



## ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

NOISE ABSORBING PART, LOW DENSITY, ENGINE HOOD  
NOISE ABSORBING PART, LOW DENSITY, ENGINE HOOD

SK-M99G9531-A  
DELTA SK-M99G9531-B

## 1. SCOPE

The material defined by this specification is a mildew, engine oil, and moisture resistant synthetic resin bonded moulded part of low density based on cotton fiber felt with an admixture of synthetic and woolen recycling fiber material. The face side is covered with a synthetic fiber felt adhered to the substrate.

## 2. APPLICATION

This material was originally released for use as an airborne noise absorption part mechanically fixed underneath the engine hood.

## 3. REQUIREMENTS

The material shall be conditioned for a minimum of 24 hours at 23 +/- 2 C and 50 +/- 5 % relative humidity prior to testing.

## 3.1 COLOR

a) Visible Surface

Black

b) Back Side

Any

Or as specified on Engineering drawing.

## 3.2 DENSITY

See Figure 1

(ASTM D 2395, Method A, specimens of 100 x 100 mm to be cut from plane areas of nominal thickness of the finished part)

## 3.3 THICKNESS

(Slide Gauge)

Between 1 - 30 mm as specified on Engineering drawing

## 3.4 WATER ABSORPTION, max

1.3 g

Test Method:

1) Cut 100 x 100 mm specimens from plane areas of finished part.

| Date       | Release No.   | Released                          |
|------------|---------------|-----------------------------------|
| 1994 12 16 |               | Revised and Retyped was: 17 pages |
| 1982 10 19 | SM/EQ 9093 TP | Released                          |

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- 2) Seal edges of test specimens against test fluid penetration (e.g. use wax).
- 3) Weigh specimens nearest to 0.1 g.
- 4) Apply 3 mL distilled water on that side of a horizontally lying specimen, which is facing the engine in assembled condition.
- 5) After 15 minutes, shake off water and blot specimen with filter paper.
- 6) Weigh specimens again nearest to 0.1 g and calculate the increase of weight.

### 3.5 TENSILE STRENGTH

150 x 30 mm specimens to be cut from plane areas of finished part. Speed of testing 25 mm/minute; distance between clamps at start of test 100 mm).

- |       |                                                                                                              |              |
|-------|--------------------------------------------------------------------------------------------------------------|--------------|
| 3.5.1 | Original                                                                                                     | See Figure 2 |
| 3.5.2 | After Humidity Ageing, max<br>(48 h at 38 +/- 2 C and 98 +/- 2 % relative humidity; 1 h at room temperature) | - 30 %       |
| 3.5.3 | After Heat Ageing, max<br>(14 d at 90 +/- 2 C; 1 h at room temperature)                                      | - 15 %       |
| 3.5.4 | After Immersion in Engine Oil, max<br>(48 h in ASTM Oil No. 1 at room temperature)                           | - 15 %       |
| 3.5.5 | After Immersion in Water, max<br>(48 h in distilled water at room temperature)                               | - 30 %       |

### 3.6 MILDEW RESISTANCE

The material shall be free from mildew and malodor. There shall be no visible changes evident after drying.

Test Method:

- 1) Cut from finished part a piece of 150 x 150 mm and soak with distilled water.
- 2) Place test piece in a beaker glass and cover tightly with a lid. Store at 35 +/- 2 C for 14 days.



## 3.7 TEAR STRENGTH, min

50 N/cm

Specimens to be cut from maximum 8 mm thick areas of finished part, specimen dimensions see ASTM D 624, Die C, speed of testing 500 mm/minute.

## 3.8 FINISHED PART REQUIREMENTS

3.8.1 Dimensions As specified on Engineering drawing

3.8.2 Mass As specified on Engineering drawing

## 3.8.3 Heat Stability after Ageing

The finished part shall show no evidence of delamination and shall not warp to an extent that would affect its use in ultimate assembly.

Test Method: The finished part or a representative section (minimum 50 %) shall be mounted as in the vehicle and subjected to a temperature of 90 +/- 2 C in a mechanically convected air dry oven for 120 hours. Examine after cooling to room temperature.

## 3.8.4 Low Temperature Flexibility After Ageing

No delamination or cracking.

Test Method:

- 1) Expose the finished part or a representative section (minimum 50 %) to 90 +/- 2 C for 120 hours.
- 2) After cooling to room temperature, store the part/section and a steel ball of radius 38 mm and 2.21 N for 4 hours at - 40 +/- 1 C in a cold box.
- 3) Place the part/section horizontally on a base plate.
- 4) While still in the cold box, drop the steel ball to the middle of the part/section from a height of 1000 mm.

## 3.8.5 Environmental Cycling

The finished part or a representative section (minimum 50 %) of it shall show no evidence of delamination, it shall not warp to an extent that would affect its use in ultimate assembly.