



# Material Specifications

|              |         |
|--------------|---------|
| Number:      | MS-435  |
| Date Issued: | A-MAR05 |

## STEEL – SHEET – COLD ROLLED – LOW CARBON (Superseded)

This specification has been superseded by CNH Material Specification MAT1010 Low Carbon Steel, Cold Rolled Sheet. CNH MAT1010 shall be specified on all applicable new and updated drawings.

| Superseded Specification,<br>Grade, Material Form |                                  | CNH Material<br>Specification / Grade |
|---------------------------------------------------|----------------------------------|---------------------------------------|
| MS-435                                            | Commercial<br>Quality            | CNH MAT1010, Grade A                  |
| MS-435                                            | Drawing Quality,<br>Fully Killed | CNH MAT1010, Grade B                  |

The controlled versions of CNH specifications and standards are published on the CNH Intranet site.

The documents are also available on the CNH electronic viewing system (e.g. eViewer). Suppliers are able to access these documents on CSCN (CNH Supplier Communications Network).

For existing drawings the superseded specification is available for viewing following this page and remains applicable until a drawing is updated to the new specification. See CNH MAT1003 (86979049) Metallic Material Designations on Engineering Drawings for additional information regarding updating specified materials.

|                   |         |
|-------------------|---------|
| Supersedes Issue: | Dated:  |
| MS-435            | SEPT 81 |

|        |
|--------|
| Page:  |
| 1 of 4 |



# Material Specifications

|              |         |
|--------------|---------|
| Number:      | MS-435  |
| Date Issued: | A-MAR05 |

## STEEL – SHEET – COLD ROLLED – LOW CARBON (Superseded)

### 1. SCOPE

This specification covers cold rolled carbon steel sheets and narrow widths slit or cut from wider sheets or coils produced to Commercial Quality, Drawing Quality (Option 19) and Drawing Quality Special Killed Steel (Option 20). The specific quality of sheets used shall be selected by Manufacturing Division or the parts manufacturer. Unless otherwise specified by appropriate option number indicated under Material Condition Options, Commercial Quality will be supplied. Steel supplied to this specification may be made by Open Hearth, Electric Furnace, or Oxygen Steel Making Practices.

### 2. PRODUCT DESCRIPTION

Cold rolled carbon steel sheets are produced in the following sizes:

|        | <u>Width</u>                                                             | <u>Thickness</u>                                                |
|--------|--------------------------------------------------------------------------|-----------------------------------------------------------------|
| Note 1 | 50mm (2 in.) to 300mm (12 in.) incl.                                     | 0.35mm (0.014 in.) to 2mm (0.082 in.) incl.                     |
| Note 2 | Over 300mm (12 in.) to 600mm (23-15/16 in.) incl.<br>Over 600mm (24 in.) | 0.35mm (0.14 in.) and thicker<br>0.35mm (0.014 in.) and thicker |

Note 1: Cold rolled sheets slit or cut from wider sheets or coils with cut edge only.

Note 2: When no special edge is specified and/or when no single strand rolling in widths under 600mm (24 in.) are specified or required.

### 3. QUALITY DESCRIPTION

The surface finish to this specification is the light matte or dull finish with an aim at 0.6 – 1.1 micrometers (25 – 45 microinch) finish, Arithmetic Average (AA) (Ra) profilometer reading. Sheets will be furnished oiled per manufacturer's standard practice.

### 4. CHEMICAL COMPOSITION

The heat analysis (formerly ladle analysis) of the steel shall conform to the following chemical analysis:

|                                            | <u>Carbon Max.</u> | <u>Manganese Max.</u> | <u>Phos. Max.</u> | <u>Sulphur Max.</u> |
|--------------------------------------------|--------------------|-----------------------|-------------------|---------------------|
| Commercial Quality:                        | 0.15               | 0.60                  | 0.035             | 0.040               |
| Drawing Quality and<br>Drawing Quality SK: | 0.10               | 0.50                  | 0.025             | 0.035               |

Drawing Quality-Special Killed shall be fully aluminum killed. This quality of steel may also be subject to product analysis as set forth in ASTM A568 and A568M.

|                   |         |
|-------------------|---------|
| Supersedes Issue: | Dated:  |
| MS-435            | SEPT 81 |

|        |
|--------|
| Page:  |
| 2 of 4 |



# Material Specifications

|              |         |
|--------------|---------|
| Number:      | MS-435  |
| Date Issued: | A-MAR05 |

## STEEL – SHEET – COLD ROLLED – LOW CARBON (Superseded)

### 5. MECHANICAL TESTS

#### 5.1 Bend Test

The sheets herein specified shall be capable of being bent at room temperature through 180 degrees flat on themselves, either parallel with or transversely to the direction of rolling, without cracking on the outside of the bent portion.

#### 5.2 Hardness

| <u>Commercial Quality</u> | <u>Drawing Quality and<br/>Drawing Quality Special Killed</u> |
|---------------------------|---------------------------------------------------------------|
| 55 HRB Max.               | 35 to 48 HRB                                                  |

Note: These are typical hardness levels.

### 6. TOLERANCES

The material shall conform to variations in dimensional tolerances as set forth in the ASTM A-568 and ASTM A-568M latest issue.

Note: When the thickness range as a result of purchasing to minimum thickness conflicts with the thickness range on the drawing, the parts manufacturer or the Manufacturing Division of J I Case Company must request an Engineering change.

### 7. REPORTS

The vendor shall furnish three (3) copies of the shipping notice showing the heat number, heat analysis (formerly ladle analysis) and MS-435.

### 8. MARKING

Shipments shall suitably be identified as to manufacturer's name, quality, size and MS-435. Sheets in the shipments will be stamped and show the heat number, manufacturer's name, and quality. Sheets made from Commercial Quality and Drawing Quality will also show the date of temper rolling. Shipments shall be identified with J I Case Raw Material Code Number.

### 9. MATERIAL CONDITION OPTIONS

It is sometimes necessary to use material in special conditions which can generally be procured from the mill at an extra price. One of the three quality levels (MS-435 i.e., Commercial Quality; MS-435 Option 19 Drawing Quality; MS-435 Option 20 Drawing Quality Special Killed) must be selected to purchase steel. The selection is by part manufacturer of manufacturing division of J I Case Company. Any option which appears on an Engineering Drawing becomes a requirement for the part.

|            |                                  |
|------------|----------------------------------|
| Option #19 | Drawing Quality                  |
| Option #20 | Drawing Quality – Special Killed |
| Option #30 | Roller Leveled                   |

|                   |         |
|-------------------|---------|
| Supersedes Issue: | Dated:  |
| MS-435            | SEPT 81 |

|        |
|--------|
| Page:  |
| 3 of 4 |



# Material Specifications

|              |         |
|--------------|---------|
| Number:      | MS-435  |
| Date Issued: | A-MAR05 |

## STEEL – SHEET – COLD ROLLED – LOW CARBON (Superseded)

### 10. PURCHASE SPECIFICATIONS

MS-435, dated September, 1981 and options if required.

Minimum thickness for metric units (minimum thickness for U.S Customary units), dimension and options if required when purchased in the U.S.

### 11. SPECIFY ON PRINT

MS-435 Nominal thickness for metric and options if required.

OR

MS-435 Thickness range for U.S. Customary units and options if required

EXAMPLES:   Metric: MS-435 1.2 Option 20

OR

U.S. Customary Units:   MS-435 .043/ .052

|                   |         |
|-------------------|---------|
| Supersedes Issue: | Dated:  |
| MS-435            | SEPT 81 |

|        |
|--------|
| Page:  |
| 4 of 4 |