

LOAD DEFLECTION (STRESS/STRAIN) CURVES & COMPRESSIBILITY/RECOVERY FOR RCM COMPOSITE MATERIALS

LOAD DEFLECTION:

The load deflection graphs were generated with the aid of a universal mechanical testing machine (MTS/Sintech). Load was applied at the rate of 0.2 in/min using a 28.7 mm (1.129 in.) penetrator until the specified load was obtained. When the prescribed load was achieved, the machine cross-head reversed direction so that a graph of the recovery characteristics of the sample was obtained. The penetrator area is 1 square inch, so the load scale can be read as Stress in PSI or as Pounds Force. This data can be used to determine the installed compressed thickness of the composite, or as a basis for the required input data for FEA studies.

NOTE ON COMPRESSED THICKNESS:

The curves shown are for Foamet[®]. Due to the solid rubber coating on Steel-N[®] or Alum-N[®], compressibility for these products is extremely low, averaging less than 2%. For design purposes, the compressed thickness of solid coatings is considered the same as the free-state composite thickness. Actual thickness change under load is typically less than 0.0005” (0.0127 mm).

NOTE REGARDING % COMPRESSIBILITY AND RECOVERY:

The test method for compressibility and recovery has been changed to the accepted ASTM F36 standard for gaskets in lieu of the previous Wolverine WTM-138. As a result, there are some changes in the values shown on the material specifications sheets.

Compressibility and recovery of Foamet[®] products is now shown as 35% minimum and 50% minimum respectively, more accurately reflecting the conformable characteristics of this material. The previous method resulted in values of 15% min. and 85% min.

Compressibility of the Steel-N[®] and Alum-N[®] products as measured per ASTM F36 is extremely low, ranging from 1 to 4%*. The values for compressibility have not changed (0-5% versus 5% maximum).

Recovery is by definition a percentage of the sample deflection caused by compression. Since the amount of compressed deflection of Steel-N[®] and Alum-N[®] is in itself such a very small value, the amount of recovery is an even smaller measured quantity and subject to large errors in measurement.

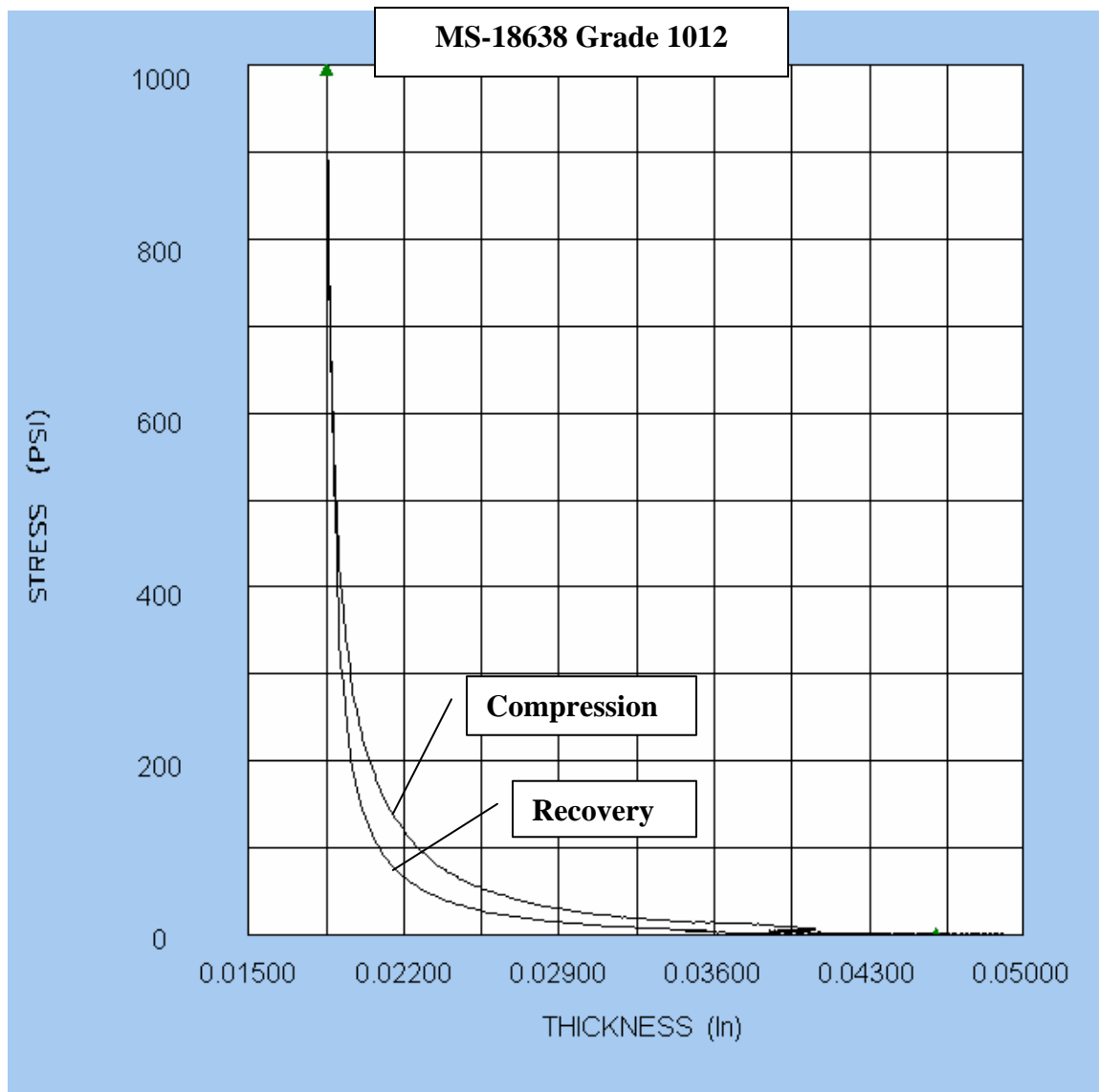
For informational purposes, typical recovery values for solid coatings as measured per ASTM F36 range from approximately 50-98%*. The previous data sheets listed a value of 90 min.

