAX | MIN | MAX  | MAX  | MAX  | MAX | MAX | MAX |
| 2  | (2005) ST 5SP | 1.005 | 0.28 | 0.33 | 0.15 | 0.3 | 0.7 | 0.85 | 0.04 | 0.04 | 0.2 | 0.2 | 0.2 |

CONFORMITY STANDARD

MECHANICAL PROPERTIES (A4-AJ500): RIBBED BARS 12-32MM

| NO | DIN488-1, ISO6935-1, BS4449, ASTM A615/A615M | MINIMUM YIELD STRENGTH (N/MM <sup>2</sup> ) | MINIMUM TENSILE STRENGTH (N/MM <sup>2</sup> ) | MINIMUM ELONGATION | MINIMUM TENSILE STRENGTH/UPPER YIELD STRENGTH |
|----|--|---|---|--------------------|---|
|    |  |   |   | %                  |   |
| 5  |  | 500   | 650   | 8                  | 1.25  |
| 6  |  |   |   |                    |   |
| 7  |  |   |   |                    |   |



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Jee Woon Kim Mr.

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WHEN YOU NEED TO BE SURE

## REBAR IN ALL SIZES IN ACCORDANCE TS 708/NISAN 2010



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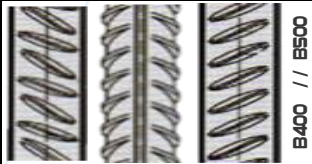


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REBAR IN ALL SIZES IN ACCORDANCE TS 708/NISAN 2010

THERMIC PRODUCTS PRODUCTION IN ACCORDANCE BS 4449:2005+A3:2016

THERMIC PRODUCTS PRODUCTION IN ACCORDANCE BS 4449:2005+A3:2016. MECHANICAL PROPERTIES, DIMENSIONS, MASS PER UNIT LENGTH, NOMINAL CROSS- SECTIONAL AREA AND CHEMICAL ANALYSIS ARE IN ACCORDANCE )BS 4449:2005+A3:2016( AND IT IS CHANGEABLE BASED ON CUSTOMER REQUIREMENTS AND ORDERS.

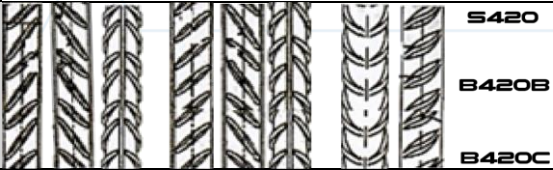


B400 // B500

| NO | NOMINAL DIAMETER (MM) | NOMINAL CROSS-SECTIONAL | MASS PER UNIT LENGTH (KG/M) | MIN MASS PER UNIT LENGTH (KG/M) | MAX MASS PER UNIT LENGTH (KG/M) | MAX HEIGHT LONGITUDINA L RIB (MM) | HEIGHT TRANSVERS RIB (MM) |      |
|----|-----------------------|-------------------------|-----------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------|------|
|    |                       |                         |                             |                                 |                                 |                                   | MIN                       | MAX  |
| 1  | 8                     | 50.3                    | 0.395                       | 0.363                           | 0.427                           | 1.2                               | 0.52                      | 0.36 |
| 2  | 10                    | 78.5                    | 0.617                       | 0.58                            | 0.654                           | 1.5                               | 0.65                      | 0.45 |
| 3  | 12                    | 113                     | 0.888                       | 0.835                           | 0.941                           | 1.8                               | 0.78                      | 0.54 |
| 4  | 14                    | 154                     | 1.21                        | 1.15                            | 1.271                           | 2.1                               | 0.91                      | 0.63 |
| 5  | 16                    | 201                     | 1.58                        | 1.501                           | 1.659                           | 2.4                               | 1.04                      | 0.72 |
| 6  | 20                    | 314                     | 2.47                        | 2.347                           | 2.594                           | 3                                 | 1.3                       | 0.9  |
| 7  | 25                    | 491                     | 3.85                        | 3.696                           | 4.004                           | 3.75                              | 1.63                      | 1.13 |
| 8  | 28                    | 616                     | 4.84                        | 4.646                           | 5.034                           | 4.2                               | 1.82                      | 1.26 |
| 9  | 32                    | 804                     | 6.31                        | 6.058                           | 6.562                           | 4.8                               | 2.08                      | 1.44 |
| 10 | 40                    | 1257                    | 9.86                        | 9.466                           | 10.254                          | 6                                 | 2.6                       | 1.8  |
| 11 | 50                    | 1963                    | 15.4                        | 14.803                          | 16.037                          | 7.5                               | 3.25                      | 2.25 |

