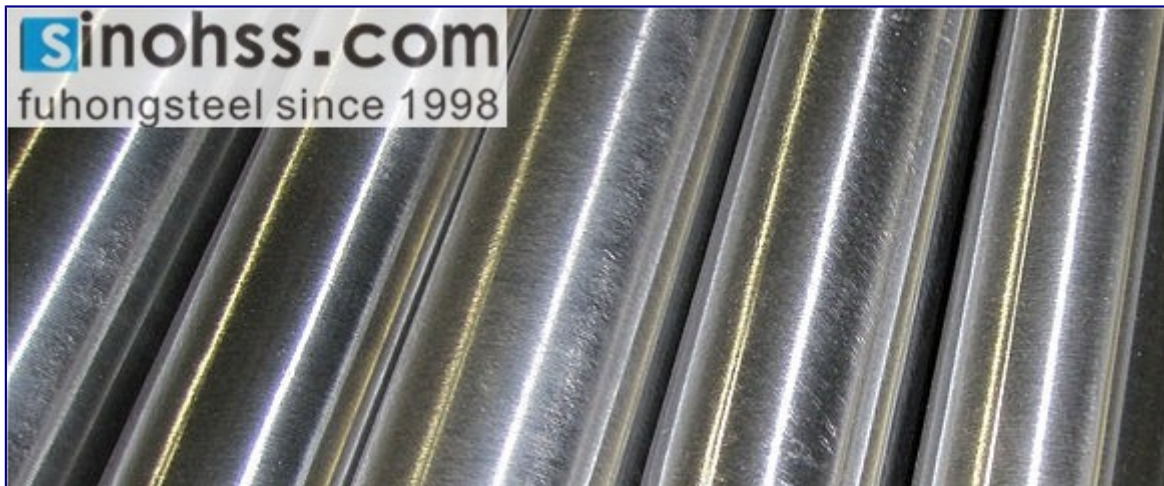


## High Speed Steel

(M2 / [1.3343](#), M35 / [1.3243](#), M42 / [1.3247](#), T1 / [1.3355](#), T4 / [1.3255](#), T5 / [1.3265](#))



### [1.3343 / HS6-5-2 Steel](#)

**DIN 1.3343 / HS6-5-2 Steel** is a common Tungsten-Molybdenum type high-speed steel. Its toughness and wear resistance are better than 1.3355 steel. DIN 1.3343 also has higher hot hardness. The thermoplastic of HS6-5-2 steel is fine, so it can hot forming. This material must be protected on heating because it is easy to oxidation decarburization.

#### Chemical Composition

C: 0.86-0.94; Si: max0.45; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.80-4.50; Mo: 4.70-5.20; V: 1.70-2.10; W: 5.90-6.70;

#### Equivalent Grades

AISI/ASTM: [M2](#)

BS: [BM2](#)

JIS: [SKH9](#) / [SKH51](#)

Germany: [S6-5-2](#)

Russia: [R6M5](#)

#### Form of 1.3343

Round / Square / Flat Bars, Plates, Sheets, Blocks

#### Size of HS6-5-2

##### Round bar

dia. 1-16mm (Cold Drawn);  
dia. 10-50mm (Hot Rolled);  
dia. 50-180mm (Hot Forged);  
dia. 180-300mm (Free Forging);

##### Flat bar

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);  
Width: Max800mm;

#### Surface Condition of 1.3343 Steel

Black, Peeled, Rough Machined, Ground

#### Hardness of HS6-5-2 Steel

Annealed (+A): max 255HB

#### Mechanical Properties of W-Nr 1.3343 Steel

Tensile strength

Yield point

Percentage reduction of area after fracture

Elongation after fracture

Impact test

#### Quenched and Tempered (+QT) of 1.3343 / HS6-5-2

1. Preheat din 1.3343 steel slowly to the temperature of 730-840°C;
2. Keep heating up to hardening temperature of 1210-1230°C;

3. Make sure that the material is heated throughly;
4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw HS6-5-2 steel from the furnace and cool in air;
7. The general tempering temperature is 550°C which can make the material at 63-64HRC.
8. The 1.3343 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

#### **Applications of DIN HS6-5-2 Steel**

W-Nr 1.3343 steel can be used for general tools. It is also good for making tools which can be hot forming tool bits. Because of its high strength, good abrasion resistance,so HS6-5-2 can also be used in the manufacture of high load conditions using the wear resistance of parts,such as cold extrusion dies.

