ZINC PREPRIMED COLD ROLLED, LOW CARBON STEEL SHEET

GM6190M

1 SCOPE. This specification covers cold rolled, low carbon steel sheets in coils and cut lengths, coated on one side only with a chromate/zinc dust complex and a subsequent zinc rich primer by a roller coating process.

NOTE: Zinc preprimed sheets are available in several qualities (Commercial Quality, Drawing Quality, Drawing Quality Special Killed, and Physical Quality, as defined in AISI Steel Products Manual Carbon Sheet Steel). These and other details of the base metal are intended to be specified by supplement to this specification. The zinc preprimed coating specified herein is intended for parts requiring good corrosion resistance on one surface only.

2 BASE METAL. Material furnished to this specification shall be cold rolled carbon steel sheet. Mechanical, physical and other properties shall conform to the limits established for the quality of sheet steel specified by the purchaser.

3 COATING. The base metal shall be uniformly coated across the width and length of the coil on one side only with a chromate/zinc dust complex and a subsequent zinc rich primer. This coating shall be applied in such a manner as to provide on the uncoated surface, a condition to achieve a high quality zinc phosphate conversion coating and subsequent pain adhesion performance properties.

4 COATING ADHESION. The adhesion of the zinc rich primer to the chromate/zinc dust complex and the chromate/zinc dust complex to the base metal shall be capable of with standing normal forming operations without loss of adhesion and pass the following Olsen Cup Ductility Test.

4.1 On a detergent washed and air dried test panel, form an Olsen Cup to a depth of 7.62 mm with the zinc primer coating on the tension side. The inside diameter of the lower die shall be 25 mm and the interchangeable upper die diameter shall be as shown in Table 1 for the metal thickness specified.

4.1.1 In addition, within 20 min. max after forming, apply pressure sensitive tape as described in GM9071P, 20 mm wide and 65 mm long over the dome area and smooth firmly and uniformly with finger or thumb pressure. Remove tape with a firm, rapid upward pull (perpendicular to panel) and place the imprinted tape sample on white paper for better visibility. The imprinted tape sample shall exhibit an adhesion rating of No. 7 or better when compared to the Olsen Cup Photographic Standards shown in Figure 1, available from GM Engineering Standards.

4.2 SIMULATED DRAW BEAD COATING ADHESION. This test is applicable for sheet metal thickness < 1.25 mm. The adhesion of the zinc rich primer to the chromate/zinc dust complex and the chromate/zinc dust to the base metal shall exhibit < 1% coating removal when tested in accordance with GM9052P.

NOTE: This test is to be used for material qualification and for evaluation of discrepant material on a competitive basis.

TABLE 1

Metal Thickness (NOTE 1) mm	Ball Diameter mm	Upper Die Diameter mm	Cup Depth (NOTE 2) mm
0.75 - 1.50	22.2	25	7.62
1.52 - 2.30	22.2	28.6	7.62

NOTE 1: The minimum base metal thickness does not include the zinc primer film thickness.

NOTE 2: Cup Depth is defined as the actual ball travel during time of formation of the cup (from under surface of flat panel to under surface of cup).

5 COATING MASS. When tested per the X-Ray Fluorescense Method, the coating weight of the chromate/zinc dust complex expressed as chromium shall be 220 mg/m^2 to 380 mg/m^2.

6 COATING THICKNESS. The total dry film thickness of the coating, both the chromate/zinc dust complex and the zinc rich primer, shall be 13.0 µm to 20.0 µm.

7 CORROSION RESISTANCE.

7.1 Flat test panels furnished to this specification and subsequently cleaned with a mild detergent wash shall be capable of withstanding neutral salt spray testing (GM4298P) for a minimum of 500 h. There shall be no blistering or loss of adhesion of the coating; and no red rust other than a few localized spots 1.5 mm diameter max in any area of the test panel (excluding the area 3.5 mm from sheared edges).

7.2 OLSEN CUP TEST PANELS. After exposure to 5% neutral salt spray for 240 h per GM4298P no blistering, loss of adhesion and red rust exceeding No. 4 per Olsen Cup Corrosion Photographic Standards shall be permitted. (Test panels used for this exposure are those previously used to determine coating adhesion per paragraphs 4, 4.1 and 4.1.1)

NOTE: Olsen Cup Corrosion Photographic Standards are available upon request from GM Engineering Standards Department.

8 SURFACE TEXTURE. The uncoated surface of steel furnished to this specification for outer panel applications shall meet the requirements of GM6180M.

9 INITIAL SOURCE APPROVAL. No shipment shall be made by any supplier until representative initial production samples have been approved by engineering as meeting the requirements of this specification.

10 INSPECTION AND REJECTION. All shipments of material or parts under contract or purchase order manufactured to this specification shall be equivalent in every respect to the initial samples approved by engineering. There shall be

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no changes in either formulation or manufacturing processes permitted without prior notification and approval by engineering. Lack of notification by the supplier constitutes grounds for rejection of any shipment. While samples may be taken from incoming shipments and checked for conformance to this specification, the supplier shall accept the responsibility for incoming shipments meeting this specification without dependence upon purchaser's inspection.

11 GENERAL INFORMATION. This standard was issued in April 1979. The latest revisions include the following: April 1989 editorial changes, December 1984 revised para. 4.1.1, 9 and 10.

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