

MATERIAL NUMBER 1.4301 · CLASS 1.4

# Z5CN18-09

Material no. 1.4301

also listed as X 5 CrNi 18 9

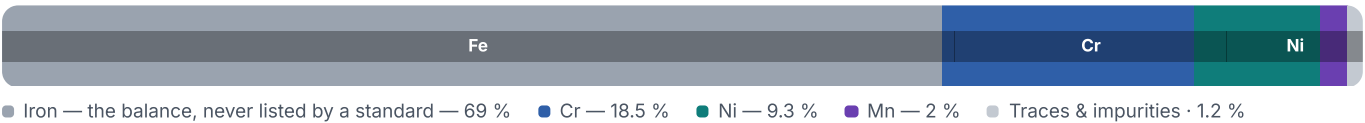
Chemical composition, mechanical and physical property values, and 170 standard designations from 22 regions.

|                             |                                                |                                      |
|-----------------------------|------------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.9</b> g/cm³ | OTHER DESIGNATIONS<br><b>170</b> in 22 regions | PROPERTY VALUES<br><b>10</b> on file |
|-----------------------------|------------------------------------------------|--------------------------------------|

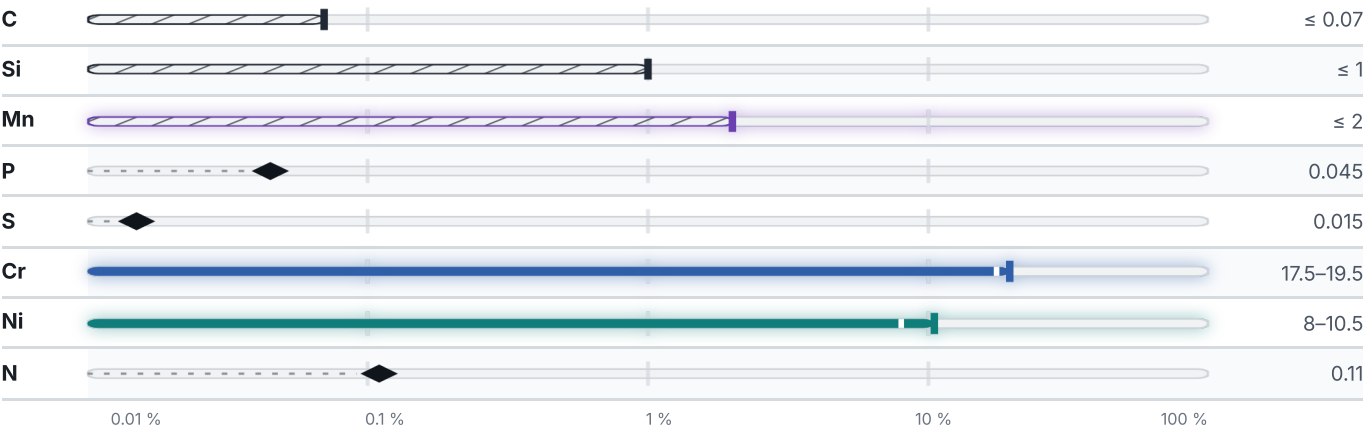
Chemical composition

Mass fraction in %

What this alloy is



Logarithmic scale, 0.01 % to 100 % — every value here compares directly, decade by decade.



The scale is logarithmic, not the element's raw share of the alloy — the only honest way to fit 0.01 % and 100 % in one picture, and it means every value here can be compared with every other.

## Predicted transformation temperatures

Not enough recorded composition to predict a transformation temperature for this grade — missing: Mo.