[Enquiry for DIN 1.3343 / HS6-5-2 Tool Steel Round / Flat Bar, Plates, Sheets, Blocks.](#)



#### **1.3243 / HS6-5-2-5 Steel**

**DIN 1.3243 / HS6-5-2-5 Steel** is a Cobalt-Type high speed steel. The 1.3243 is on the basis of 1.3343, but with 5% Cobalt and 0.05% Vanadium content increased which improving the hot hardness and wear resistance. HS6-5-2-5 steel is easy oxidation decarburization, so it should be paid attention to the hot working and heat treatment.

#### **Chemical Composition**

C: 0.87-0.95; Si: max0.45; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.80-4.50; Mo: 4.70-5.20; V: 1.70-2.10; W: 5.90-6.70; Co: 4.50-5.00;

#### **Equivalent Grades**

AISI/ASTM: [M35](#)

BS: [BM35](#)

JIS: [SKH55](#)

Germany: [S6-5-2-5](#)

Russia: [R6M5K5](#)

#### **Form of 1.3243**

Round / Square / Flat Bars, Plates, Sheets, Blocks

#### **Size of HS6-5-2-5**

##### **Round bar**

dia. 1-16mm (Cold Drawn);

dia. 10-50mm (Hot Rolled);

dia. 50-180mm (Hot Forged);

dia. 180-300mm (Free Forging);

##### **Flat bar**

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);

Width: Max800mm;

### Surface Condition of 1.3243 Steel

Black, Peeled, Rough Machined, Ground

### Hardness of HS6-5-2-5 Steel

Annealed (+A): max 269HB

### Mechanical Properties of W-Nr 1.3243 Steel

Tensile strength

Yield point

Percentage reduction of area after fracture

Elongation after fracture

Impact test

### Quenched and Tempered (+QT) of 1.3243 / HS6-5-2-5

1. Preheat din 1.3243 steel slowly to the temperature of 730-840°C;
2. Keep heating up to hardening temperature of 1200-1220°C;
3. Make sure that the material is heated throughly;
4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw HS6-5-2-5 steel from the furnace and cool in air;
7. The general tempering temperature is 540-560°C which can make the material at 64HRC.
8. The 1.3243 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

### Applications of DIN HS6-5-2-5 Steel

The 1.3243 steel is always used in the manufacture of gear cutting tools,milling tools,punch,cutter,etc. HS6-5-2-5 steel can be also used for machining hard materials,particularly applicable to cutting heat resistant alloys.

[Enquiry for DIN 1.3243 / HS6-5-2-5 Tool Steel Round / Square / Flat Bar, Plates, Sheets, Blocks.](#)



### 1.3247 / HS2-9-1-8 Steel

**DIN 1.3247 / HS2-9-1-8 Steel** is a Cobalt-Molybdenum high speed steel according to DIN standard. The 1.3247 steel can reach high hardness of 70HRC after QT. HS2-9-1-8 tool steel has good red hardness and high temperature hardness. Cutting tools made of 1.3247 steel can be used to cut high temperature iron base and casting alloys. HS2-9-1-8 steel has poor toughness,so the quenching temperature should be low.

### Chemical Composition

C: 1.05-1.15; Si: max0.70; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.50-4.50; Mo: 9.00-10.00; V: 0.90-1.30; W: 1.20-1.90; Co: 7.50-8.50;

### Equivalent Grades

AISI/ASTM: [M42](#)

BS: [BM42](#)

JIS: [SKH59](#)

Germany: [S2-10-1-8](#)

**Form of 1.3247**

Round / Square / Flat Bars, Plates, Sheets, Blocks

**Size of HS2-9-1-8****Round bar**

dia. 1-16mm (Cold Drawn);  
dia. 10-50mm (Hot Rolled);  
dia. 50-180mm (Hot Forged);  
dia. 180-300mm (Free Forging);

**Flat bar**

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);  
Width: Max800mm;

**Surface Condition of 1.3247 Steel**

Black, Peeled, Rough Machined, Ground

**Hardness of HS2-9-1-8 Steel**

Annealed (+A): max 269HB

**Mechanical Properties of W-Nr 1.3247 Steel**

Tensile strength  
Yield point  
Percentage reduction of area after fracture  
Elongation after fracture  
Impact test

**Quenched and Tempered (+QT) of 1.3247 / HS2-9-1-8**

1. Preheat din 1.3247 steel carefully to the temperature of 730-840°C;
2. Keep heating up to hardening temperature of 1170-1190°C;
3. Make sure that the material is heated thoroughly;
4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw HS2-9-1-8 steel from the furnace and cool in air;
7. The general tempering temperature is 530-550°C which can make the material at 66HRC.
8. The 1.3247 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

**Applications of DIN HS2-9-1-8 Steel**

Due to the grinding performance is good,so 1.3247 steel can be used to manufacture all kinds of complex high precision cutting tools,such as forming milling cutter,precision broach. HS2-9-1-8 tool steel can also be used to make special drills,lathe tools,and a variety of high hardness segment,blades.