STEEL REBARS

PRODUCING REBAR IN ALL SIZES IN ACCORDANCE TS 708/NISAN 2010. DIMENSIONS, MASS PER UNIT LENGTH, NOMINAL CROSS-SECTIONAL AREA OF RIBBED BARS ACCORDING TO TS 708/NISAN 2010

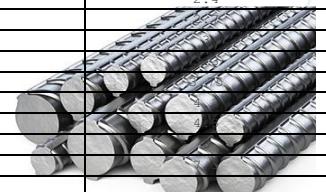


S420

B420B

B420C

| NO | NOMINAL DIAMETER (MM) | NOMINAL CROSS-SECTIONAL | MASS PER UNIT LENGTH (KG/M) | MIN MASS PER UNIT LENGTH (KG/M) | MAX MASS PER UNIT LENGTH (KG/M) | MAX HEIGHT LONGITUDINA L RIB (MM) | HEIGHT TRANSVERS RIB (MM) |      |
|----|-----------------------|-------------------------|-----------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------|------|
|    |                       |                         |                             |                                 |                                 |                                   | MIN                       | MAX  |
| 1  | 8                     | 50.3                    | 0.395                       | 0.371                           | 0.419                           | 1.2                               | 0.24                      | 1.2  |
| 2  | 10                    | 78.5                    | 0.617                       | 0.589                           | 0.645                           | 1.5                               | 0.3                       | 1.5  |
| 3  | 12                    | 113                     | 0.888                       | 0.848                           | 0.928                           | 1.8                               | 0.36                      | 1.8  |
| 4  | 14                    | 154                     | 1.21                        | 1.156                           | 1.265                           | 2.1                               | 0.42                      | 2.1  |
| 5  | 16                    | 201                     | 1.58                        | 1.509                           | 1.651                           | 2.4                               | 0.48                      | 2.4  |
| 6  | 18                    | 254.4                   | 2                           | 1.91                            | 2.09                            | 2.7                               | 0.54                      | 2.7  |
| 7  | 20                    | 314                     | 2.47                        | 2.359                           | 2.581                           | 3                                 | 0.6                       | 3    |
| 8  | 25                    | 491                     | 3.85                        | 3.696                           | 4.004                           | 3.75                              | 0.75                      | 3.75 |
| 9  | 28                    | 616                     | 4.84                        | 4.646                           | 5.034                           | 4.2                               | 0.84                      | 4.2  |
| 10 | 32                    | 804                     | 6.31                        | 6.058                           | 6.562                           | 4.8                               | 0.96                      | 4.8  |
| 11 | 40                    | 1257                    | 9.86                        | 9.466                           | 10.254                          | 6                                 | 1.2                       | 6    |
| 12 | 50                    | 1963                    | 15.4                        | 14.803                          | 16.037                          | 7.5                               | 1.5                       | 7.5  |



STEEL REBARS

**WHEN YOU NEED TO BE SURE**

## **GRADE IN ACCORDANCE ASTM-A615 STANDARD**



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## GRADE IN ACCORDANCE ASTM-A615 STANDARD

| NO | CONFORMITY STANDARDS  | MECHANICAL PROPERTIES (A3-AJ400) : NOMINAL DIAMETER STEEL 8-10MM |  |                         |                          |
|----|---|--|--|-------------------------|--------------------------|
|    |   | MIN YIELD STRESS<br>(N/MM <sup>2</sup> )                         | MIN TENSILE STRENGTH<br>(N/MM <sup>2</sup> ) | MINIMUM ELONGATION<br>% | TENSILE /YIELD<br>RM/REH |
| 1  | 1-DIN 488:2009 REINFORCING STEELS- PART 1:<br>GRADES. PROPERTIES. MARKING       | 400  | 600  | 12                      | 1.25                     |
| 2  | 2-DIN488-2: 2009 REINFORCEMENT OF CONCRETE-PART2<br>RIBBED BARS                 |  |  |                         |                          |
| 3  | 3- ISO 6935-2:2007 STEEL FOR THE REINFORCEMENT OF<br>CONCRETE-PART2 RIBBED BARS |  |  |                         |                          |
| 4  | 4.GOST 5781-82: 1993 HOT-ROLLED   |  |  |                         |                          |
| 5  | STEEL BARS FOR THE REINFORCEMENT OF CONCRETE                                    |  |  |                         |                          |
| 6  | 5. ASTM A615/A615M:2005 STANDARD SPECIFICATION<br>FOR DEFORMED AND PLAIN        |  |  |                         |                          |
| 7  | CARBON-STEEL BARS FOR CONCRETE REINFORCEMENT                                    |  |  |                         |                          |

TECHNICAL SPECIFICATION OF HOT-ROLLED STEEL BARS FOR REINFORCEMENT OF CONCRETE.