## Mechanical properties

37 values across 9 conditions

| CONDITION · DIMENSION                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% | HB  |         |
|---------------------------------------------------|-------------------------|-------------------------|---------|--------|-----|---------|
| Pipe cooling strain, GOST 9941-81                 | 529                     | –                       | 37      | –      | –   |         |
| Pipe hot strain, GOST 9940-81                     | 510                     | –                       | 40      | –      | –   |         |
| Bar cold-worked , GOST 18907-73                   | 880–930                 | –                       | –       | –      | –   |         |
| Bar, GOST 18907-73                                | 640–780                 | –                       | 20      | –      | –   |         |
| Forging, GOST 25054-81                            | 470                     | 196                     | 38–40   | 45–50  | –   |         |
| Sheet thin, GOST 5582-75                          | 740–930                 | –                       | 25      | –      | –   |         |
| Sheet thin cold-worked , GOST 5582-75             | 930                     | –                       | 10      | –      | –   |         |
| 08KH18N10 ( 08X18H10 ) , Forging<br>GOST 25054-81 | –                       | –                       | –       | –      | 170 |         |
| CONDITION · DIMENSION                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A<br>%  | HB     | HRB | HV      |
| Plate/Sheet Hot-rolled                            | 520                     | 205                     | 40      | –      | –   | –       |
| Hot-rolled                                        | –                       | –                       | –       | 187    | 90  | 200     |
| COLD ROLLED                                       |                         |                         |         |        |     | HV      |
| Cold rolled                                       |                         |                         |         |        |     | 220–450 |
| SOFT ANNEALED                                     |                         |                         |         |        |     | HB      |
| Soft annealed                                     |                         |                         |         |        |     | 215     |
| SOLUTION ANNEALED                                 |                         |                         |         |        |     | HB      |
| Solution annealed                                 |                         |                         |         |        |     | 200     |
| QUENCHING 1020 - 1100°C                           | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>% |     |         |
| Ø 60                                              | 470                     | 196                     | 40      | 55     |     |         |
| CONDITION · DIMENSION                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% |        |     |         |
| Sheet trick, GOST 7350-77                         | 510                     | 205                     | 43      |        |     |         |
| CONDITION · DIMENSION                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% |        |     |         |
| Sheet thin, GOST 5582-75                          | 510                     | 185                     | 45      |        |     |         |
| CONDITION · DIMENSION                             | RM<br>N/mm <sup>2</sup> | A5<br>%                 |         |        |     |         |
| Sheet thin, GOST 4986-79                          | 530                     | 20–40                   |         |        |     |         |

## Physical properties

2 values

| CONDITION · DIMENSION | RHO<br>g/cm <sup>3</sup> | E<br>GPa | ALPHA<br>10 <sup>-6</sup> /K | LAMBDA<br>W/(m·K) | CP<br>J/(kg·K) | RHO_EL<br>nΩ·m |
|-----------------------|--------------------------|----------|------------------------------|-------------------|----------------|----------------|
| 20                    | 7.85                     | 196      | –                            | 17                | –              | 800            |
| 100                   | –                        | –        | 16                           | –                 | 504            | –              |
| 200                   | –                        | –        | 17                           | –                 | –              | –              |
| 300                   | –                        | –        | 17                           | –                 | –              | –              |
| 400                   | –                        | –        | 18                           | –                 | –              | –              |
| 500                   | –                        | –        | 18                           | –                 | –              | –              |
| PROPERTY              | VALUE                    |          | UNIT                         |                   |                |                |
| Density               | 7.9                      |          | g/cm <sup>3</sup>            |                   |                |                |

## Technological properties

| PROPERTY    | VALUE                | UNIT |
|-------------|----------------------|------|
| Weldability | without limitations. |      |

## Heat treatment

3 regimes

| STEP                                  | TEMPERATURE            | MEDIUM |
|---------------------------------------|------------------------|--------|
| source joins the operations with (or) |                        |        |
| Quenching                             | Temperature not stated | —      |
| Solution annealing                    | 1010–1150 °C           | Water  |
| source joins the operations with (or) |                        |        |
| Quenching                             | Temperature not stated | —      |
| Solution annealing                    | Temperature not stated | —      |
| Solution annealing                    | Temperature not stated | —      |