**[Enquiry for DIN 1.3247 / HS2-9-1-8 Tool Steel Round / Square / Flat Bars, Plates, Sheets, Blocks.](#)**







### 1.3355 / HS18-0-1 Steel

**DIN 1.3355 / HS18-0-1 Steel** is a common Tungsten-type high speed steel. HS18-0-1 steel has high hardness and red hardness. The 1.3355 steel can remain 57 HRC when the temperature is 500°C. Its heat treatment temperature range is wide, which makes this material not easy to overheating. HS18-0-1 steel is easy grinding and hot working process is not easy to oxidation decarburization. The high temperature plastic of 1.3355 tool steel is poor, but the wearability is good.

#### Chemical Composition

C: 0.73-0.83; Si: max0.45; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.80-4.50; V: 1.00-1.20; W: 17.20-18.70;

#### Equivalent Grades

AISI/ASTM: [T1](#)

BS: [BT1](#)

JIS: [SKH2](#)

Russia: [R18](#)

Austria: [S200](#)

#### Form of 1.3355

Round / Square / Flat Bars, Plates, Sheets, Blocks

#### Size of HS18-0-1

##### Round bar

dia. 1-16mm (Cold Drawn);  
dia. 10-50mm (Hot Rolled);  
dia. 50-180mm (Hot Forged);  
dia. 180-300mm (Free Forging);

##### Flat bar

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);  
Width: Max800mm;

#### Surface Condition of 1.3355 Steel

Black, Peeled, Rough Machined, Ground

#### Hardness of HS18-0-1 Steel

Annealed (+A): max 255HB

#### Mechanical Properties of W-Nr 1.3355 Steel

Tensile strength

Yield point

Percentage reduction of area after fracture

Elongation after fracture

Impact test

#### Quenched and Tempered (+QT) of 1.3355 / HS18-0-1

1. Preheat din 1.3355 steel slowly to the temperature of 820-870°C;
2. Keep heating up to hardening temperature of 1270-1285°C;
3. Make sure that the material is heated throughly;

4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw HS18-0-1 steel from the furnace and cool in air;
7. The general tempering temperature is 550-570°C which can make the material at 63HRC.
8. The 1.3355 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

#### **Applications of DIN HS18-0-1 Steel**

1.3355 tool steel is usually used in the manufacture of all kinds of cutting tools, such as turning tool, milling cutter, cutter, reamer, drill bit, saw blade, tap, etc. Due to the high temperature hardness and good wearability, HS18-0-1 steel can also be used for high temperature wear resistance parts, such as bearing high temperature, the hot spring, etc. DIN 1.3355 steel sometimes is used as cold work tool steel.

[\*\*Enquiry for DIN 1.3355 / HS18-0-1 Tool Steel Round / Square / Flat Bar, Plates, Sheets, Blocks.\*\*](#)



#### **1.3255 / S18-1-2-5 Steel**

**DIN 1.3255 / S18-1-2-5 Steel** is a Tungsten-Cobalt high speed tool steel according to DIN Germany standard. S18-1-2-5 steel is similar to [1.3355](#) steel but with added 5% cobalt. Because of the addition of Cobalt content, it improves the high temperature hardness and red hardness of din 1.3255 steel. This material also has considerable toughness and easy to grinding.

#### **Chemical Composition**

C: 0.75-0.83; Si: max0.45; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.80-4.50; Mo: 0.50-0.80; V: 1.40-1.70; W: 17.50-18.50; Co: 4.50-5.50;

#### **Equivalent Grades**

AISI/ASTM: [T4](#)

BS: [BT4](#)

JIS: [SKH3](#)

#### **Form of 1.3255**

Round / Square / Flat Bars, Plates, Sheets, Blocks

#### **Size of S18-1-2-5**

##### **Round bar**

- dia. 1-16mm (Cold Drawn);
- dia. 10-50mm (Hot Rolled);
- dia. 50-180mm (Hot Forged);
- dia. 180-300mm (Free Forging);

##### **Flat bar**

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);  
Width: Max800mm;

