

Surface Finish—Hot & Cold Rolled Steel**1. SCOPE**

This standard specifies different surface finishes for both cold rolled and hot rolled steel sheet and plate.

2. DESIGNATION**2.1 VERSATILE ONLY**

References to surface finish classification specified in this standard shall use "VFEO" as a prefix, to distinguish it from other existing designations,

VFEO CLASS 5, COLD-ROLLED SHEET

3. RELATED SPECIFICATIONS**3.1 REFERENCE STANDARDS**

ASTM A569—Steel, Carbon (0.15% max.), Hot Rolled Sheet and Strip, CQ

ASTM A366—Steel, Cold Rolled Sheet, CQ

ASTM A 619—Carbon Steel Sheet, Cold Rolled, DQ

ASTM A620—Steel, Sheet, Carbon, Cold Rolled, DQ, SK

ASTM A611—Steel, Cold Rolled Sheet, Carbon, Structural

ASTM A568—Steel, Sheet, Carbon, and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements for

ASTM A36—Structural Steel

ASTM A283—Low and Intermediate Tensile Strength Carbon Steel Plates

SAE J911—Surface Texture Measurement of Cold Rolled Sheet Steel

3.2 This standard replaces the following company standard:

Versatile Standard

MS-162

4. COMMON SURFACE FINISHES

4.1 The following are common finishes for sheet steel to ASTM A568.

4.1.1 **MATTE FINISH**—This is a dull finish, without luster, produced by rolling on rolls which have been roughened by mechanical, chemical, or electrical means, to various degrees of surface texture, depending upon the application. With some surface preparation, matte finish is suitable for decorative painting. It is not generally recommended for bright plating.

4.1.2 **COMMERCIAL BRIGHT FINISH**—This is a relatively bright finish having a surface texture intermediate between that of matte and luster finish. With some surface preparation, commercial bright finish is suitable for decorative painting or certain plating applications. If the sheets are deformed in fabrication, the surface may roughen to some degree and areas so affected will require some surface preparation to restore surface texture to that of the unformed areas.

4.1.3 **LUSTER FINISH**—This is a smooth bright finish produced by rolling on ground rolls and is suitable for decorative painting or plating with additional special surface preparation by the customer. The luster may not be retained after fabrication; therefore, the formed parts will require surface preparation to make them suitable for bright plating.

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5. ACCEPTABLE SURFACE FINISHES

5.1 The following classes of steel surface finish allow a broad range from which to select for a specific requirement.

Surface Class	Surface Finish	Surface Type / Use	Coating Type	Surface Roughness	Steel Type	Allowable Imperfections	Surface Prep
Class 1	Luster	Exposed / Panels	Plating	Extra Fine: <10 μ in.	Cold Rolled CQ	None	Cleaning
Class 2	Luster or Commercial Bright	Exposed / Panels	Plating or Paint	Fine: 10 - 20 μ in.	Cold Rolled CQ	None	Polishing if Plated, Clean if Paint
Class 3	Commercial Bright or Matte	Exposed / Panels	Paint	Medium: 20 - 30 μ in.	Cold Rolled CQ	None	Cleaning
Class 4	Matte	Exposed / Panels	Paint	Med. Coarse: 30 - 40 μ in.	Cold Rolled CQ	None	Cleaning
Class 5	Matte	Exposed / Wrapped Panels	Paint	40 - 60 μ in.	Cold Rolled CQ	None	Cleaning
Class 6	—	Exposed / Wrapped Panels	Paint	40 - 60 μ in.	Hot Rolled Pickled & oiled, Temper Rolled	None	Cleaning (Shot or Sand Blasting if Specified)
Class 7	—	—	Paint	>60 μ in.	Hot Rolled	Scale Permitted	Shot Blast Before Painting

5.2 Generally, a surface finish roughness of .08 to 1.5 mm (30 to 60 micro inches) average peak height and 2 to six peaks per millimeter (50 to 150 peaks per inch) is considered standard for cold rolled steel sheet.

5.2.1 Sheet with a surface roughness of about 30 to 50 micro inches performs well through dies and is smooth enough for most painted parts, such as hood tops and fenders, requiring average paint finish.

6. DESCRIPTION OF TERMS

6.1 The following descriptions of common steel imperfections, except ripples, are visually represented in the Steel Products manual, published by the Iron and Steel Society. None of the imperfections listed below are acceptable on steel surface finish for steel.