## Designations across standards

170 designations · 9 documented as identical

| United States     |                       | 75       | A493           | astm |
|-------------------|-----------------------|----------|----------------|------|
| S30300            |                       | uns      | A511           | astm |
| S30400            | This grade's own name | uns      | A554           | astm |
| S30403            |                       | uns      | A580           | astm |
| S30451            | This grade's own name | uns      | A593           | astm |
| S30453            |                       | uns      | A632           | astm |
| S30500            |                       | uns      | A666           | astm |
| 303               |                       | aisi-sae | A688           | astm |
| 30304             |                       | aisi-sae | A738           | astm |
| 304               | This grade's own name | aisi-sae | A774           | astm |
| 304H              |                       | aisi-sae | A793           | astm |
| 304L              |                       | aisi-sae | A813           | astm |
| 304LN             |                       | aisi-sae | A814           | astm |
| 304N              | This grade's own name | aisi-sae | A836           | astm |
| 305               |                       | aisi-sae | A837           | astm |
| S30400            |                       | aisi-sae | A851           | astm |
| A 182 Grade F304  |                       | astm     | A879           | astm |
| A 312 Grade TP304 |                       | astm     | A880           | astm |
| A 403 Grade WP304 |                       | astm     | A899           | astm |
| A 479 304         | This grade's own name | astm     | A908           | astm |
| A1012             |                       | astm     | A924           | astm |
| A1022             |                       | astm     | A943           | astm |
| A1049             |                       | astm     | A965           | astm |
| A182              |                       | astm     | A988           | astm |
| A182 F 304        | This grade's own name | astm     | F1667          | astm |
| A193              |                       | astm     | F2215          | astm |
| A194              |                       | astm     | TP304          | astm |
| A213              |                       | astm     | TP304L         | astm |
| A240              |                       | astm     |                |      |
| A249              |                       | astm     | United Kingdom | 18   |
| A269              |                       | astm     | 302 S 17       | bs   |
| A270              |                       | astm     | 304 S 40       | bs   |
| A276              |                       | astm     | 304S11         | bs   |
| A312              |                       | astm     | 304S15         | bs   |
| A313              |                       | astm     | 304S15 EN 58E  | bs   |
| A314              |                       | astm     | 304S16         | bs   |
| A320              |                       | astm     | 304S17         | bs   |
| A336              |                       | astm     | 304S18         | bs   |
| A358              |                       | astm     | 304S25         | bs   |
| A368              |                       | astm     | 304S31         | bs   |
| A376              |                       | astm     | 801            | bs   |
| A403              |                       | astm     | En 58 E        | bs   |
| A409              |                       | astm     | LW 13          | bs   |
| A430              |                       | astm     | LW 15          | bs   |
| A473              |                       | astm     | LW 21          | bs   |
| A478              |                       | astm     | LWCF 13        | bs   |
| A479              |                       | astm     | LWCF 15        | bs   |
| A492              |                       | astm     | LWCF 21        | bs   |

