

This page is mainly introduced the W112 Special Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of W112 Special, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

## Datasheet for Steel Grades Tool Die Steels W112 Special

| W112 Special Standard Number: |                  |                                                     |
|-------------------------------|------------------|-----------------------------------------------------|
| ITEM                          | Standard Number  | Descriptions                                        |
| 1                             | SAE J 437 (1970) | Selection and heat treatment of tool and die steels |
| 2                             | SAE J 438 (1970) | Tool and die steels                                 |

| W112 Special Chemical composition (mass fraction) (wt.%) |    |    |    |          |    |    |          |    |       |
|----------------------------------------------------------|----|----|----|----------|----|----|----------|----|-------|
| Chemical                                                 |    |    |    | Min. (%) |    |    | Max. (%) |    |       |
| C                                                        |    |    |    | 1.10     |    |    | 1.30     |    |       |
| Si                                                       |    |    |    | 0.10     |    |    | 0.40     |    |       |
| Mn                                                       |    |    |    | 0.10     |    |    | 0.40     |    |       |
| Cr                                                       |    |    |    |          |    |    |          |    |       |
| V                                                        |    |    |    |          |    |    |          |    |       |
| C                                                        | Si | Mn | P  | S        | Cr | Ni | Mo       | V  | Ta    |
|                                                          |    |    |    |          |    |    |          |    |       |
| W                                                        | N  | Cu | Co | Pb       | B  | Nb | Al       | Ti | Other |
|                                                          |    |    |    |          |    |    |          |    |       |

Tool and die steels

| W112 Special 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        | -       | $Akv \geq J$         |
| HBS        | 123-321 | -                    |
| HRC        | 30      | -                    |

### W112 Special Mechanical Properties

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

### W112 Special Heat Treatment Regime

| Annealing | Quenching | Tempering | Normalizing | Q & T |
|-----------|-----------|-----------|-------------|-------|
| √         | √         | √         | √           | √     |

### W112 Special 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          | $\Phi 8$ -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 Die Steels the specifications follows:**