

High Strength Low-Alloy Steel Hot-Rolled Sheet ASTM A1011 HSLAS Grade 50 (Formerly A607, Grade 50)

1. SCOPE

1.1 This standard is intended to cover high strength low-alloy (HSLA) columbium hot-rolled steel sheet and strip used in FNHA operations. Material meeting requirements of ASTM A1011 HSLAS-F (formerly A715), A935, A936, and CSA G40.21 grade 50W may also meet the requirements of this standard.

1.2 HSLA steel has the following physical characteristics: good notch toughness, high strength to weight ratio, good weather resistance and good weldability.

2. DRAWING SPECIFICATION

2.1 HR Sheet or Strip ASTM A1011 HSLAS GR50

2.2 Replaces the following call-outs:

HR Sheet or Strip ASTM A607 GR50
HR Sheet or Strip ASTM A715 GR50

3. RELATED SPECIFICATIONS

3.1 REFERENCE STANDARDS

86050115 (FNHA 2-A-026.00)—General Requirements for Carbon and High Strength Low-Alloy Hot-Rolled Sheet, Hot-Rolled Strip and Cold-Rolled Sheet Steel
9842869 (FNHA 2-A-003.00)—Standard A1011 HSLAS-F GR50 Hot-Rolled Sheet
86563034 (FNHA-2-A-002.01)—Material List 86050122, Raw Materials for STD A1011 HSLAS GR50

ASTM A572—High Strength Low-Alloy Columbium—Vanadium Steels of Structural Quality
ASTM A1011—HSLAS GR50 Steel Sheet and Strip Hot Rolled and Cold-Rolled, High Strength Low-Alloy Columbium and/or Vanadium
ASTM A1011—HSLAS-F GR50 Specification for Steel Sheet and Strip, High Strength, Low Alloy Hot-Rolled or Cold-Rolled with Improved Formability
ASTM A935—Specification for Steel Sheet and Strip, Heavy Thickness Coils, High Strength, Low Alloy, Columbium or Vanadium, or Both, Hot-Rolled
ASTM A1018 (formerly A936)—Specification for Steel Sheet and Strip, Heavy Thickness Coils, High Strength, Low Alloy Hot-Rolled with Improved Formability
CSA G40.21—Structural Quality Steel

3.2 This standard replaces the following company standard:

Versatile

MS 637

4. REQUIREMENTS

4.1 CHEMICAL REQUIREMENTS

Elements	Percent Analysis
Carbon, max.	0.23
Manganese, max.	1.35
Phosphorus, max.	0.04
Sulfur, max.	0.04
Columbium, min.	0.005

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4.2 MECHANICAL REQUIREMENTS

Tensile Strength, min. psi (MPa)	65,000 (450)
Yield Point, min. psi (MPa)	50,000 (340)
Elongation in 2 in. (50 mm), Hot-Rolled, min. %:	22

4.3 BEND REQUIREMENTS

Bend Radius to Thickness Ratio	
Transverse Specimen	Longitudinal Specimen
1 1/2	1

4.4 DIMENSIONAL TOLERANCES

HSLA steel shall conform to dimensional tolerances shown in 86050115 (FNHA-2-A-026.00), Appendix A6.

4.5 FINISH AND APPEARANCE

4.5.1 Surface Finish

Hot-Rolled—Unless otherwise specified, hot-rolled material shall have an as-rolled, not pickled surface finish. When required, material may be specified to be pickled or blast-cleaned.

4.5.2 Edges

Hot-Rolled—In the as-rolled condition, the material has mill edges. Pickled or blast-cleaned material has cut edges. When required, as-rolled material may be specified to have cut edges.

4.5.3 Oiling

Hot-Rolled—Unless otherwise specified, hot-rolled as-rolled material shall be furnished dry, and hot-rolled pickled or blast-cleaned material shall be furnished oiled. When required, pickled or blast-cleaned material may be specified to be furnished dry, and as-rolled material may be specified to be furnished oiled.



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