The majority of any “compression” seen in the actual application of solid coatings will be due to the flow of the coating as it conforms to the surface finish of the mating flanges.

*Data taken at 400 PSI with a preload of 5 pounds on a 1.129” diameter indenter.

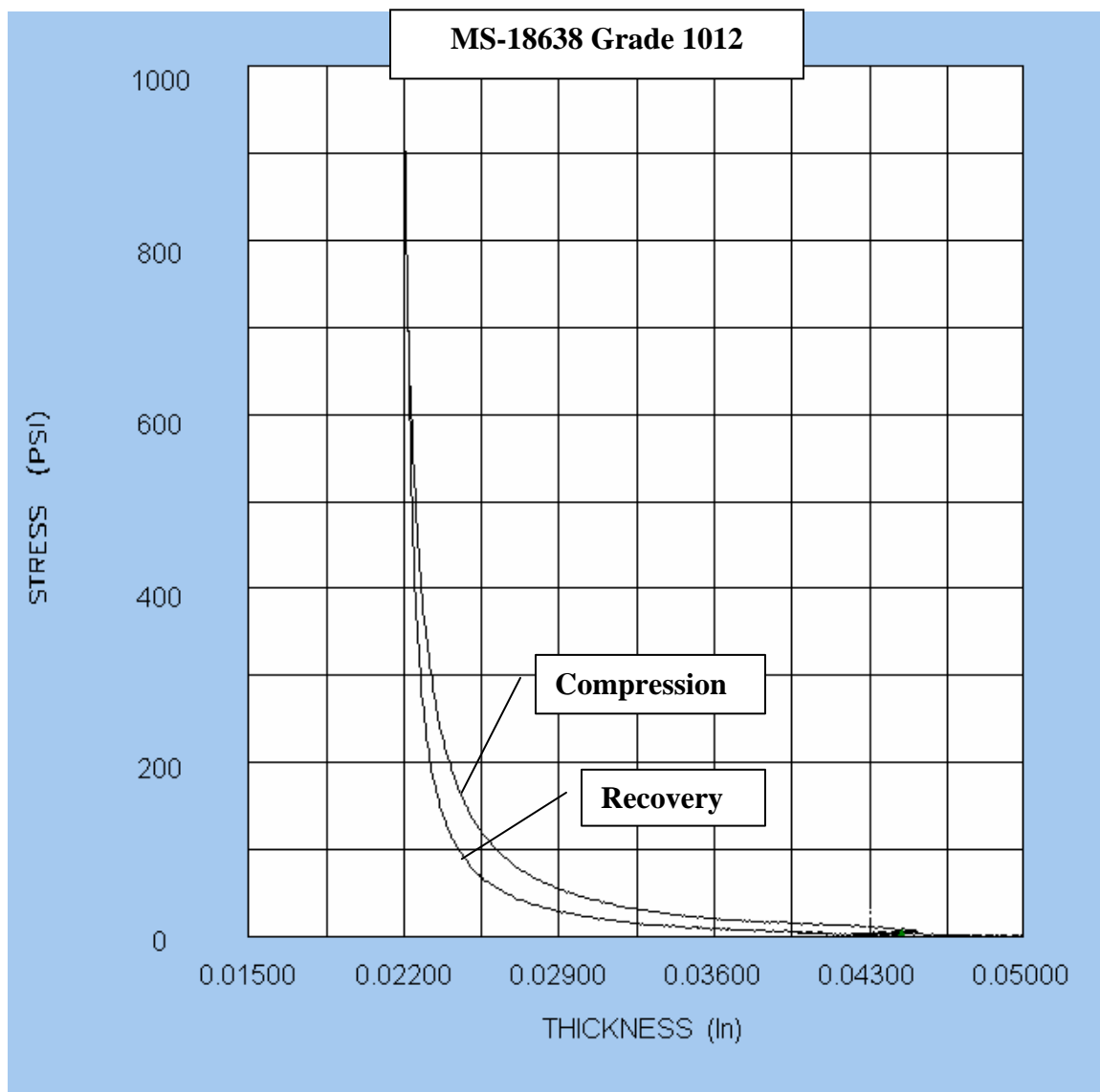
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**MS-18638 GRADE 1012
HEAT AGED 100°C FOR 5 HOURS**



