



## ALUMINUM ALLOY, SHEET, PRETREATED SURFACE

WSB-M2A160-A1

### 1. SCOPE

The material defined by this specification is a non-heat-treatable, aluminum sheet alloy, suitable for forming and coated with a pretreatment to stabilize the aluminum oxide surface.

### 2. APPLICATION

This specification was originally released for material used for stamped underbody components. The material is pretreated with a coating to provide better adhesive bonding and durability.

### 3. REQUIREMENTS

#### 3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

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

Part producers using this material in their products, must use Ford approved materials and must conform to a process control plan which has been approved by STA and/or the relevant Materials Activity.

#### 3.2 CHEMICAL COMPOSITION, %

(ASTM E 34/ASTM E 101/ASTM E 227/ASTM E 607/  
ASTM E 1251)

The determination of the chemical composition can be made with chemical, spectrochemical or x-ray fluorescence, in accordance with the above standards. In case of the dispute, the umpire method shall be ASTM E 34.

|                        |                 |
|------------------------|-----------------|
| Silicon                | 0.40 max        |
| Iron                   | 0.40 max        |
| Copper                 | 0.10 max        |
| Manganese              | 0.50 max        |
| Magnesium              | 2.60 - 3.60 max |
| Chromium               | 0.30 max        |
| Zinc                   | 0.20 max        |
| Titanium               | 0.15 max        |
| Manganese and Chromium | 0.10 - 0.60     |
| Others, each           | 0.05 max        |
| Others, total          | 0.15 max        |
| Aluminum               | Remainder       |

| Date       | Action    | Revisions                                             |
|------------|-----------|-------------------------------------------------------|
| 2003 09 23 | Revised   | Para 3.0 inserted; para 3.1, 3.10, 3.11 and 4 deleted |
| 1997 12 12 | Activated |                                                       |



Documents

W. J. Curtiss

**3.3 MECHANICAL PROPERTIES, 0 TEMPER**

(ASTM B 557M, thickness 0.6 - 2.0 mm and  
ASTM E 646)

The following specified properties are to be measured on samples cut parallel, transverse and 45° to the rolling direction.

As Received:

|                                        |     |
|----------------------------------------|-----|
| Yield Strength (0.2% offset), min, MPa | 90* |
| Tensile Strength, min, MPa             | 205 |
| Elongation, min, %                     | 19  |

\*The supplier must demonstrate capability of producing to a yield strength range of 40 MPa. Established range will be detailed on the Aluminum Suppliers Control Plan.

**3.4 ADHESIVE AND SEALANT PERFORMANCE REQUIREMENTS**

(For applications when adhesives and sealants are required)

Material supplied to this specification shall demonstrate acceptable adhesive and sealant performance per the material specifications and the adhesive and sealant compatibility procedures identified by Materials Engineering.

**3.5 PRE-TREATMENT SURFACE COATING**

- |       |                                                                                     |                                        |
|-------|-------------------------------------------------------------------------------------|----------------------------------------|
| 3.5.1 | Coating Weight<br>(Coating weight measured using X-ray<br>fluorescence, ASTM B 568) | 20 +/- 5 mg<br>Chromium/m <sup>2</sup> |
| 3.5.2 | Pretreatment Shelf Life                                                             |                                        |

The pretreated aluminum sheet has a shelf life of 12 months. The material must be transported and stored in conditions that avoid condensation and contamination by oil and grease.

**3.6 PAINTABILITY**

Material supplied to this specification must have prior approval for paintability by the responsible Materials Engineering Activity. This approval shall be based on samples prepared to the local process and resistance requirements appropriate to the country of Ford vehicle manufacture, or to the relevant Engineering Performance Specification.

Material supplied to European Automotive Operations (EAO) shall meet the requirements of WSK-M2P136-A.

Material supplied to North American Automotive Operations (NAAO) shall meet the following requirements:

- Material intended for Class 1 surface applications shall meet the requirements of ESB-M2P130.
- Material intended for Class 2 and 3 surface applications shall meet the requirements of ESB-M2P129.