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| GM | WORLDWIDE ENGINEERING STANDARDS | Material Specification | GMW16875 |

# Performance Requirements of Anti-Squeak, -Itch, -Rattle Fiber Tape

## 1 Scope

This specification covers the material properties and durability requirements of a flocked fabric, felt, or nonwoven sound abatement tape. These tapes are used for interior sound abatement applications where two similar or dissimilar substrate materials come into contact, causing a rubbing, chafing, itching, chattering, rattling or squeaking noise. Typical areas of application are between interior trim parts, instrument panel components and other areas, depending on the origin of undesired sound. In most cases, the tape becomes trapped between two surfaces.

**1.1 Material Description.**

**1.1.1 Type I Material;** is flocked fabric or a (felt), coated with a permanent, acrylic, pressure-sensitive adhesive. Typically, the Type I Tape fibers are nylon; however, other polymers, or blends of polymers, can be used. The backing can be a woven blend of polyester and cotton or other polymers.

**1.1.1.1 Type IA Material.** Is **NOT** exposed to ultraviolet (UV) light.

**1.1.1.2 Type IB Tape.** Is exposed to UV; therefore, it must exhibit weathering resistance. Type IB Tape may be used to line the bottom of coin holders or storage bins in direct exposure locations.

**1.1.2 Type II Material;** is a nonwoven tape coated with a permanent, acrylic, pressure-sensitive adhesive. The nonwoven fiber can be various polymers, typically polyester or polyurethane. **Type II Material** is a lower-cost, lower-performance alternative to **Type I Material** used in less demanding applications.

**1.1.3** If there is no type callout on the drawing, the construction is assumed to be **Type IA Material.**

**1.2 Symbols.** Not applicable.

**1.3 Applicability.** Interior sound abatement applications.

**1.4 Remarks.** Not applicable.

## 2 References

**Note:** Only the latest approved standards are applicable unless otherwise specified.

**2.1 External Standards/Specifications.**

| | | |
|---|---|---|
| ASTM D1000 | FMVSS 302 | ISO 8510-2 |

**2.2 GM Standards/Specifications.**

| | | | |
|---|---|---|---|
| GMW3059 | GMW3235 | GMW14729 | GMW16208 |
| GMW3205 | GMW14124 | GMW15340 | GMW16853 |
| GMW3208 | GMW14162 | GMW15572 | |
| GMW3232 | GMW14270 | GMW15634 | |

**2.3 Additional References.**

Safety and Industrial Hygiene (S&IH) Technical Standard (TS), S&IH TS 3.4-160-02

## 3 Requirements

**3.1 Tape Performance.** All tests shall be performed at ambient condition 22 °C ± 3 °C and 55% ± 5% relative humidity unless otherwise indicated.

**3.2 Properties.** See Table 1.

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**Table 1: Performance Properties**

| Properties | Values Type IA | Values Type IB | Values Type II | Test Methods |
|---|---|---|---|---|
| Liner Removability | 200 N/m Maximum | 200 N/m Maximum | 200 N/m Maximum | 180 Degree Peel at 300 mm/minute ISO 8510-2 |
| 180 Degree Peel Adhesion (see 3.2.1), Newtons per Meter (N/m) Minimum | Not applicable | Not applicable | Not applicable | 180 Degree Peel at 300 mm/minute ISO 8510-2 |
| After 72 h Room Temperature (RT) | 350 N/m | 350 N/m | 280 N/m | ISO 8510-2 |
| After 24 h Humidity | 350 N/m | 350 N/m | 235 N/m | GMW14729, Option A, ISO 8510-2 |
| After 168 h Oven Aging at 70 °C | 350 N/m | 438 N/m | 350 N/m | ISO 8510-2 |
| After Cycle D or Cycle E | 350 N/m | 438 N/m | 350 N/m | GMW14124, ISO 8510-2 |
| Shear Strength (see 3.2.2), N/m Test at -18 °C After 4 h at -18 °C | 7500 N/m | 7500 N/m | 2500 N/m | ASTM D1000 |
| Test at 60 °C After 24 h at 60 °C | 3500 N/m | 3500 N/m | 2500 N/m | ASTM D1000 |
| Taber Abrasion, 500 cycles, CS-10, 1.0 kg Load (Type I) or 0.5 kg Load (Type II) | No Wear-through to Fabric Backing | No Wear-through to Fabric Backing | No Wear-through to Fabric Backing | GMW3208 |
| Flammability | Must Conform to FMVSS 302 | Must Conform to FMVSS 302 | Must Conform to FMVSS 302 | GMW3232 |
| Xenon Weatherometer, Interior Cycle | Not applicable | 263 kJ/m$^2$ (see 3.2.3) | Not applicable | GMW14162 |
| Odor | Minimum of 6 | Minimum of 6 | Minimum of 6 | GMW3205 |
| VOC/SVOC | Per GMW16853 | Per GMW16853 | Per GMW16853 | GMW15634 |
| Gravimetric Fogging | ≤ 2 mg | ≤ 2mg | ≤ 2 mg | GMW3235, Method B |

**Key:** Volatile Organic Compound (VOC), Semivolatile Organic Compound (SVOC).

**3.2.1 180 Degree Peel Adhesion.** Bond tape to production-intent substrate (if not available, use acrylonitrile butadiene styrene (ABS) (GMW15572P-ABS-T2), polypropylene (PP) (GMW16208P-PP-T2), and thermoplastic polyolefin (TPO) (GMW15340P-PP+EPDM-M20-T1U)). Allow a 72 h dwell at ambient conditions prior to exposure. After exposure to any conditions, allow a 24 h dwell at ambient conditions prior to testing.

**3.2.2 Shear Strength.** Bond 25 mm x 150 mm tape to nominal size ABS, PP, and TPO test plaques, 625 mm$^2$ bond area. Allow a 72 h dwell at ambient conditions prior to exposure. Expose to required environment. Test at required temperature in a constant rate of extension (CRE) machine at 300 mm/minute.

**3.2.3 Xenon**. No objectionable color changes. A noticeable on-tone fade is acceptable. A bleached-out condition is unsatisfactory. The sample shall also show no stiffening or fiber degradation.

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