

This page is mainly introduced the H11 Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of H11, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

## Datasheet for Steel Grades Tool Steel And Hard Alloy H11

### H11 Standard Number:

| ITEM | Standard Number | Descriptions |
|------|-----------------|--------------|
|------|-----------------|--------------|

### H11 Chemical composition (mass fraction) (wt.%)

| Chemical  |           |           |        | Min.(%) |           |    | Max.(%)   |           |       |
|-----------|-----------|-----------|--------|---------|-----------|----|-----------|-----------|-------|
| C         | Si        | Mn        | P      | S       | Cr        | Ni | Mo        | V         | Ta    |
| 0.33~0.43 | 0.80~1.20 | 0.20~0.50 | ≤0.030 | ≤0.030  | 4.75~5.50 |    | 1.10~1.60 | 0.30~0.60 |       |
| W         | N         | Cu        | Co     | Pb      | B         | Nb | Al        | Ti        | Other |
|           |           |           |        |         |           |    |           |           |       |

Annealing hardness HBS: 235

Cold pull hardness HBS: 262

Preheat temperature / °C : 788

Quenching temperature / °C | salt bath furnaces: 996

Quenching temperature / °C | controlled atmosphere furnace: 1010

Holding time/min: 5 to 15

Quenching medium: air cold

Tempering temperature / °C : 552

After tempering quartile hardness HRC: 53

### H11 Physical Properties

|                  |         |                          |
|------------------|---------|--------------------------|
| Tensile strength | 115-234 | $\sigma_b$ /MPa          |
| Yield Strength   | 23      | $\sigma_{0.2} \geq$ /MPa |
| Elongation       | 65      | $\delta_5 \geq$ (%)      |
| $\psi$           | -       | $\psi \geq$ (%)          |

|     |         |         |
|-----|---------|---------|
| Akv | -       | Akv ≥ J |
| HBS | 123-321 | -       |
| HRC | 30      | -       |

| H11 Mechanical Properties |         |                          |
|---------------------------|---------|--------------------------|
| Tensile strength          | 231-231 | $\sigma_b$ /MPa          |
| Yield Strength            | 154     | $\sigma_{0.2} \geq$ /MPa |
| Elongation                | 56      | $\delta 5 \geq$ (%)      |
| $\psi$                    | -       | $\psi \geq$ (%)          |
| Akv                       | -       | Akv ≥ J                  |
| HBS                       | 235-268 | -                        |
| HRC                       | 30      | -                        |

| H11 Heat Treatment Regime |           |           |             |       |
|---------------------------|-----------|-----------|-------------|-------|
| Annealing                 | Quenching | Tempering | Normalizing | Q & T |
| √                         | √         | √         | √           | √     |

| H11 Range of products |                                          |                            |                                             |                                                               |
|-----------------------|------------------------------------------|----------------------------|---------------------------------------------|---------------------------------------------------------------|
| Product type          | Products                                 | Dimension                  | Processes                                   | Deliver Status                                                |
| Plates / Sheets       | Plates / Sheets                          | 0.08-200mm(T)*W*L          | Forging, hot rolling and cold rolling       | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Steel Bar             | Round Bar, Flat Bar, Square Bar          | Φ8-1200mm*L                | Forging, hot rolling and cold rolling, Cast | Black, Rough Turning, Shot Blasting,                          |
| Coil / Strip          | Steel Coil /Steel Strip                  | 0.03-16.0x1200mm           | Cold-Rolled & Hot-Rolled                    | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Pipes / Tubes         | Seamless Pipes/Tubes, Welded Pipes/Tubes | OD:6-219mm x WT:0.5-20.0mm | Hot extrusion, Cold Drawn, Welded           | Annealed, Solution and Aging, Q+T, ACID-WASHED                |

**We can produce Tool Steel And Hard Alloy the specifications follows:**