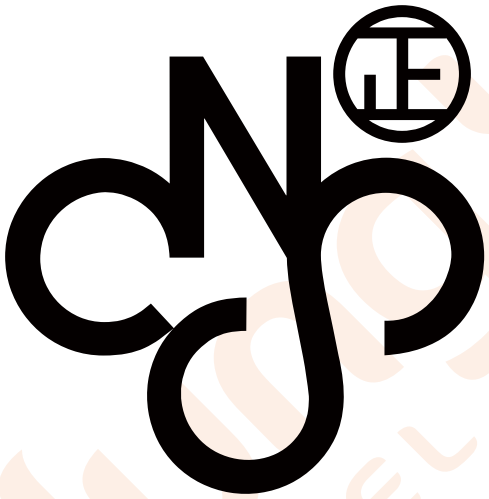
CNS

National Standards of the Republic of China



- The National Standards of the Republic of China (CNS) are the official standards implemented in the Republic of China (Taiwan).
  Formerly known as the “Chinese National Standards,” the name was officially changed to its current form in 2005.
  These standards have been administered since 1935 by the Industrial Standards Committee of the Ministry of Economic Affairs, now known as the Bureau of Standards, Metrology and Inspection (BSMI).
- CNS is divided into 21 major categories, with the “G” category representing ferrous metallurgy.
- G1 and G2 cover general requirements and testing methods for ferrous metal processing.
- G3 focuses on steelmaking raw materials and products, including specifications for steel materials, cast iron, forged steel, and related items.

Scope of Application for Category G Standards

① Steel materials (e.g., structural steel, tool steel, stainless steel, spring steel, etc.)
② Cast iron (e.g., gray cast iron, ductile cast iron, etc.)
Raw materials for steelmaking (e.g., iron ore, alloying materials)
③ Steel products (e.g., steel plates, steel pipes, steel bars, etc.)
④ Inspection and testing methods (e.g., mechanical properties, chemical composition, dimensional tolerances)

Scope of Application for Category G Standards

In the CNS (Chinese National Standards) system, Category G represents ferrous metallurgy.
The coding format is G followed by four digits, each number corresponding to a specific steel grade standard.

Category	Code Range	Key Standards	Application Scope
General Structural Steel	G3101 G4051	SS400 S45C	Bridges, construction, mechanical structures
Alloy Structural Steel	G4053	SCM440 SNCM220	Gears, bearings, power transmission systems
Stainless Steel	G4303 G4304	SUS304 SUS316	Food equipment, chemical containers
Bearing Steel	G4805	SUJ2	High-speed rotating machinery, bearings
Tool Steel	G4404 G4405	SKD11 SKH55	Cutting tools, molds, metalworking

Structure of CNS Standards

- The Taiwan National Standards (CNS) designation system for steel materials is primarily based on CNS 109 G1001, and is generally composed of the following three parts:

Part 1: Material

The Taiwan National Standards (CNS) designation system for steel materials is primarily based on CNS 109 G1001, and is generally composed of the following three parts:

Part 2: Application or Composition

There are two different methods of designation:

A

Indicates the standard name or intended application of the product. Common examples include:

P：Plate	T：Tube	U：Use
W：Wire	F：Forging	C：Casting

Examples:
SPCC: Steel Plate, Cold Rolled
SUP: Steel for Spring Use

B

For structural steels (including structural carbon steel and alloy steel), this part represents either the main alloying elements or the carbon content (for carbon structural steel).
When indicating carbon content, it is typically shown as 100 times the actual carbon percentage.

Examples:
SCM420: Chromium-Molybdenum steel,
designation number 420.
S25C: Carbon steel with 0.25% carbon content.

Part 3

This part indicates either the material grade number or the minimum tensile strength / yield strength.
When representing minimum tensile or yield strength, it is typically shown as a three-digit number.

Example:
SCM420: Grade 420 in the Chromium-Molybdenum steel series.

Designation System of CNS Standards

- The numbering of CNS standards is mostly synchronized with JIS (Japanese Industrial Standards); however, CNS adds its own year of promulgation to indicate the official release date in Taiwan.
- In Taiwan's industry, although most steel grade designations are consistent with JIS, inspection and quality control must still be carried out based on the official CNS standard documents.

Designation System of CNS Standards

CNS + Category Code + Standard Number + Year of Promulgation + Steel Grade Designation

- **Rolled Steel for General Structural Use**

For example: **CNS G 3101-2017 SS400**

G = Ferrous metals category

3101 = Standard number

2017 = Year of promulgation

SS400 = Steel grade designation

First S = Steel

Second S = Structure, indicating the steel is intended for structural applications

400 = Minimum tensile strength of the steel is 400 MPa (megapascals)

Steel Symbol Indication–CNS

◆ Carbon Steel for Mechanical Structural Use

For example: **CNS G 4051-2017 S45C**

G = Ferrous metals category
3101 = Standard number
2017 = Year of promulgation
SS400 = Steel grade designation
First S = Steel
Second S = Structure, indicating the steel is intended for structural applications
400 = Minimum tensile strength of the steel is 400 MPa (megapascals)

◆ Low Alloy Steel for Mechanical Structural Use

For example: **CNS G 4053-2017 SCM440**

S = Steel
C = Carbon
M = Molybdenum
440 = Designation number of the grade within the standard, typically aligned with the Japanese JIS standard

◆ Stainless Steel

For example: **CNS G 4303-2017 SUS304**

SUS = Steel Use Stainless, indicating stainless steel used for steel applications
304 = Grade number within the stainless steel series

Steel Symbol Indication–CNS

Stainless Steel

For example: **CNS G 4304-2017 SUS316**

SUS = Steel Use Stainless, indicating stainless steel intended for steel applications.

316 = Grade designation, belonging to the molybdenum-containing austenitic stainless steel series.

High Carbon Chromium Bearing Steel

For example: **CNS G 4805-2017 SUJ2**

SUJ = The designation for “bearing steel” under the Japanese JIS standard, indicating a high-carbon chromium alloy steel specifically used for manufacturing bearings

2 = Indicates the specific grade within the SUJ series

Alloy Tool Steel

For example: **CNS G 4404-2017 SKD11**

SKD = Steel Kougu Dice, the Japanese abbreviation for cold work tool steel

11 = Specific grade within the SKD series

High Speed Tool Steel

For example: **CNS G 4405-2017 SKH55**

SKH = Stands for Super High-speed Steel, a series of high-speed steels containing alloying elements such as molybdenum and vanadium

55 = Specific grade within the series, typically characterized by higher carbon and chromium content

Meaning of Additional Symbols

Symbol	Meaning
H	Hardened
T	Tempered
E	Electrical steel
P	Plate
T	Tube