



HANNA RUBBER COMPANY

Resources

## Understanding ASTM D1056: *A Guide to Flexible Cellular Rubber Materials*

When selecting materials for gasketing, sealing, or cushioning, it's essential to understand the standards that define their properties. ASTM D1056 is one such standard that specifies the classification of flexible cellular rubber materials. This guide will help you understand ASTM D1056 and its implications for your projects.

### What is ASTM D1056?

ASTM D1056 is a standard developed by ASTM International, covering flexible cellular rubber products known as sponge rubber and expanded rubber. It does not apply to latex foam rubber or ebonite cellular rubber. These materials can be made from synthetic, natural, or reclaimed rubber and may include other polymers or chemicals. The standard ensures that these materials have properties similar to vulcanized rubber, such as the ability to recover their original shapes after deformation.

### Classification System

The ASTM D1056 standard classifies cellular rubber materials based on type, class, grade, and optional suffixes:

- Type:** Indicates the cell structure of the rubber.
  - Type 1:** Open-cell rubber.
  - Type 2:** Closed-cell rubber.
- Class:** Indicates the material's resistance to various conditions.
  - Class A:** Non-oil resistant.
  - Class B:** Oil resistant with low mass change.
  - Class C:** Oil resistant with medium mass change.
  - Class D:** High-temperature resistant.
- Grade:** Specifies the material's firmness, expressed by compression-deflection.
  - Grade 0 to 5:** Ranging from soft to firm, with specific psi (kPa) ranges for each grade.
- Suffixes:** Indicate additional material requirements.

### ASTM D1056 Suffix List

The suffixes in ASTM D1056 specify additional properties and requirements for cellular rubber materials:

- A:** Heat resistance
- B:** Compression set
- C:** Ozone or weather resistance
- D:** Load deflection
- E:** Fluid resistance
- F:** Low-temperature resistance
- G:** Tear resistance

- **J:** Abrasion resistance
- **K:** Adhesion capability
- **L:** Water absorption
- **M:** Combustion characteristics
- **N:** Impact resistance
- **P:** Staining resistance
- **R:** Resilience
- **T:** Tensile/elongation
- **W:** Density
- **Z:** Special requirements (must be specified)

## Example of ASTM D1056 Classification

An example designation might be **2A1**, where:

- **2** indicates closed-cell rubber.
- **A** signifies non-oil resistant.
- **1** denotes a soft grade with a compression-deflection range of 2 to 5 psi (13.8 to 34.5 kPa).

## Why ASTM D1056 Matters

Understanding ASTM D1056 is crucial for selecting the appropriate material for your specific application. Adhering to this standard ensures that the cellular rubber materials used meet necessary performance requirements, leading to better product reliability and longevity.

## Applications of ASTM D1056 Materials

Materials classified under ASTM D1056 are used across various industries, including automotive, aerospace, construction, and electronics. Common applications include:

- **Gaskets and seals:** To prevent leaks and maintain pressure.
- **Vibration isolation pads:** To reduce noise and wear.
- **Cushioning components:** To protect delicate equipment.

## Conclusion

ASTM D1056 provides a comprehensive classification system for flexible cellular rubber materials, helping manufacturers, engineers, and designers select the right material for their needs. By understanding this standard, you can ensure optimal performance and durability for your products, whether you're designing seals, gaskets, or cushioning components.

For more detailed information, you can refer to the full ASTM D1056 standard available through ASTM International <https://www.astm.org>. Additionally, understanding the suffixes and specific test methods referenced in the standard can provide deeper insights into the material properties and their suitability for various applications.

By adhering to ASTM D1056, you can ensure that your materials meet the required specifications, leading to reliable and high-quality products that perform as expected in their intended applications.

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*The above information aims to serve as a resource for understanding ASTM D1056, its classification system, and its importance in selecting flexible cellular rubber materials. Whether you are a manufacturer, engineer, or designer, this guide will help you make informed decisions to ensure optimal performance and durability for your projects.*