



COATINGS, STEEL SHEET

WSS-M1P94-A

1. SCOPE

This specification defines the requirements for coil coatings on steel sheet. These coatings comprise 4 categories:

- . Zinc Based Metallic (i.e. Zinc, Zinc/Iron, Zinc/Nickel and other Zinc/Alloy)
- . Other Metallic (i.e. Nickel, Tin)
- . Organic (i.e. Zinc Rich Primer)
- . Phosphate (Upon request from the Stamping Plant to the responsible Materials Engineering Activity, there is the option of using prephosphated material to aid formability).

Such coatings shall be specified in conjunction with the appropriate base steel sheet. **The currently released base steel specifications are:**

Specifications released for regional use (prior to 2012):

WSS-M1A183-D
WSB-M1A215-E1/F1
WSD-M1A333-A1/A2/A3/A4
WSS-M1A338-A1
WSS-M1A341-A1/A2/A3/A4/A5/A6/A7/A8/A9/A10/A11/A12
WSS-M1A344-A1/A2
WSS-M1A345-A1/A2/A3/A4
WSS-M1A346-A1/A2/A3/A4/A5/A6
WSS-M1A347-A1/A2/A3/A4/A5/A6
WSS-M1A348-A1/A2/A3/A4/A5/A6/A7/A8/A9

Specifications released for global use (2012 and later):

WSS-M1A365-A11/A12/A13/A14/A15
WSS-M1A367-A11/A12/A21/A22/A23/A33/A34/A35/A36/A37/A38
WSS-M1A368-A13/A14/A81/A82/A83/A84/A91/A92

2. APPLICATION

This specification was released originally for material used for automobile body and chassis parts requiring good corrosion resistance. The category of Other Metallic Coatings was incorporated originally for fuel systems parts requiring good corrosion resistance.

Note: Good quality paintability depends upon the critical factors of chemical cleanliness and crystalline integrity of the phosphate coating. Accordingly, prudence should be exercised when considering a pre-phosphate coating on exterior facing surfaces e.g. skin panels.

Note: The presence of a coating will influence the properties of the final coated product, compared to the uncoated base steel sheet.

Note: Rinses used during the coating process must be hexavalent chromium free.

Date	Action	Revisions	Rev 04
2012 07 31	Revised	Para 1, 3.5, 3.10, 5.8 revised. 5.9 added.	A. Toennessen, D Jordan NA
2004 03 17	Revised	Para 2 revised	B. Curtis
1996 02 15	Activated		K. Thurgood



3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 FORMABILITY

The formability paragraph of the appropriate Base Steel Sheet material specification shall apply.

3.3 WELDABILITY

The weldability paragraph of the appropriate Base Steel Sheet material specification shall apply, except in the case of WSD-M1A333-A1/A2/A3/A4 and zinc based metallic coatings; also WSD-M1A333-A1/A2/A3/A4 and zinc rich primer, when FLTM BA 113-01 shall apply.

3.4 PAINTABILITY

The paintability para of the appropriate Base Steel Sheet material specification shall apply.

3.5 COATING: ZINC BASED METALLIC

3.5.1 Coating Mass (ASTM A 90)

Coating Mass Designation	Standard Range Coating Mass Per Side g/m ² Single Spot min/max*	
	Hot Dipped**	Electrolytic**
00	NA	0
20	20/50	20/30
30	30/60	30/45
40	40/70	40/55
45	45/75	45/60
50	50/80	50/70
55	55/85	55/75
60	60/90	60/80
70	70/100	70/90
98	100/130	100/130

In some instances, coatings that are produced to tighter coating mass ranges than shown above may be available. These shall be designated as 'Restricted Coating' (Symbol 'C') and shall be detailed on the appropriate Engineering Drawing as follows:

Coating Mass Designation	Restricted Range Coating Mass Per Side g/m ² Single Spot min/max*	
	Hot Dipped**	Electrolytic**
50	50/70	50/65
55	55/75	55/70
60	60/80	60/75
70	70/90	
98	100/130	





*ASTM A 90 should be suitably modified to allow coating mass determinations on individual sides.

**Where these tolerances cannot be met, exceptions must be approved by the responsible activity. Differentially coated products and higher strength coated products generally have greater coating mass ranges than those stated.

3.5.2 Coating Composition (Electrolytic)

Unless an alloy coating is chosen, the primary deposit shall be Zinc. Electrolytic Zinc/Nickel shall contain 10.5 - 13.5% Nickel. Electrolytic Zinc/Iron shall contain 12 - 18% Iron. The frequency of testing and the analytical method shall form part of the control plan.

3.5.3 Coating Composition (Hot Dipped)

Unless an alloy coating is chosen, the primary deposit shall be Zinc. The frequency of testing and the analytical method shall form part of the control plan (see also para 4.3).

3.5.4 Supplementary Coatings

Unless otherwise stated (see para 3.7 and 3.8), no supplementary coatings (other than a company approved mill oil (rust preventative oil) or prelube) are permitted.

3.5.5 Coating Adhesion (ASTM A 924M/ASTM A 591)

Coated steel shall conform to the coating bend test requirements of ASTM A 924M for hot dipped and ASTM A 591 for electrolytic coated products. The frequency of testing shall form part of the control plan.

3.5.5.1 Coating Bend Test (ASTM A 924M/ASTM A591)

Coated Steel shall conform to the coating bend test requirements of ASTM A 924M for hot dipped and ASTM A 591 for electrolytic coated products. The frequency of testing shall form part of the control plan.

3.5.5.2 Adhesive Shear Test (SAE J1523 or ISO 4587) For All Coating Types

At a frequency to be negotiated with Materials Engineering (as part of the Source Approval Process) and incorporated into the control plan, the following:

When tested according to SAE J1523 or ISO 4587 (0.8 mm. thickness specimen; additional bonding thickness of 0.25 mm.) using a high strength structural epoxy adhesive such as WSB-M2G388-A (1k) or WSB-M2G373-A (2k), the coating (ie. zinc or zinc/alloy) shall remain adherent to the steel substrate up to a minimum shear strength requirement of 8 MPa.

The supplier shall have the option to seek or decline approval to paragraph 3.5.5.2. If approval to paragraph 3.5.5.2 is declined, no material shall be supplied for adhesive bonding applications as defined