#### **Surface Condition of 1.3255 Steel**

Black, Peeled, Rough Machined, Ground

### Hardness of S18-1-2-5 Steel

Annealed (+A): max 269HB

### Mechanical Properties of W-Nr 1.3255 Steel

Tensile strength

Yield point

Percentage reduction of area after fracture

Elongation after fracture

Impact test

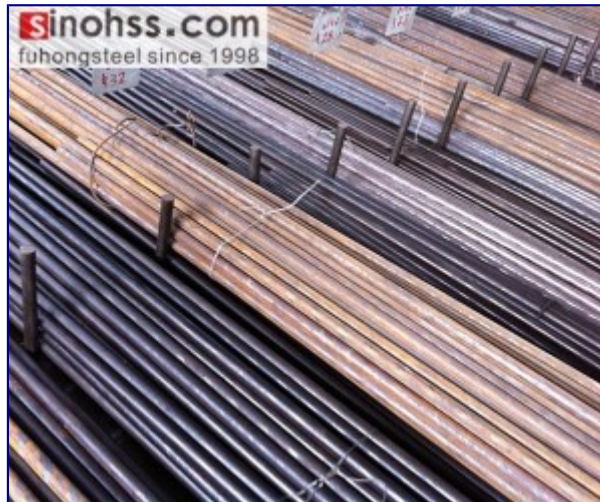
### Quenched and Tempered (+QT) of 1.3255 / S18-1-2-5

1. Preheat din 1.3255 steel slowly to the temperature of 820-870°C;
2. Heating up to quenching temperature of 1270-1290°C;
3. Make sure that the material is heated throughly;
4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw S18-1-2-5 steel from the furnace and cool in air;
7. The general tempering temperature is 540-560°C which makes the material 63HRC.
8. The 1.3255 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

### Applications of DIN S18-1-2-5 Steel

1.3255 steel can be used at higher temperature. It is used to make various cutting tools of higher temperature, such as turning tool, cutter, reamer, forming cutting tools, drilling tools, gear cutting tools, etc. S18-1-2-5 steel is also good for cold work tool steel.

[Enquiry for DIN 1.3255 / S18-1-2-5 Tool Steel Round / Square / Flat Bar, Plates, Sheets, Blocks.](#)



### 1.3265 / S18-1-2-10 Steel

**DIN 1.3265 / S18-1-2-10 Steel** is a Tungsten-Cobalt high-speed tool steel. The 1.3265 steel contains 8% Co, so the high temperature performance and toughness is better than [1.3255](#). This kind of material also has high abrasion resistance and good cutting performance. But S18-1-2-10 steel is difficult to grinding.

### Chemical Composition

C: 0.72-0.80; Si: max0.45; Mn: max0.40; P: max0.030; S: max0.030;  
Cr: 3.80-4.50; Mo: 0.50-0.80; V: 1.40-1.70; W: 17.50-18.50; Co: 9.00-10.00;

### Equivalent Grades

AISI/ASTM: [T5](#)

BS: [BT5](#)

JIS: [SKH4](#)

### Form of 1.3265

Round / Square / Flat Bars, Plates, Sheets, Blocks

## **Size of S18-1-2-10**

### **Round bar**

dia. 1-16mm (Cold Drawn);  
dia. 10-50mm (Hot Rolled);  
dia. 50-180mm (Hot Forged);  
dia. 180-300mm (Free Forging);

### **Flat bar**

Thickness: 1-2.5mm(Cold Rolled); 1.5-20mm(Hot Rolled); 20-300mm(Hot Forged);  
Width: Max800mm;

## **Surface Condition of 1.3265 Steel**

Black, Peeled, Rough Machined, Ground

## **Hardness of S18-1-2-10 Steel**

Annealed (+A): max 285HB

## **Mechanical Properties of W-Nr 1.3265 Steel**

Tensile strength

Yield point

Percentage reduction of area after fracture

Elongation after fracture

Impact test

## **Quenched and Tempered (+QT) of 1.3265 / S18-1-2-10**

1. Preheat din 1.3265 steel slowly to the temperature of 820-870°C;
2. Heating up to quenching temperature of 1270-1290°C;
3. Make sure that the material is heated throughly;
4. Quench in the oil or brine;
5. Heat uniformly to the required tempering temperature;
6. Withdraw S18-1-2-10 steel from the furnace and cool in air;
7. The general tempering temperature is 540-560°C which makes the material 63HRC.
8. The 1.3265 tool steel is also suitable for vacuum hardening and triple tempering is strongly recommended.

## **Applications of DIN S18-1-2-10 Steel**

Tools made of 1.3265 steel is good for machining high strength steel,high temperature alloy,titanium alloys,casting alloy materials and other difficult-to-machine materials. Cutting tools used to make use of higher temperatures, such as turning tool,cutter,milling cutter,drill,broach,etc.

[\*\*Enquiry for DIN 1.3265 / S18-1-2-10 Tool Steel Round / Square / Flat Bar, Plates, Sheets, Blocks.\*\*](#)