

The test standard for cellular materials is ASTM D1056. Industry standard is D1056.

- This standard is applicable for Sponges (Open Cell) and Expanded (Closed Cell) Foams.
- The product is identified by three-character Grade Number (Example: 2A2).
- The three characters represent Type, Class and Grade.

Type

- Type 1 = Open cell
- Type 2 = Closed cell

Class

- Class A = Non-oil resistant (example: EPDM)
- Class B = Oil resistant, low swell (example: Nitrile)
- Class C = Oil resistant, medium swell (example: Neoprene)
- Class D = Extreme temperature resistance (example: Silicone)

Grade

Grade ratings represent compression deflection, or the amount of force in pounds per square inch to deflect the sample 25% of its height.

- Grade 0 = less than 2 psi
- Grade 1 = 2-5 psi
- Grade 2 = 5-9 psi
- Grade 3 = 9-13 psi (for classes A, B, C) 9-15 psi (for class D)
- Grade 4 = 13-17 psi (for classes A, B, C) 15-22 psi (for class D)
- Grade 5 = 17-25 psi (for classes A, B, C) 22-30 psi (for class D)

Suffix Letter Test Required

A- Heat resistance

L -Water absorption

B- Compression set

M -Flammability resistance

C -Ozone or weather resistance

N -Impact resistance

D -Compression deflection resistance

P -Staining resistance

E -Fluid resistance (Fuel B)

R -Resilience

F -Low temperature resistance

T-Tensile and Elongation

G -Tear resistance

W- Density

J -Abrasion resistance

Z -Any special requirements

K -Adhesion resistance

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Suffix numbers that follow the suffix letter denote different testing parameters or conditions for that suffix.

For e.g. B1 stands for C. Set at 70oC (158oF) and B2 stands for C. Set at 23oC (74.3oF) or Room Temp.

Example Line Call Out for Sponge ASTM D-1056

2C2 A1 B2 E1 Z (Z = material passes FMVSS 302)

2 - Closed Cell,

C - Medium Oil Swell or Medium Oil Resistance

2 -C.D (25% Compression) 5 to 9psi,

A1 - Change in C.D. after aging for 22h at 100°C to be +/- 30% from Original C.D.,

B2 - Compression Set at 23°C for 22h (50% compression) and after 24h recovery to be max. of 25%,

E1 - Change in weight after 7 days at 23°C in ASTM Reference Fuel B to be max. of 150% and

Z = States special requirement as stated.

D 1056 Equivalency

MIL- C - 3133; MIL- STD 670:

Exactly the same as D 1056 and were discontinued in 1986.

SAE J18; Exactly the same as D 1056

ASTM D1667; Very similar to 1056. Specifically for PVC containing closed cell foams.

ASTM D3575; similar to 1056 for polyolefin foams. Plastics like polyethylene and ethylene vinyl acetate.