



PERFORMANCE, POLYMERIC FOAM FOR SEATING APPLICATIONS, INCLUDING CUSHIONS, ARMRESTS, AND HEADRESTRAINTS

WSS-M15P20-B1

PERFORMANCE, POLYMERIC FOAM FOR SEATING APPLICATIONS, INCLUDING CUSHIONS, ARMRESTS, AND HEADRESTRAINTS FOR APPLICATIONS WITH BIO-BASED OR RECYCLED MATERIAL CONTENT

WSS-M15P20-B2

1. SCOPE

This specification defines the material performance requirements for seating foam, including head restraints, cushions, bolsters, and armrests. The materials used are typically polyurethane, however, this specification also covers the attachment of materials that would be provided on a finished part, such as hook/loop fastener, scrim, etc. Foam materials (die cut, molded, etc.) adhered to a molded pad shall meet the requirements of the finished pad as well.

2. APPLICATION

WSS-M15P20-B1/B2 This specification is for material used in all seat cushions and backs, armrests, head restraints, armrests, and other foam trim items related to seating construction. This specification covers the foam performance requirements with respect to foam material properties and additional specifications cover the application of the assemblies, which are listed below. For seat cushions/backs this specification covers attached components such as fasteners, anti-squeak coatings, and molded in fabrics. These specifications should be used together to define the performance requirements of the affected component.

WSB-M15P26-C
WSD-M15P39-A
WSB-M15P43-A

ARMREST, UNITIZED, FORMED, PERFORMANCE
PERFORMANCE, FABRIC COVERED MOULDED PARTS
PERFORMANCE, HEADREST, BLOW MOLDED, FOAM INJECTED

2.1 LIMITATIONS

This material is susceptible to compression set damage when exposed to steam. Use of excessive steam in the seat assembly process can damage urethane flexible foam. Seating assembly plant steaming practices should be reviewed before releasing parts using this material.

3. REQUIREMENTS

3.1 APPROVED SOURCES

This specification is performance based and does not have approved sources.

3.2 PRECONDITIONING

All test samples must be crushed at demold in a manner that is consistent with production intent. They shall be cured for at least the minimum time period specified in the Control Plan prior to hardness testing and a provision must exist to correlate the short-term IFD values to a fully cured sample. PPAP samples shall be cured for a minimum of 7 days prior to all other physical property testing. The samples must be conditioned in the lab environment, 23 + 2 °C and 50 + 5% RH, for a minimum of 12 hours prior to testing.

Except where noted, all tests will be performed on core specimens cut at a minimum of 10 mm below the molded surface of the sample and they shall have their longest dimension at right angles to the direction of the foam rise. This will place that dimension parallel to the top surface.

Date	Action	Revisions	Rev 3
2015 12 09	Revised	See Summary of Revisions	B. Witkowski, NA
2009 10 14	Revised	See Summary of Revisions	B. Witkowski, NA
2007 07 10	Released		B. Witkowski



Specimens shall be taken from in and around the IFD circle and they shall be free of densification layers or any portion where there is an obvious defect, such as voids. These statements supersede the specimen preparation instructions contained in the methods that exist outside of this document.

3.3 MATERIAL AND TEST SPECIMEN

Cell Structure, Physical Characteristics

The molded foam pads shall meet the requirements for allowable defects as outlined in the Engineering Specifications for seating pads or as defined on the Engineering Drawing, the foam shall have a uniform cell structure.

All foam samples shall be cut from production parts that are free of the top molded surface (unless otherwise noted within the specification below, or in the applicable test method), voids, hard spots, and densification lines.

Specimens shall be obtained from molded parts. If part thickness or configuration makes it too difficult to obtain usable test specimens, surrogate test blocks molded from the same material may be used, with approval from Materials Engineering. This is particularly applicable to small parts (arm rest, released soft molded trim pieces, etc. for seating applications)

All tests will be performed on core specimens cut at a minimum of 10 mm below the molded surface (unless specified with skin) and shall have their longest dimension at right angles to the direction of the foam rise. This will place that dimension parallel to the top surface. All tests shall be performed using a sample size of 3, (unless noted in the section) with the average of the samples reported, unless otherwise specified. All testing shall be done on parts made with production mold release agents, anti-squeak surface treatments, molded in fabrics, or other miscellaneous materials. Densities/firmness will vary by application, and the Release Engineer should consult Comfort Engineering if there are issues with density and firmness of the parts.

Non-cushion soft trim applications (also referred to as small part applications)- This performance specification is applicable to small parts items that are manufactured with foam formulations also used in head restraint or seating applications. For items requiring surrogate blocks to be used for qualification, such as final parts are not of sufficient size to allow for sample specimens to be prepared, a surrogate block of the identical formulation may be used. Density, index, and key process parameters shall be kept consistent between the manufacture of the part and the surrogate block, and be provided to seat engineering or materials engineering.

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| 3.3.1 | Density, Core, min kg/m ³
(ASTM D 3574, Test A) | As specified on the Engineering Drawing. |
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Sample size 50 x 50 x 25 mm minimum, taken inside or as close as possible to the IFD circle. A minimum of 24 hour ageing period prior to test is required. Molded density based on part volume shall be reported for small parts or multi-firmness or multi-density pads, and an applicable surrogate test blocks shall be made at this density for other tests in subsequent sections of this specification.

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| 3.3.2 | Indentation Force Deflection
(ASTM D 3574, Test B1, 50% deflection) | Test values as specified on the Engineering Drawing requirements, test fixtures, values and locations as specified on the Engineering Drawing. |
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| 3.3.3 | Hardness, Hysteresis, and Comfort Factor
(FLTM BO 121-01) | Test values as specified on the Engineering Drawing |
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