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# TECHNICAL SPECIFICATIONS OF COMMON AND ROUTINE PRODUCTS TECHNICAL SPECIFICATION OF STEEL BARS.



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**TECHNICAL SPECIFICATIONS OF COMMON AND ROUTINE PRODUCTS TECHNICAL SPECIFICATION OF STEEL BARS.**

| NO | TYPE           |               | MIN YIELD STRESS<br>R <sub>EH</sub> (N/MM <sup>2</sup> ) | MIN TENSILE STRENGTH<br>(N/MM <sup>2</sup> ) | TENSILE /YIELD RM/REH | MINIMUM ELONGATION |
|----|----------------|---------------|--|--|-----------------------|--------------------|
|    | STD ISIRS 3132 | STD GOST 5781 |  |  |                       |                    |
| 1  | A I            | S240          | 240  | 360  |                       | 18                 |
| 2  |                | AJ340         | 340  | 500  |                       | 15                 |
| 3  | A II           | AJ350         | 350  | 500  |                       | -                  |
| 4  |                | AJ400         | 400  | 600  |                       | 12                 |
| 5  | A III          | AJ420         | 420  | 600  |                       | -                  |
| 6  |                | AJ500         | 500  | 650  | 1.25                  | 8                  |
| 7  | A IV           | AJ520         | 520  | 690  |                       | -                  |
| 8  |                |               |  |  |                       |                    |
| 9  |                |               |  |  |                       |                    |

**CHEMICAL COMPOSITION OF STEEL RIBBED BARS:**

| NO | %C   |      | %SI  |     | %MN |     | %P   | %S   | %CR | %NI | %CU |
|----|------|------|------|-----|-----|-----|------|------|-----|-----|-----|
|    | MIN  | MAX  | MIN  | MAX | MIN | MAX | MAX  | MAX  | MAX | MAX | MAX |
| 1  | 0.28 | 0.42 | 0.15 | 0.3 | 0.5 | 0.8 | 0.04 | 0.05 | 0.3 | 0.3 | 0.3 |
| 2  |      |      |      |     |     |     |      |      |     |     |     |



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## DIMENSIONS AND MASS:



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**DIMENSIONS AND MASS:**

| NO | NOMINAL DIAMETER (MM) | NOMINAL CROSS-SECTIONAL AREA (MM <sup>2</sup> ) | MASS PER UNIT LENGTH (KG/M) |       |       | TRANSVERS HEIGHT RIB (MM) |
|----|-----------------------|---|-----------------------------|-------|-------|---------------------------|
|    |                       |   | STANDARD                    | MIN   | MAX   |                           |
| 1  | 8                     | 50.3  | 0.395                       | 0.363 | 0.426 | 0.52                      |
| 2  | 10                    | 78.5  | 0.616                       | 0.566 | 0.665 | 0.65                      |
| 3  | 12                    | 113   | 0.888                       | 0.839 | 0.936 | 0.78                      |
| 4  | 14                    | 154   | 1.21                        | 1.143 | 1.27  | 0.91                      |
| 5  | 16                    | 201   | 1.58                        | 1.509 | 1.651 | 1.04                      |
| 6  | 18                    | 254   | 2                           | 1.91  | 2.09  | 0.17                      |
| 7  | 20                    | 314   | 2.47                        | 2.358 | 2.581 | 0.3                       |
| 8  | 22                    | 380   | 2.98                        | 2.845 | 3.114 | 1.43                      |
| 9  | 25                    | 491   | 3.85                        | 3.675 | 4.023 | 1.63                      |
| 10 | 28                    | 616   | 4.83                        | 4.612 | 5.047 | 1.82                      |
| 11 | 32                    | 804   | 6.31                        | 6.026 | 6.593 | 11 2.09                   |
| 12 | 36                    | 1018  | 7.99                        | 7.63  | 8.349 | 2.34                      |
| 13 | 40                    | 1257  | 9.78                        | 9.339 | 10.22 | 2.59                      |

PRODUCTION OF GALVANIZED AND ALLOY REBARS IS ACCEPTED BY CUSTOMER ORDER.

