

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

LAMINATED SOUND/VIBRATION STEEL SHEET
LAMINATED SOUND/VIBRATION STEEL SHEET

WSE-M1A321-A1
WSE-M1A321-A2

1. SCOPE

The material defined by these specifications is a multi-layered composite structure designed to be used in place of sheet steel where vibration damping is required for noise reduction. This material consists of a viscoelastic polymer material sandwiched between two sheets of steel such as low carbon, cold rolled, aluminum-killed-draw-quality per WSD-M1A333-A1 thru A4. This material is fully weldable and does not require any special schedules or fixtures.

Specification WSS-M1P94-A shall be used where precoating by the steel supplier is required.

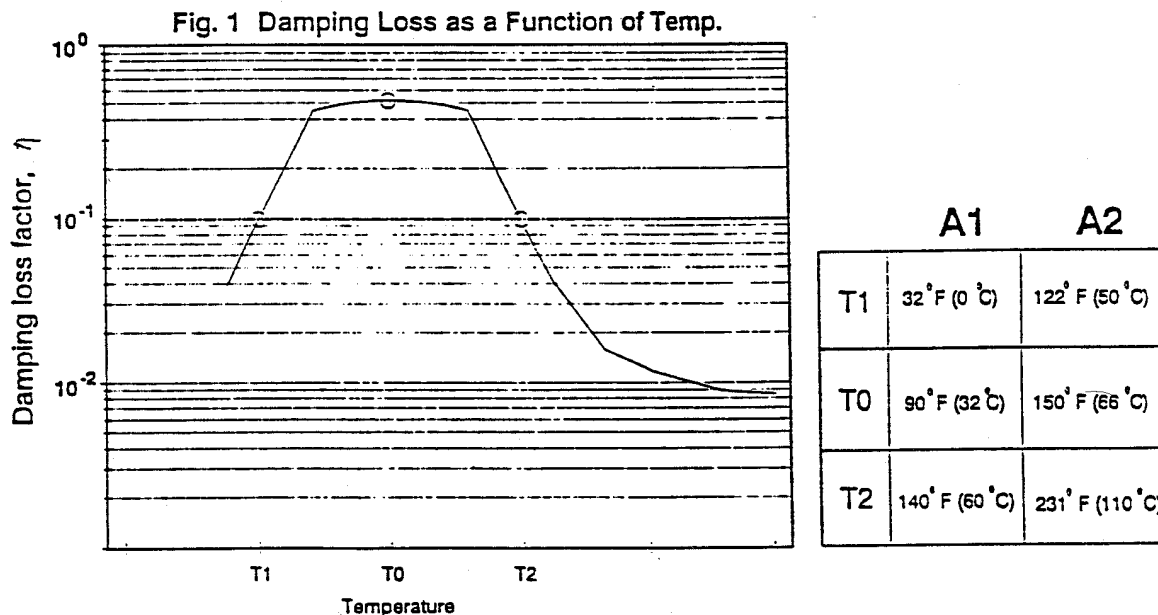
2. APPLICATION

2.1 These specifications were released originally for the following applications:

A1: Body panels, brackets, and special application heat shields.

A2: Oil pans and baffles, valve covers, engine covers, and brackets.

2.2 The two grades listed cover the operating temperature ranges listed below, over which their damping characteristics are optimized at a loss factor of $\geq n = .1$.



Date	Action	Revisions
2002 09 23	Revised	Updated and renumbered
1999 11 18	Revised	Revised para 1., 3.3, & added 3.5, 3.6, 5.2 & updated Mark Myers
1991 09 12	NEO1E10127076025	Released Pam Lee

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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 TEST CONDITIONS

The results described herein are applicable under ambient temperatures and humidity unless otherwise noted.

3.2.1 Shear adhesion tests performed using standard 25 x 25 mm overlap shear panels.

	A1 Shear Strength (MPa)	A2 Shear Strength (MPa)
Initial (laminate as produced)	2 min	5 min
a) 40 minutes at 450 °F	2 min	---
b) 1 hour at 375 °F	---	5 min
c) 10 days at 300 °F	2 min	---
d) 10 days at 225 °F	---	5 min
Humidity (100 % relative humidity)		
a) 250 hours at 100 °F	2 min	5 min
Environmental Cycle (after 5 cycles of the following schedule):		
a) 24 hours at 100 °F		
24 hours at - 20 °F		
24 hours at 225 °F	2 min	5 min
Salt Spray (250 hours exposure)	2 min	4 min
Oil Immersion (various Motor Oils)		
a) 1 hour at 300 °F	2 min	---
b) 10 weeks at 300 °F	---	5 min
Forming Lubricant Soak Test		
a) 1 week at ambient temperature	2 min	---