

MATERIAL NUMBER 1.0535 · CLASS 1.0

# 55SL

## Material no. 1.0535

also listed as C55

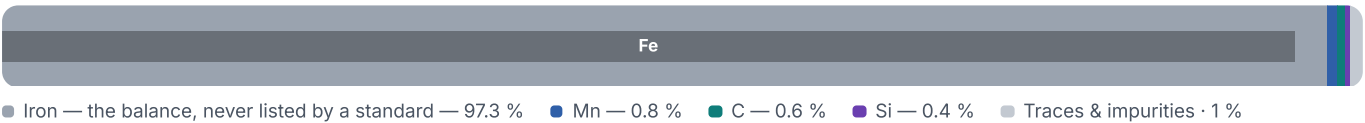
Chemical composition, mechanical and physical property values, and 101 standard designations from 21 regions.

|                              |                                                |                                      |
|------------------------------|------------------------------------------------|--------------------------------------|
| DENSITY<br><b>7.85</b> g/cm³ | OTHER DESIGNATIONS<br><b>101</b> in 21 regions | PROPERTY VALUES<br><b>16</b> on file |
|------------------------------|------------------------------------------------|--------------------------------------|

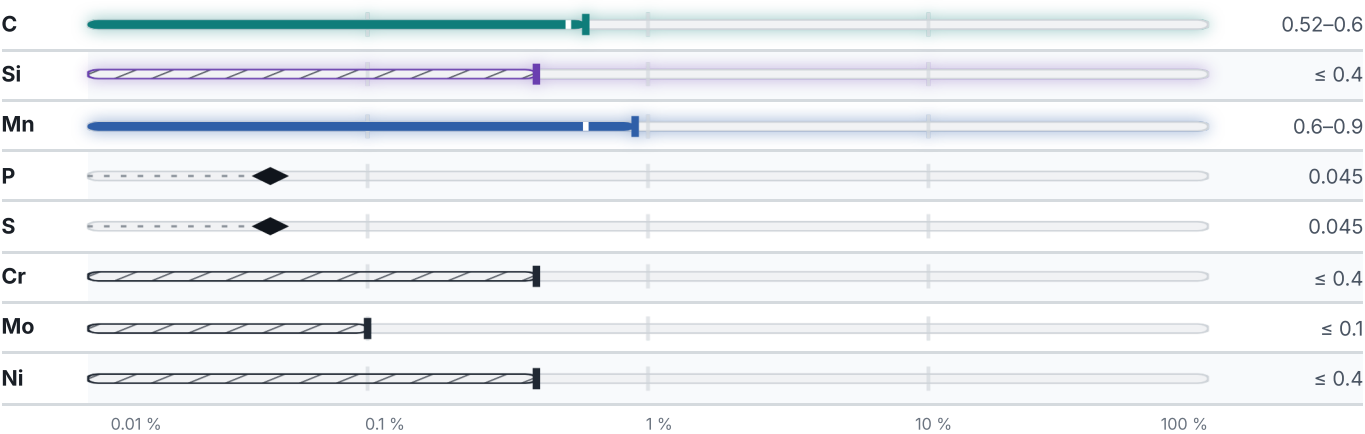
Chemical composition

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

computed from composition · °C

|                                |                                |                                |                               |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| PREDICTED AE3<br><b>744</b> °C | PREDICTED AE1<br><b>723</b> °C | PREDICTED ACM<br><b>687</b> °C | PREDICTED BS<br><b>547</b> °C |
|--------------------------------|--------------------------------|--------------------------------|-------------------------------|

