

Data sheet: B6.1

Enamelling steels

Cold Rolled Steel Sheet for Enamelling Applications

General description

Cold rolled steel sheet for enamelling applications is produced by ArcelorMittal South Africa. Enamelling steel is suitable for high temperature baked enamel applications such as pots, pans, kettles, dishes, geysers and basins. Included in the range produced are steels for commercial applications where severe forming is not required, and specifications for drawing and deep drawing applications.

The choice of steel depends on the degree of formability required, and the type of enamelling process to be used. Enamelling steels are readily weldable. A heat input of 0,32 kJ/mm is recommended by AWS D1.3.

Chemical composition

Table 1: Chemical composition specification (ladle analysis, percent)

Specification	C Max	Mn Max	P Max	S Max	Si Max	Ti Max
Commercial Enamelling Quality	0,08	0,45	0,040	0,040	0,040	-
Drawing Enamelling Quality	0,08	0,45	0,040	0,040	0,040	-
DEQ (Domestic Appliances)	0,08	0,45	0,040	0,040	0,040	-
EN 10209 DC01EK	0,08	0,60	0,045	0,050	-	-
EN 10209 DC04EK	0,08	0,40	0,030	0,035	0,040	-
EN 10209 DC04EK (Domestic Appliances)	0,08	0,40	0,030	0,035	0,040	-
EN 10209 DC06EK (Domestic Appliances)	0,02	0,45	0,040	0,040	0,040	0,3
CR220EK AMSA	0,08	0,60	0,045	0,050	0,040	-
DC03EK AMSA	0,08	0,45	0,040	0,040	0,040	-

For further information, contact:

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<https://www.arcelormittalsa.com/Products.aspx>

Care has been taken to ensure that the information in this data sheet is accurate. ArcelorMittal South Africa Limited does not, however, assume responsibility for any inaccuracies or misinterpretations of this data. We are continuously engaged in product development and revised data sheets will be issued from time to time. Please ensure that you have the most recent issue. **Effective date: Nov 2023**

Mechanical properties

Table 2: Mechanical properties

Specification	Yield Strength ² (MPa)	Tensile strength (MPa)	Elongation (%) ^{1, 2} Min	Bar-r Min	Direction
Commercial Enamelling Quality	140 - 270	270 - 390	30	-	Transverse
Drawing Enamelling Quality	140 - 210	270 - 350	36	-	Transverse
DEQ (Domestic Appliances)	140 - 210	270 - 350	36	-	Transverse
EN 10209 DC01EK	140 - 270	270 - 390	30	-	Transverse
EN 10209 DC04EK	140 - 210	270 - 350	36	-	Transverse
EN 10209 DC04EK (Domestic Appliances)	140 - 210	270 - 350	36	-	Transverse
EN 10209 DC06EK (Domestic Appliances)	140 - 190	270 - 350	38	1,6	Transverse
CR220EK AMSA	210 - 260	270 - 390	30	-	Transverse
DC03EK AMSA	190 - 240	270 - 370	34	-	Transverse

Notes:

1. Values apply to material thicker than 0,70mm.
2. The minimum guaranteed elongation is reduced by 2,0%, and the maximum Yield strength is increased by 20MPa for every 0,2mm (or part thereof) thickness reduction below (and including) $t = 0,70\text{mm}$
3. The tensile test is carried out as described in EN 10002 Part 1 using type 2 specimens (initial gauge length $L_0 = 80\text{mm}$). The test pieces for the tensile test are taken at right angles to the direction of rolling. Yield strength is determined by the 0,2% offset method.

Dimensions

Table 3: Available dimensions

Thickness t (mm)	Width (mm)
$0,40 \leq t < 0,50$	800 - 1225
$0,40 \leq t < 0,65$	800 - 1325
$0,65 \leq t < 0,70$	800 - 1460
$0,70 \leq t < 1,60$	800 - 1600
$1,60 \leq t \leq 2,00$	800 - 1500

Notes:

1. Thicknesses and widths are available in increments in accordance with Price List 130.
2. Within the ranges shown in the above table, certain specific sizes are Standard Items (refer to Price List 130). Standard Items are preferentially priced and are available in smaller quantities than non-standard items.

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Surface texture

Enamelling steels are available in 'normal' or 'matt' surface texture as listed in Data Sheet: Cold Rolled Products (file reference B1). A matt finish is recommended to ensure proper adhesion of the enamel coating to the base metal.

Dimensional tolerances

Tolerances on shape and dimensions are given in Data Sheet: Cold Rolled Product Tolerances (file reference B1.1).

Coil inside diameter

The standard inside diameter is 508mm (610mm on enquiry).

Sag resistance

The end-user is advised to select the material thickness with care to reduce the possibility of sagging during baking operations.

Certification

Test and analysis certificates are supplied for Drawing Enamelling Quality and Commercial Enamelling Quality.

Supply conditions

Cold rolled enamelling steel sheet is supplied in terms of Price List 130 and ArcelorMittal South Africa's General Conditions of Sale.

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