



## THERMOPLASTIC POLYESTER-ETHER ELASTOMER (TEEE), 55 DUROMETER D HARDNESS BLOW MOLDING COMPOUND

WSS-M4D1006-A1

### 1. SCOPE

The material defined by this specification is a thermoplastic blow molding compound based on polyester-ether elastomer.

### 2. APPLICATION

This specification was released originally for material used for air induction system ducts.

#### 2.1 LIMITATIONS

This material has a higher compression set compared to elastomers.  
This material is not suitable for use with concentrated acids and bases.

### 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).

- 3.1.1 Many 4D resin specifications prior to 2011, identified certain requirements with the symbol (s), which indicated that the mean and +/- 3 sigma values were to be reported. The specification minimum, maximum or range was established using 3 sigma data. For 2011 and beyond, refer to Table 1 for number of samples required for each test to establish specification limits.
- 3.1.2 This specification is based on virgin materials, however materials with recycled content as defined by WRS-M99P42-A1 (post-consumer and/or postindustrial recyclates and repolymerised recycled materials) should be used whenever technically feasible and following all materials and PV testing required by Ford Materials Engineering.
- 3.1.3 The use of regrind is permitted, for economic / environmental reasons, with compliance as indicated in Ford Engineering CAD and Drafting Standard E-4
- 3.1.4 Performance Criteria:  
Parts using this specification shall meet the appropriate performance specifications, WSS-M15P50-B/Latest.
- 3.1.5 As specified in WSS-M99P1111-A, paragraph 3.2, Ford Materials Engineering may request a Control Plan and Certificate of Analysis (CoA) containing lot testing requirements which must include, but are not limited to:

| Date       | Action | Revisions         | Rev 0 |
|------------|--------|-------------------|-------|
|            |        |                   |       |
| 2013 07 19 |        | New specification |       |



Documents

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Document Sharing Hub



Melt Flow Rate  
Filler Content  
Impact Strength, Notched Charpy at 23°C  
Flexural Modulus

### 3.2 SAMPLE PREPARATION

Unless otherwise specified all tests shall be carried out on injection molded, one-end gated test specimens. The test specimens A and D shall be molded using molding conditions defined in TEEE. No annealing is allowed. See Table 1 for the number of samples required.

Specimens shall be as follows:

|            |                                                                 |
|------------|-----------------------------------------------------------------|
| Specimen A | 150 minimum x 10 x 4.0 +/- 0.2 mm (ISO 527-2, Specimen Type 1A) |
| Specimen B | 355 x 100 x 1.0 +/- 0.1 mm (ISO 3795)                           |
| Specimen C | 145 x 60 x 3.2 +/- 0.2 mm                                       |
| Specimen D | Center of Specimen A, 80 x 10 x 4.0 +/- 0.2 mm                  |
| Specimen E | 100 mm diameter x 3.2 mm                                        |
| Specimen F | 80 mm diameter x 3.2 mm                                         |
| Specimen G | 90 mm x 200 mm                                                  |
| Specimen H | 50 +/- 1 mm diameter x 3.2 +/- 0.2 mm                           |
| Specimen I | 100 mm x 150 mm, min                                            |

### 3.3 MATERIAL PROPERTIES

|       |                                                                                                |                               |
|-------|------------------------------------------------------------------------------------------------|-------------------------------|
| 3.3.1 | Melt Flow Rate<br>(ISO 1133 230 °C, 10 kg)                                                     | 4 - 8 g/10 minutes            |
| 3.3.2 | Density<br>(ISO 1183, Method A)                                                                | 1.14 – 1.18 g/cm <sup>3</sup> |
| 3.3.3 | Hardness, Durometer D<br>(ISO 868, 15 s dwell)                                                 | 47 - 56                       |
| 3.3.4 | Tensile Strength at Break<br>(ISO 527-1 and ISO 527-2, Specimen A,<br>50 mm/minute test speed) | 25 MPa min                    |
| 3.3.5 | Elongation at Break<br>(ISO 527-1 and ISO 527-2, Specimen A,<br>50 mm/minute test speed)       | 230% min                      |
| 3.3.6 | Tensile Modulus<br>(ISO 527-1 and ISO 527-2, Specimen A,<br>1 mm/minute test speed)            | 130 MPa min                   |
| 3.3.7 | Flexural Modulus<br>(ISO 178, Specimen D,<br>64 mm support span, 2 mm/minute test speed)       | 125 MPa min                   |