## Mechanical properties

33 values across 8 conditions

| NORMALIZED                              |                         | RM<br>N/mm <sup>2</sup> | A<br>%  |         |
|-----------------------------------------|-------------------------|-------------------------|---------|---------|
| ≤ 16                                    |                         | 680                     | 11      |         |
| 16 – 100                                |                         | 640                     | 12      |         |
| 100 – 250                               |                         | 620                     | 12      |         |
| 250 – 500                               |                         | 600                     | –       |         |
| 500 – 1000                              |                         | 590                     | –       |         |
| COLD DRAWN / HARD                       |                         | RM<br>N/mm <sup>2</sup> | A<br>%  |         |
| 5 – 10                                  |                         | 770–1100                | 5       |         |
| 10 – 16                                 |                         | 730–1080                | 6       |         |
| 16 – 40                                 |                         | 690–1050                | 7       |         |
| 40 – 63                                 |                         | 650–1030                | 8       |         |
| CONDITION · DIMENSION                   | RM<br>N/mm <sup>2</sup> | A5<br>%                 | Z<br>%  | HB      |
| Rolled stock cold-worked , GOST 1050-88 | 660                     | 6                       | 30      | –       |
| Rolled stock annealed , GOST 1050-88    | 560                     | 12                      | 40      | –       |
| Bar GOST 10702-78                       | –                       | –                       | –       | 217     |
| Rolled stock GOST 1050-88               | –                       | –                       | –       | 241     |
| NORMALIZING                             | RM<br>N/mm <sup>2</sup> | RE<br>N/mm <sup>2</sup> | A5<br>% | Z<br>%  |
| to 80                                   | 630                     | 375                     | 14      | 40      |
| TREATED TO IMPROVE SHEARABILITY         |                         |                         |         | HB      |
| Treated to improve shearability         |                         |                         |         | 255     |
| ANNEALING                               |                         | RM<br>N/mm <sup>2</sup> | A5<br>% |         |
| 6 - 60                                  |                         | 580                     | 17      |         |
| SOFT ANNEALED                           |                         |                         |         | HB      |
| Soft annealed                           |                         |                         |         | 229     |
| AS ROLLED AND TURNED                    |                         |                         |         | HB      |
| As rolled and turned                    |                         |                         |         | 181–269 |

## Physical properties

8 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                    | 7.81                     | 216      | –                            | 48                | –              | 272            |
| 100                   | –                        | 213      | 11.2                         | 48                | 487            | –              |
| 200                   | –                        | 207      | 12                           | 47                | 500            | –              |
| 300                   | –                        | 200      | 12.8                         | 44                | 517            | –              |
| 400                   | –                        | 180      | 13.4                         | 41                | 533            | –              |
| 500                   | –                        | 171      | 13.9                         | 38                | 559            | –              |
| 600                   | –                        | 154      | 14.2                         | 35                | 584            | –              |
| 700                   | –                        | 136      | 14.5                         | 31                | –              | –              |
| 800                   | –                        | 123      | 13.4                         | 27                | –              | –              |

| PROPERTY                 | VALUE | UNIT              |
|--------------------------|-------|-------------------|
| Density                  | 7.85  | g/cm <sup>3</sup> |
| Transformation point Ac1 | 725   | °C                |
| Transformation point Ac3 | 760   | °C                |
| Transformation point Ar3 | 750   | °C                |
| Transformation point Ar1 | 690   | °C                |

## Technological properties

| PROPERTY           | VALUE              | UNIT |
|--------------------|--------------------|------|
| Weldability        | hard weldability.  |      |
| Flake sensitivity  | weakly predisposed |      |
| Temper brittleness | not predisposed    |      |

## Heat treatment

1 regimes

| STEP                                                  | TEMPERATURE            | MEDIUM |
|-------------------------------------------------------|------------------------|--------|
| source joins the operations with + / procedural order |                        |        |
| Normalizing                                           | Temperature not stated | —      |
| Normalizing                                           | Temperature not stated | —      |
| Tempering                                             | Temperature not stated | —      |