| United States / Aerospace                          |       | 17 | Russia / CIS                                     |  | 8      |
|----------------------------------------------------|-------|----|--------------------------------------------------|--|--------|
| 5501                                               | ams   |    | 07Ch18N10                                        |  | gost   |
| 5511                                               | ams   |    | 08Ch18N10                                        |  | gost   |
| 5513                                               | ams   |    | 08KH18N10                                        |  | gost   |
| 5560                                               | ams   |    | 08X18H10                                         |  | gost   |
| 5563                                               | ams   |    | 08X18H10                                         |  | gost   |
| 5564                                               | ams   |    | 0X18H10                                          |  | gost   |
| 5565                                               | ams   |    | PROKh18N10                                       |  | gost   |
| 5566                                               | ams   |    | ct.08X18H10                                      |  | gost   |
| 5567                                               | ams   |    |                                                  |  |        |
| 5639                                               | ams   |    | <b>Spain</b>                                     |  | 6      |
| 5697                                               | ams   |    | F.3451                                           |  | une    |
| 5857                                               | ams   |    | F.3451-X5CrNi18-10                               |  | une    |
| 5868                                               | ams   |    | F.3504                                           |  | une    |
| 5910                                               | ams   |    | F.3541                                           |  | une    |
| 5911                                               | ams   |    | F.3551                                           |  | une    |
| 5912                                               | ams   |    | X5CrNi18-10                                      |  | une    |
| 5913                                               | ams   |    |                                                  |  |        |
| <b>Japan</b>                                       |       | 11 | <b>China</b>                                     |  | 4      |
| SUS 304                                            | jis   |    | 0Cr18Ni9                                         |  | gb     |
| SUS 304-CSP                                        | jis   |    | 0Cr19Ni9                                         |  | gb     |
| SUS 304A                                           | jis   |    | 0Cr19Ni9N                                        |  | gb     |
| SUS 304FB                                          | jis   |    | 0Cr18Ni9                                         |  | gb     |
| SUS 304N1                                          | jis   |    |                                                  |  |        |
| SUS 304TB                                          | jis   |    | <b>Europe</b>                                    |  | 3      |
| SUS 304TBS                                         | jis   |    | 1.4301                                           |  | din-en |
| SUS 304TKA                                         | jis   |    | X 5 CrNi 18 9 <span>This grade's own name</span> |  | din-en |
| SUS 304TKC                                         | jis   |    | X5CrNi18-10 <span>This grade's own name</span>   |  | din-en |
| SUS 304TP                                          | jis   |    |                                                  |  |        |
| SUS F 304                                          | jis   |    | <b>Sweden</b>                                    |  | 3      |
|                                                    |       |    | 2332                                             |  | ss     |
|                                                    |       |    | 2333                                             |  | ss     |
|                                                    |       |    | 2333-02                                          |  | ss     |
| <b>France</b>                                      |       | 10 |                                                  |  |        |
| 304F00                                             | afnor |    | <b>Italy</b>                                     |  | 2      |
| AFNOT Z7CN18-09 <span>This grade's own name</span> | afnor |    | X3CrNi18-10                                      |  | uni    |
| X5CrNi18-10                                        | afnor |    | X5CrNi18-10                                      |  | uni    |
| Z4CN19-10FF                                        | afnor |    |                                                  |  |        |
| Z5CN17-08                                          | afnor |    | <b>Poland</b>                                    |  | 2      |
| Z5CN18-09                                          | afnor |    | 00H18N10                                         |  | pn     |
| Z5CN18-10                                          | afnor |    | 0H18N9                                           |  | pn     |
| Z5CN19-09                                          | afnor |    |                                                  |  |        |
| Z6CN18.09                                          | afnor |    | <b>Austria</b>                                   |  | 2      |
| Z7CN18-09                                          | afnor |    | X5CrNi18-10OS                                    |  | onorm  |
|                                                    |       |    | X5CrNi18-10S                                     |  | onorm  |
|                                                    |       |    |                                                  |  |        |
|                                                    |       |    | <b>International</b>                             |  | 1      |
|                                                    |       |    | X5CrNi18-10                                      |  | iso    |

|          |      |                         |        |
|----------|------|-------------------------|--------|
| Czechia  | 1    | former Yugoslavia       | 1      |
| 17240    | csn  | Č.4580                  | jus    |
| Slovakia | 1    | Australia / New Zealand | 1      |
| 17 240   | stn  | 304                     | as-nzs |
| Brazil   | 1    | Finland                 | 1      |
| 304      | abnt | 725                     | sfs    |
| Serbia   | 1    | South Korea             | 1      |
| Č.4580   | srps | SUS304                  | ks     |

**Note on use.** The data is compiled to the best of our knowledge from publicly available standards and manufacturer documentation. It replaces neither material testing nor an inspection document to EN 10204. Please request a mill certificate to EN 10204 2.1, 3.1 or 3.2 together with your enquiry. The standard in its current valid edition always prevails.

### Enquiry about Z5CN18-09

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