



# ENGINEERING MATERIAL SPECIFICATION

## Material Name

## Specification Number

|                                                               |               |
|---------------------------------------------------------------|---------------|
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>80 A HARDNESS, EXTERIOR | WSK-M4D689-A1 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>85 A HARDNESS, EXTERIOR | WSK-M4D689-A2 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>90 A HARDNESS, EXTERIOR | WSK-M4D689-A3 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>95 A HARDNESS, EXTERIOR | WSK-M4D689-A4 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>75 A HARDNESS, EXTERIOR | WSK-M4D689-A5 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>65 A HARDNESS, EXTERIOR | WSK-M4D689-A6 |
| POLYVINYL CHLORIDE (PVC), FLEXIBLE<br>60 A HARDNESS, EXTERIOR | WSK-M4D689-A7 |

### 1. SCOPE

The materials defined by these specifications are flexible polyvinyl chloride injection and/or extrusion molding compound.

### 2. APPLICATION

These specifications were released originally for materials used for exterior garnish mouldings.

### 3. REQUIREMENTS

#### 3.1 STATISTICAL PROCESS

Suppliers must conform to the requirements of Ford Quality System Standard Q-101. A mutually acceptable Control Plan as described therein is required for material/source approval. Appropriate statistical tools must be used to analyze process/product data so that variation in the final product is continuously reduced.

#### 3.2 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The IR spectra and thermograms established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

| Date       | Release No.      | Release/Revision                             |
|------------|------------------|----------------------------------------------|
| 1993 05 03 | EP00E10258815000 | Added para 3.6, NAAO only D.Keller L.Rodigas |
| 1992 09 01 | EP00E10176304000 | Revised para 3.5.2 & 3.5.3 L.Rodigas         |
| 1992 04 01 | EP00E10176266000 | Added -A5 to -A7 L.Rodigas                   |

WP 3948-a

Page 1 of 6

9009160 0005452 33T



## 3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

## 3.4 MOLDED TEST SPECIMEN

## 3.4.1 Preparation of Test Specimens

Unless otherwise specified, all test shall be conducted on specimens die cut from ungrained compression molded plaques 150 x 150 x 2.0 +/- 0.2 mm molded according to ISO 293.

3.4.2 Density, g/cm<sup>3</sup>, max  
(ISO 1183, Method A/ASTM D 792, Method A)

|      |      |      |      |
|------|------|------|------|
| A1   | A2   | A3   | A4   |
| 1.35 | 1.40 | 1.45 | 1.45 |
| A5   | A6   | A7   |      |
| 1.35 | 1.35 | 1.35 |      |

3.4.3 Hardness, Durometer A  
(ISO 868/ASTM D 2240,  
6 mm thick plied-up specimens,  
15 s delay)

|          |          |          |          |
|----------|----------|----------|----------|
| A1       | A2       | A3       | A4       |
| 80 +/- 5 | 85 +/- 5 | 90 +/- 5 | 95 +/- 5 |
| A5       | A6       | A7       |          |
| 75 +/- 5 | 65 +/- 5 | 60 +/- 5 |          |

3.4.4 Tensile Strength at Break, MPa, min  
(ISO R 527, type 2/ASTM D 638M,  
type M-II, 500 mm/min test speed)

|    |    |    |    |
|----|----|----|----|
| A1 | A2 | A3 | A4 |
| 12 | 14 | 15 | 16 |
| A5 | A6 | A7 |    |
| 11 | 10 | 10 |    |

3.4.4.1 Elongation at Break, %, min  
(Test Method according  
to para 3.4.4)

|     |     |     |     |
|-----|-----|-----|-----|
| A1  | A2  | A3  | A4  |
| 220 | 180 | 160 | 150 |
| A5  | A6  | A7  |     |
| 240 | 250 | 250 |     |