## Designations across standards

101 designations · 3 documented as identical

| France                                    | 18       | Italy               | 8    |
|-------------------------------------------|----------|---------------------|------|
| 1C55                                      | afnor    | 1C55                | uni  |
| 2C50                                      | afnor    | C50                 | uni  |
| 2C55                                      | afnor    | C50E                | uni  |
| AF70                                      | afnor    | C50R                | uni  |
| AF70C55                                   | afnor    | C53                 | uni  |
| C45E                                      | afnor    | C55                 | uni  |
| C50E                                      | afnor    | C55E                | uni  |
| C50RR                                     | afnor    | C55R                | uni  |
| C54                                       | afnor    |                     |      |
| C55                                       | afnor    | <b>Russia / CIS</b> | 6    |
| C55E                                      | afnor    | 50                  | gost |
| XC48H1                                    | afnor    | 55                  | gost |
| XC48H1TS                                  | afnor    | 55KH                | gost |
| XC48TS                                    | afnor    | 55SL                | gost |
| XC50                                      | afnor    | 55nn                | gost |
| XC54                                      | afnor    | 58                  | gost |
| XC55                                      | afnor    |                     |      |
| XC55H1                                    | afnor    | <b>Spain</b>        | 5    |
|                                           |          | C50E                | une  |
|                                           |          | C55                 | une  |
|                                           |          | C55E                | une  |
|                                           |          | C55k                | une  |
|                                           |          | F.1150              | une  |
|                                           |          | <b>Japan</b>        | 5    |
|                                           |          | S40C                | jis  |
|                                           |          | S50C                | jis  |
|                                           |          | S53C                | jis  |
|                                           |          | S55C                | jis  |
|                                           |          | S55C-CSP            | jis  |
|                                           |          | <b>China</b>        | 5    |
|                                           |          | 50                  | gb   |
|                                           |          | 55                  | gb   |
|                                           |          | SM50                | gb   |
|                                           |          | SM55                | gb   |
|                                           |          | ZG340-640           | gb   |
|                                           |          | <b>Poland</b>       | 5    |
|                                           |          | 55                  | pn   |
|                                           |          | 55A                 | pn   |
|                                           |          | 55rs                | pn   |
|                                           |          | 60                  | pn   |
|                                           |          | D50                 | pn   |
| <b>United States</b>                      | 9        |                     |      |
| G10550 <span>This grade's own name</span> | uns      |                     |      |
| G10600                                    | uns      |                     |      |
| 1049                                      | aisi-sae |                     |      |
| 1050                                      | aisi-sae |                     |      |
| 1055 <span>This grade's own name</span>   | aisi-sae |                     |      |
| 1060                                      | aisi-sae |                     |      |
| G10490                                    | aisi-sae |                     |      |
| G10500                                    | aisi-sae |                     |      |
| G10550                                    | aisi-sae |                     |      |
| <b>United Kingdom</b>                     | 9        |                     |      |
| 060A52                                    | bs       |                     |      |
| 060A57                                    | bs       |                     |      |
| 070M55                                    | bs       |                     |      |
| 080A52                                    | bs       |                     |      |
| 080M50                                    | bs       |                     |      |
| C50E                                      | bs       |                     |      |
| C55                                       | bs       |                     |      |
| C55E                                      | bs       |                     |      |
| En9                                       | bs       |                     |      |

|               |        |                       |                         |        |   |
|---------------|--------|-----------------------|-------------------------|--------|---|
| Romania       |        | 5                     | Sweden                  |        | 2 |
| OLC50AT       | stas   |                       | 1655                    | ss     |   |
| OLC50X        | stas   |                       | 1674                    | ss     |   |
| OLC55         | stas   |                       | Czechia                 |        | 2 |
| OLC55A        | stas   |                       | 12051                   | csn    |   |
| OLC55X        | stas   |                       | 12060                   | csn    |   |
| Bulgaria      |        | 5                     | Hungary                 |        | 2 |
| 50            | bds    |                       | C50E                    | msz    |   |
| 55            | bds    |                       | C55E                    | msz    |   |
| C50E          | bds    |                       | Australia / New Zealand |        | 2 |
| C55           | bds    |                       | 1050                    | as-nzs |   |
| C55E          | bds    |                       | 1055                    | as-nzs |   |
| Europe        |        | 3                     | South Korea             |        | 2 |
| 1.0535        | din-en |                       | SM50C                   | ks     |   |
| C55           | din-en | This grade's own name | SM55C                   | ks     |   |
| CF53          | din-en |                       | Slovakia                |        | 1 |
| International |        | 3                     | 12 060                  | stn    |   |
| C50           | iso    |                       | Serbia                  |        | 1 |
| C55           | iso    |                       | Č.1630                  | srps   |   |
| C55E4         | iso    |                       |                         |        |   |
| Belgium       |        | 3                     |                         |        |   |
| C53           | nbn    |                       |                         |        |   |
| C55-1         | nbn    |                       |                         |        |   |
| C55-2         | nbn    |                       |                         |        |   |

**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 55SL

Quotation, availability, mill certificate or a technical question — directly on the material page.

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|                        |                   |              |              |
|------------------------|-------------------|--------------|--------------|
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