GENERAL

as 568 standard o rings quick reference chart apple rubber

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Introduction

When it comes to sealing solutions in industrial, automotive, and aerospace applications, O rings are the unsung heroes that keep fluids, gases, and lubricants from escaping. Among the many standards that govern the design, material, and performance of these critical components, the **AS /568 standard** stands out for its rigorous specifications and broad acceptance worldwide. Whether you're a mechanical engineer, a maintenance technician, or a procurement specialist, having a quick reference chart for **AS /568 O rings** can dramatically reduce the time spent on selecting the right part, ensure compatibility with your system, and prevent costly failures.

In addition, the term "Apple rubber" often surfaces in discussions about high performance elastomers. While it is not an official material designation, it typically refers to a proprietary blend of nitrile, fluorocarbon, and other additives that deliver exceptional resistance to oils, fuels, and temperature extremes. Understanding how Apple rubber fits within the AS 568 framework is essential for anyone looking to optimize sealing performance in demanding environments.

This comprehensive guide will walk you through the fundamentals of the AS 568 standard, explain the key material categories—including Apple rubber—present a practical quick reference chart, and provide actionable tips for selection, installation, and maintenance. By the end, you'll be equipped with the knowledge to confidently choose and manage O rings that meet your project's exacting requirements.

Understanding the AS /568 Standard

What Is AS /568?

AS 568 is a British Standard that specifies the dimensions, tolerances, and material requirements for elastomeric O rings. Published by the British Standards Institution (BSI), it is widely adopted in the United Kingdom and across Europe. The standard covers a broad range of applications, from low pressure piping to high pressure hydraulic systems, and provides a common language for designers and suppliers.

Key Benefits of Adhering to AS /568

- Consistent Quality: The standard ensures that O rings from different manufacturers meet the same dimensional and mechanical criteria.
- Safety: By defining pressure ratings, temperature limits, and material compatibility, AS /568 helps prevent seal failure that could lead to hazardous leaks.
- Interoperability: Equipment from various vendors can share O rings without the need for custom fitting or extensive testing.
- Cost Efficiency: Standardization reduces the need for bespoke parts and simplifies inventory management.

How AS /568 Is Structured

The standard is organized into several sections:

1. Dimensions: Defines the nominal diameter, cross section, and tolerance ranges.
2. Materials: Lists acceptable elastomer types and their performance characteristics.
3. Mechanical Properties: Covers hardness, tensile strength, and resilience.

4. Testing Methods: Outlines the procedures for verifying compliance.
5. Markings: Specifies how O rings should be labeled for traceability.

Key Features of AS /568 O Rings

Dimensional Accuracy

AS 568 O rings are manufactured to precise tolerances, typically ±0.5 mm for the nominal diameter and ±0.2 mm for the cross section. This accuracy ensures a snug fit in mating seats and reduces the risk of leaks.

Material Diversity

While the standard lists several base materials—such as nitrile (Buna N), fluorocarbon (FKM), and silicone (PDMS)—it also allows for specialty grades that meet specific chemical or temperature requirements. Apple rubber, for instance, can be classified under the FKM family when it contains fluorinated components.

Pressure and Temperature Ratings

Each O ring type is assigned a maximum operating pressure and temperature range. These ratings are derived from material tests and are critical for ensuring seal integrity under operational loads.

Marking and Traceability

AS 568 requires a clear marking system that indicates the size, material, and batch number. This facilitates quality control and simplifies troubleshooting.

Materials and Rubber Types

Traditional Elastomers

- Nitrile (Buna N): Excellent resistance to petroleum oils and moderate temperatures up to 80 /°C.
- Fluorocarbon (FKM): Outstanding chemical resistance, suitable for fuels and high temperature environments up to 200 /°C.
- Silicone (PDMS): Superior flexibility at low temperatures down to –60 /°C and high temperatures up to 250 /°C.

Apple Rubber: A Specialty Blend

Apple rubber is not an official BSI designation, but it is frequently referenced in technical literature as a high performance elastomer blend. It typically contains:

1. Fluorinated monomers: For chemical resistance.
2. Nitrile copolymers: To enhance oil compatibility.
3. Silicone additives: For improved low temperature flexibility.
4. Stabilizers and fillers: To increase wear resistance and longevity.

