



SURFACE VEHICLE RECOMMENDED PRACTICE

J2392™

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Categorization and Properties of SAE Cold Rolled Strip Steels

RATIONALE

SAE J2392 has been reaffirmed to comply with the SAE Five-Year review policy.

1. SCOPE

This SAE recommended practice defines and establishes tolerances and attributes of cold rolled strip steels. Differences between cold rolled strip and cold rolled sheet products are discussed so that process designers can make informed material selection decisions.

1.1 Purpose

Cold rolled strip steels are produced to closer dimensional tolerances than cold rolled sheet steels. Cold rolled strip is commercially available over a wider range of thickness and chemical compositions. Cold rolled strip is also available with finishes, tempers and edges that differ from sheet products. Cold rolled strip steels are produced in sizes as follows in Table 1:

TABLE 1 - DIMENSIONAL LIMITS FOR COLD ROLLED STRIP STEELS

Width, mm	Thickness, mm
12.5 to 600 mm	7.6 mm and under

Strip tolerance products are available in widths greater than 600 mm, however, these products are technically classified as sheet.

2. REFERENCES

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE and ASTM publications shall apply.

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Documents

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2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J403	Chemical Compositions of SAE Carbon Steels
SAE J404	Chemical Compositions of SAE Alloy Steels
SAE J409	Product Analysis—Permissible Variations from Specified Chemical Analysis of a Heat or Cast of Steel
SAE J911	Surface Roughness and Peak Count Measurement of Cold-Rolled Sheet Steel
SAE J2329	Categorization and Properties of Low-Carbon Automotive Sheet Steels

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A 109/A 109M	Standard Specification for Steel, Strip, Carbon, Cold Rolled
ASTM E 430	Method for Measurement of Gloss of High Gloss Surfaces By Goniophotometry

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this specification.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J1058	Standard Sheet Steel Thickness
SAE J1268	Hardenability Bands for Carbon and Alloy H Steels
SAE J2340	Categorization and Properties of Dent Resistant, High Strength, and Ultra High Strength Automotive Sheet Steel

2.2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A 684/A 684M	Standard Specification for Steel, Strip, High - Carbon, Cold Rolled
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2.2.3 AIST Publications

Available from Association for Iron & Steel Technology, 186 Thorn Hill Road, Warrendale, PA 15086, Tel: 724-776-6040, www.aist.org.

Steel Products Manual, Strip Steel; Carbon, High Strength Low Alloy, and Alloy; Iron and Steel Society Publication, February, 1995

3. TEMPER DESIGNATION

- 3.1 Low carbon cold rolled strip is often specified to standard tempers. Temper refers to the hardness, or strength of the steel. As hardness increases, formability decreases. In general, the degree of formability increases as the temper number increases, as indicated in Table 2.

TABLE 2 - TEMPER DESIGNATORS: LOW CARBON COLD ROLLED STRIP STEELS

Temper Number	Temper Name	Thickness Under	Thickness Through	Hardness Minimum	Hardness Maximum	Approx. Tensile Strength (MPa)	Description
1	Hard	0.6	—	15T90	—	620 ± 70	Very hard and springy intended for flat work not requiring cold forming.
		1.0	0.6	30T76	—		
		1.8	1.0	B90	—		
		7.6	1.8	B84	—		
2	Half Hard	0.6	—	15T83.5	15T88.5	450 ± 70	Moderately hard and springy intended for limited bending defined as 90 degrees across the rolling direction around a radius equal to the thickness.
		1.0	0.6	30T63.5	30T73.5		
		7.6	1.0	B70	B85		
3	Quarter Hard	0.6	—	15T80	15T85	380 ± 70	Medium soft intended for limited amounts of bending, forming and drawing. May be bent 180 degrees across the rolling direction around a radius equal to the thickness.
		1.0	0.6	30T56	30T67		
		7.6	1.0	B60	B75		
4	Skin Rolled	0.6	—	—	15T82	330 ± 40	Soft and ductile intended for deep drawing. May be bent flat upon itself in any direction.
		1.0	0.6	—	30T60		
		7.6	1.0	—	B65		
5	Dead Soft	0.6	—	—	15T78.5	300 ± 40	Soft and ductile intended for deep drawing applications where stretcher straining and fluting is not objectionable.
		1.0	0.6	—	30T53		
		7.6	1.0	—	B55		

- 3.2 Low carbon cold rolled strip is available in tempers other than standard by agreement between strip user and strip producer.

4. CHEMICAL COMPOSITION

- 4.1 Cold rolled strip steels are produced from a wide range of hot band alloys. In general, cold rolled strip steel products may be produced from any grade of steel that is available for hot band substrate. With the exception of strip produced to standard tempers (hardness), other public specifications govern the applicable composition limits.

4.2 Low Carbon Steel Specified To Temper

When cold rolled strip is specified to a standard temper, chemical composition limits are given by Table 3.

TABLE 3 - HEAT ANALYSIS COMPOSITION - WT %

Element	Temper 1, 2, 3	Number 4, 5
Carbon, max.	0.25	0.15
Manganese, max.	0.60	0.60
Phosphorus, max.	0.025	0.025
Sulfur, max.	0.025	0.025