Ford Motor Company

ENGINEERING MATERIAL SPECIFICATION

Material Name	Specification Number
STEEL SHEET, LAMINATED SOUND/VIBRATION DAMPING	**WSD-M1A337-A1**
STEEL SHEET, LAMINATED SOUND/VIBRATION DAMPING	**WSD-M1A337-A2**
STEEL SHEET, LAMINATED SOUND/VIBRATION DAMPING	**WSD-M1A337-A3**
STEEL SHEET, LAMINATED SOUND/VIBRATION DAMPING	**WSD-M1A337-A4**
STEEL SHEET, LAMINATED SOUND/VIBRATION DAMPING	**WSD-M1A337-A5**

1. SCOPE

The materials defined by these specifications are formable, weldable multilayer composites for use in applications where sound reduction is required. These materials consist of a viscoelastic polymer material sandwiched between sheets of drawing quality steel meeting the requirements of WSD-M1A333-A2/A3. For variant A5 the steel has a two sided aluminum alloy coating for enhanced higher temperature performance, meeting requirements of WSD-M1A295-A1/A2/A3. The grades have optimized damping loss factors η of ≥ 0.1 for the following ranges of temperature:

A1 0 - 60 °C	A2 50 - 110 °C	A3 70 - 90 °C
A4 90 - 110 °C	A5 110 - 250 °C	

2. APPLICATION

Variant A1 was originally released for body panels and brackets. Variants A2/A3/A4 for oil pans, baffles and engine covers. Variant A5 is intended for enhanced higher temperature performance.

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 CONSTRUCTION AND SURFACE TREATMENT

3.2.1 The thickness of the polymer core will vary according to grade. The core thickness is a significant characteristic and the tolerance on an established mean value shall be +/- 0.005 mm.

3.2.2 The steel sheet elements shall conform to WSD-M1A333-A2/A3 with a total thickness tolerance twice that of the two individual sheets of steel. The material may be supplied with the outside surfaces protected from corrosion via application of oils or forming lubricants or as otherwise specified by the Ford Engineering Drawing. These supplementary materials shall be compatible with subsequent processes. For variant A5 the steel sheet shall be aluminum coated to meet WSD-M1A295-A1/A2/A3.

Date	Action	Revisions
2002 07 31	Revised	Updated and renumbered
2000 01 19	Activated	C.Sales (FAO)

Documents
Document Sharing Hub

Copyright Ford Motor Company
Provided by IHS Markit under license with FORD
No reproduction or networking permitted without license from IHS
Full document details: FORD WSD-M1A337-A1 2002

Copyright © 2002, Ford Global Technologies, Inc.
Licensee=/, User=,
Not for Resale,

3.3 ACOUSTIC PERFORMANCE

The damping properties will be determined by FLTM EU-BV 60-1, but allowing for the differences in construction and with the following revisions:

Test piece size	200 x 15 mm full thickness all over
Test frequencies	200 and 1000 Hz

3.3.1 As Received

	Test Temp. °C	Loss factor η min
A1	30	0.3
A2	80	0.3
A3	80	0.3
A4	100	0.3
A5	180	0.3

3.3.2 Heat Ageing

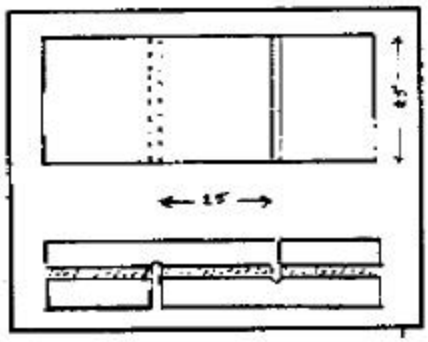
The acoustic requirements of 3.3.1 shall be maintained after heating a sample in air for 24 hours and retesting after cooling to room temperature.

	Ageing Temp. °C
A1	140
A2	140
A3	140
A4	140
A5	250

3.4 METAL TO CORE ADHESION

All test requirements shall be determined at normal room conditions after stabilizing from the stated exposure conditions.

The test sample shall be a 25 x 25 mm overlap shear as detailed.



Documents Document Sharing Hub

Copyright Ford Motor Company
Provided by IHS Markit under license with FORD
No reproduction or networking permitted without license from IHS
Full document details: FORD WSD-M1A337-A1 2002

Copyright © 2002, Ford Global Technologies, Inc.
Licensee=/, User=,
Not for Resale,