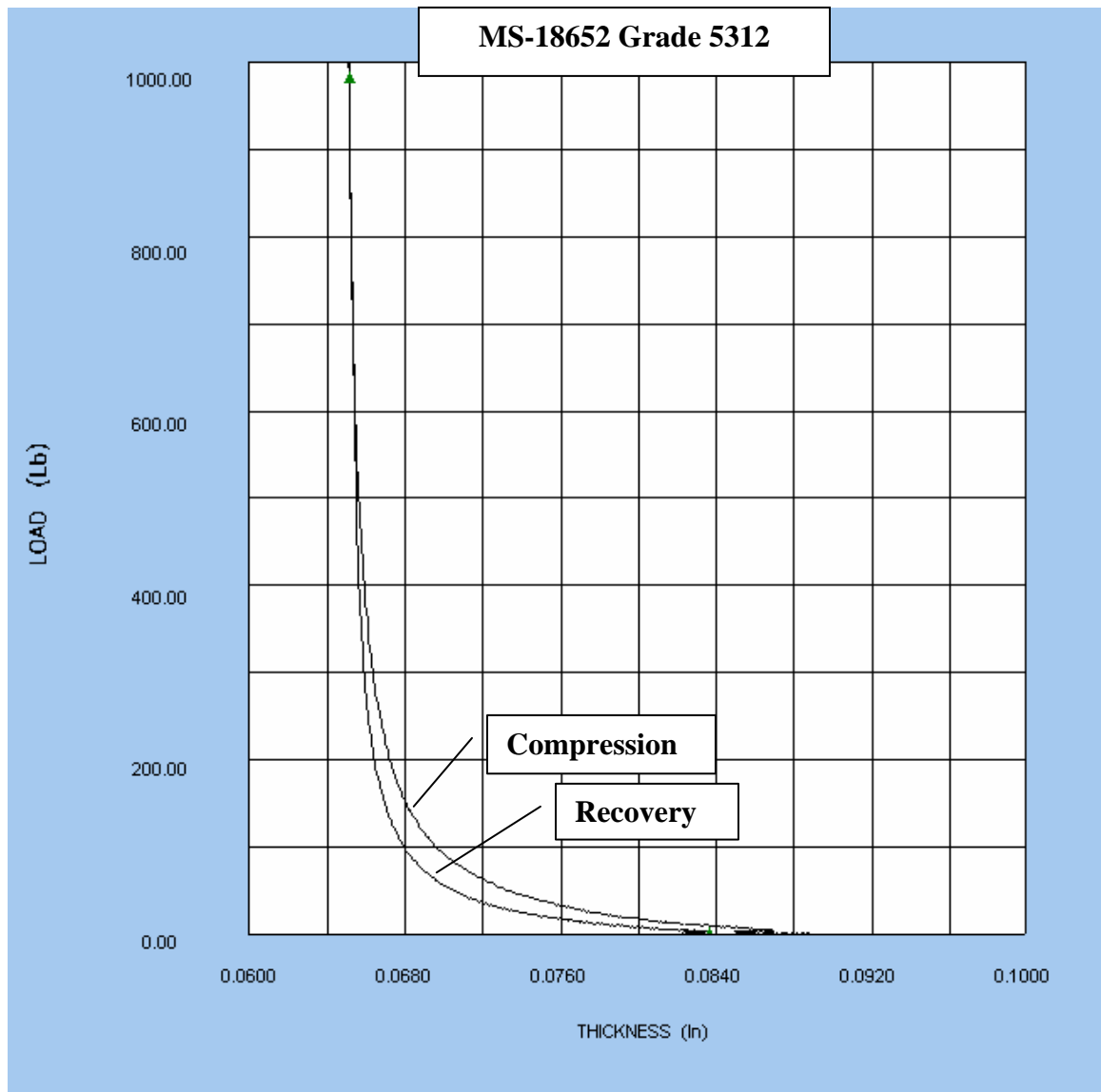
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MS-18638 GRADE 1012 UNAGED SAMPLE



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**MS-18652 GRADE 5312
HEAT AGED 100°C FOR 5 HOURS**



LOAD DEFLECTION (STRESS/STRAIN) CURVES & COMPRESSIBILITY/RECOVERY FOR RCM COMPOSITE MATERIALS

MS-18652 GRADE 5312 UNAGED SAMPLE