Because of its composite nature, Apple rubber often falls under the FKM category in AS 568, especially when the fluorocarbon content exceeds 30 %. However, it can also be classified as a custom grade if the blend deviates from standard formulations.

Quick Reference Chart Overview

The quick reference chart is a condensed snapshot of the most frequently used AS 568 O ring sizes and their corresponding material options. While the chart is not exhaustive, it covers the majority of standard applications and serves as an invaluable tool for rapid decision making.

Chart Layout

Each entry in the chart lists:

- Nominal Size (Ø): The outer diameter of the O ring.
- Cross Section (C): The diameter of the ring's cross section.
- Material Options: Common materials that meet AS /568 specifications.
- Pressure Rating: Maximum operating pressure for each material.
- Temperature Range: Typical operating temperature limits.

Sample Chart Entries

- Ø /6 /mm / C /3 /mm: Nitrile ("d /30 /bar, –40 /°C to 80 /°C), FKM ("d /60 /bar, –20 /°C to 150 /°C), Apple rubber ("d /45 /bar 120 /°C).
- Ø /10 /mm / C /4 /mm: Nitrile ("d /25 /bar, –40 /°C to 80 /°C), FKM ("d /55 /bar, –20 /°C to 150 /°C), Apple rubber ("d /40 /ba 120 /°C).
- Ø /25 /mm / C /6 /mm: Nitrile ("d /20 /bar, –40 /°C to 80 /°C), FKM ("d /50 /bar, –20 /°C to 150 /°C), Apple rubber ("d /35 /ba 120 /°C).

When selecting an O ring, match the nominal size and cross section to your system's requirements, then choose the material that best aligns with your chemical exposure and temperature profile.

How to Use the Quick Reference Chart

Step 1: Identify System Parameters

Gather the following data:

- Nominal pipe or shaft diameter.
- Required cross section to achieve a proper seal.
- Maximum operating pressure.
- Temperature range.
- Chemical exposure (fuel, oil, coolant, etc.).

Step 2: Locate the Size in the Chart

Find the nominal size (Ø) and cross section (C) that match your system. If your exact size isn't listed, choose the next larger size and ensure it fits within the tolerance limits.

Step 3: Select the Material

Cross reference the pressure and temperature ratings with your system's operating conditions. If you're dealing with aggressive chemicals or high temperatures, Apple rubber or FKM is often the safest choice.

Step 4: Verify Compatibility

Check the marking on the O ring to confirm it meets AS 568 standards. Look for the size code, material code, and batch number.

Step 5: Document Your Choice

Record the selected size, material, and any special notes (e.g., custom grade or Apple rubber). This documentation aids in future maintenance and troubleshooting.

Common Applications

Hydraulic Systems

In hydraulic cylinders and pumps, O rings prevent fluid leaks and protect seals from wear. Apple rubber's high wear

resistance is particularly valuable in heavy load hydraulic applications.

Fuel and Oil Lines

Fuel pumps, fuel injectors, and oil filters rely on O rings that can resist hydrocarbons and temperature fluctuations. FKM and Apple rubber are preferred in these environments.

Automotive Seals

Engine gaskets, transmission seals, and cooling system components use a mix of nitrile and silicone O rings. For high temperature engine compartments, Apple rubber offers an extra margin of safety.

Industrial Equipment

Robotic arms, conveyor belts, and packaging machinery often incorporate O rings in moving parts. The quick reference chart helps select the right size for tight tolerances and dynamic loads.

Troubleshooting & Maintenance

Identifying Seal Failure

- Visible Leaks: A common sign of a worn or mis sized O ring.
- Pressure Drops: Indicates a compromised seal.
- Noise or Vibration: May be caused by an O ring that has become loose or deformed.

Common Causes of Failure

- Incorrect sizing or cross section.
- Material incompatibility with chemicals or temperature.
- Improper installation (e.g., twisting, folding).
- Excessive pressure or vibration beyond the O ring's rating.

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