

## Hot- and cold-rolled 22MnB5

Ultra high strength after heat treatment for weight reduction of complex parts

22MnB5 is an uncoated ultra high-strength steel designed for the hot forming process. After forming, heat treatment and quenching, it combines the 1500 MPa strength with excellent shape accuracy offering real opportunities for weight reduction through downgauging when

compared to conventional HSLA grades. Additional benefits of using 22MnB5 are good repeatability in long production runs when compared with cold press forming.

### Mechanical properties

| 22MnB5                               | Substrate   | Test Direction | Yield strength                  | Tensile strength           | Elongation            |
|--------------------------------------|-------------|----------------|---------------------------------|----------------------------|-----------------------|
|                                      |             |                | $R_{p0.2}$ (N/mm <sup>2</sup> ) | $R_m$ (N/mm <sup>2</sup> ) | $L_0=80\text{mm}$ (%) |
| Tata Steel specification             | Hot-rolled  | T              | $\geq 320$                      | $\geq 500$                 | $\geq 15$             |
| Typical Tata Steel 22MnB5 properties |             | T              | 340-550                         | 525-670                    | > 15                  |
| Tata Steel specification             | Cold-rolled | T              | $\geq 300$                      | 500- 600                   | $\geq 20$             |
| Typical Tata Steel 22MnB5 properties |             | T              | 340-440                         | 500- 580                   | > 21                  |

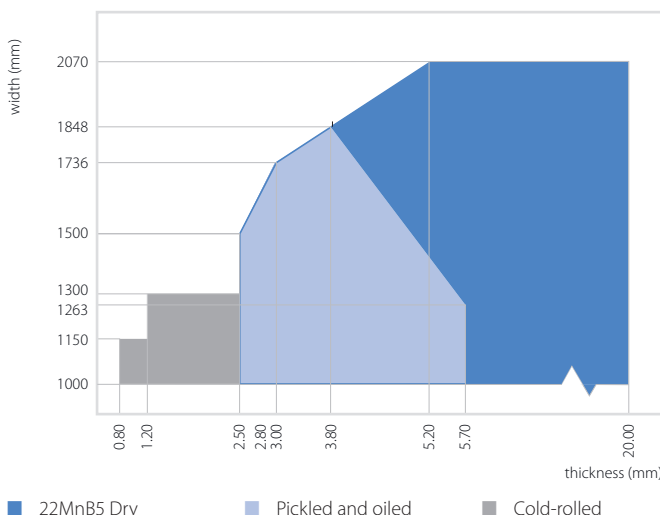
### Chemical composition

The chemical composition fits with the Euronorm specification for 22MnB5, as well as the more demanding specifications required by the major automotive manufacturers.

| 22MnB5                                | C           |      | Mn          |      | P     | S     | Si          |      | Al          |      | Cr          |     | Ti          |      | B            |        |
|---------------------------------------|-------------|------|-------------|------|-------|-------|-------------|------|-------------|------|-------------|-----|-------------|------|--------------|--------|
|                                       | min. - max. |      | min. - max. |      | max.  | max.  | min. - max. |      | min. - max. |      | min. - max. |     | min. - max. |      | min. - max.  |        |
| Tata Steel specification              | 0.20        | 0.25 | 1.10        | 1.30 | 0.02  | 0.010 | 0.20        | 0.30 | 0.02        | 0.06 | 0.10        | 0.3 | 0.02        | 0.04 | 0.002        | 0.0035 |
| Typical Tata Steel product properties | 0.23        |      | 1.25        |      | 0.01  | 0.005 | 0.25        |      | 0.04        |      | 0.2         |     | 0.03        |      | 0.003        |        |
| EN 10083 22MnB5                       | 0.17        | 0.23 | 1.10        | 1.40 | 0.025 | 0.035 | 0.40        |      |             |      |             |     |             |      | 0.0008 0.005 |        |

All values are in weight%

### Dimensional window of 22MnB5



Please refer to Tata Steel or your local sales representative for dimensions which fall outside of the above matrix.

Our material experts are there to support the deployment of our products in your specific application area. Our online material database Aurora Online provides our customers with comprehensive datasheets and ready to run input decks.

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