Designation: D5605 – 94 (Reapproved 2016)

Standard Practice for Styrene-Butadiene Rubber (SBR)—Establishing Raw Mooney Viscosity Target Values[1]

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1. Scope

1.1 This practice covers a means for producers and users of emulsion styrene-butadiene rubber (SBR) to establish common target values for the Mooney viscosity of these rubbers.

1.2 Mooney viscosity is a widely used measurement for rubber as defined in Test Methods D1646 where the procedure for its measurement is specified.

1.3 The Mooney viscosity target value is defined as the midpoint of a Mooney viscosity specification range established by a producer or user of rubber.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1646 Test Methods for Rubber—Viscosity, Stress Relaxation, and Pre-Vulcanization Characteristics (Mooney Viscometer)

3. Significance and Use

3.1 Mooney viscosity is used extensively in the rubber industry as a measurement of the general quality of raw or compounded uncured rubber. This special viscosity has been related to average molecular weight and to handling and processing characteristics in various rubber operations such as mixing, extruding, molding, and so forth.

3.2 This practice addresses the raw Mooney viscosity of SBR in its finished state at the SBR manufacturer's plant and in the ready-to-use state at the rubber product manufacturer's plant.

3.3 Different processes and different processing equipment often require rubber of the same composition at different raw Mooney viscosity levels. The use of this practice enables producers of SBR to offer each rubber with a number of standard target Mooney viscosity values and informs users which Mooney viscosity rubbers are available.

NOTE 1—Use of this practice will eliminate the need for producers to manufacture rubbers of the same composition with target Mooney values unrealistically close together. This will allow the manufacturers to produce to each target, and eliminate the need to sort product for many different specification ranges. The result will be improved process performance indexes and more consistent rubber for all users.

NOTE 2—Using this practice will benefit users by providing a published list of the producer's Mooney viscosity target values and improved consistency of the rubber they receive. The better consistency will result from producing rubber to a target rather than sorting it after it is tested. Interchangeability of rubbers from different producers should be simplified.

4. Establishing Target Values

4.1 Target values for raw Mooney viscosity of SBR shall be chosen from values ending in a 0 or a 5, for example 55, 60, 65.

4.2 Target values may be expressed in any of the customary units (specimen preparation, rotor size, warm-up time, running time and temperature).

4.3 With targets established at intervals of 5 units, the maximum difference which could occur between a target value and the midpoint of an established specification range is 2 units. A change this small should be able to be accommodated by most users of SBR.

4.3.1 Illustration:

Producer's Mooney viscosity target value	70 UML1 + 4(100°C)
User's specification range	62–82 UML1 + 4(100°C)
User's specification midpoint	72 UML1 + 4(100°C)

User would choose a Mooney viscosity target value of 70. If the user's midpoint had been 73, he would have chosen a target value of 75.

5. Keywords

5.1 Mooney viscosity; SBR; target values

[1] This practice is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.23 on Synthetic Rubbers.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.