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## STANDARD ASTM A510 GR SAE1008 STANDARD ASTM A510 GR SAE1006



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## STANDARD ASTM A510 GR SAE1008

| SIZE (mm) |          |     | Chemical Analysis   (%) |      |      |       |       | Mechanical Properties |          |      |            |           |
|-----------|----------|-----|-------------------------|------|------|-------|-------|-----------------------|----------|------|------------|-----------|
|           |          |     | C                       | Si   | Mn   | P     | S     | Reh (Mpa)             | Rm (Mpa) | El%  | Mass/Meter | Bend Test |
| 5.5       | Standard | Min | -                       | 0.15 | 0.3  | -     | -     | -                     | -        | -    | 0.367      | Accepted  |
| 6.5       |          |     |                         |      |      |       |       |                       |          |      |            |           |
| 8         |          |     |                         |      |      |       |       |                       |          |      |            |           |
| 9         |          | Max |                         |      |      |       |       |                       |          |      |            |           |
| 10        | Product  |     | 0.09-0.1                | 0.09 | 0.37 | 0.011 | 0.016 | -                     | 385      | 25.5 | 0.406      |           |

## STANDARD ASTM A510 GR SAE1006

| SIZE (mm) |          |     | Chemical Analysis   (%) |      |      |   |   | Mechanical Properties |          |     |            |           |
|-----------|----------|-----|-------------------------|------|------|---|---|-----------------------|----------|-----|------------|-----------|
|           |          |     | C                       | Si   | Mn   | P | S | Reh (Mpa)             | Rm (Mpa) | El% | Mass/Meter | Bend Test |
| 5.5       | Standard | Min | -                       | 0.15 | 0.25 | - | - | -                     | -        | -   | -          | Accepted  |
| 6.5       |          |     |                         |      |      |   |   |                       |          |     |            |           |
| 8         |          |     |                         |      |      |   |   |                       |          |     |            |           |
| 9         |          |     |                         |      |      |   |   |                       |          |     |            |           |
| 10        |          |     |                         |      |      |   |   |                       |          |     |            |           |

OTHER SAE GRADES ARE MANUFACTURED TO ORDER FROM 1006 TO 1023.

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## SWRH82B STANDARD JIS G 3506 SWRH72B STANDARD JIS G 3506



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## SWRH82B STANDARD JIS G 3506

| No | SIZE (MM) |          | CHEMICAL ANALYSIS   (%) |      |      |     |       | MECHANICAL PROPERTIES |      |   |
|----|-----------|----------|-------------------------|------|------|-----|-------|-----------------------|------|---|
|    |           |          | C                       | SI   | MN   | P   | S     | TENSILE PROPERTY      | EL%  |   |
| 1  | 1.9       | STANDARD | MIN                     | 0.79 | 0.15 | 0.6 | -     | -                     | -    | - |
| 2  | 5.5       |          |                         |      |      |     |       |                       |      |   |
| 3  | 6.5       |          |                         |      |      |     |       |                       |      |   |
| 4  | 8         |          |                         |      |      |     |       |                       |      |   |
| 5  | 9         |          |                         |      |      |     |       |                       |      |   |
| 6  | 10        | PRODUCT  |                         | 0.82 | 0.23 | 0.8 | 0.013 | 0.002                 | 1226 | - |

## SWRH72B STANDARD JIS G 3506

| No | SIZE (MM) |          | CHEMICAL ANALYSIS   (%) |      |      |     |       | MECHANICAL PROPERTIES |          |   |
|----|-----------|----------|-------------------------|------|------|-----|-------|-----------------------|----------|---|
|    |           |          | C                       | SI   | MN   | P   | S     | TENSILE PROPERTY      | EL%      |   |
| 1  | 1.9       | STANDARD | MIN                     | 0.69 | 0.15 | 0.3 | -     | -                     | -        | - |
| 2  | 5.5       |          |                         |      |      |     |       |                       |          |   |
| 3  | 6.5       |          |                         |      |      |     |       |                       |          |   |
| 4  | 8         |          |                         |      |      |     |       |                       |          |   |
| 5  | 9         |          |                         |      |      |     |       |                       |          |   |
| 6  | 10        | PRODUCT  |                         | 0.72 | 0.23 | 0.8 | 0.013 | 0.002                 | 995-1020 | - |

OTHER SWRH--B GRADES ARE MANUFACTURED TO ORDER.