

5083 O Aluminum Coil for Air Storage Cylinder

1 . 5083 O Aluminum Coil for Air Storage Cylinder Description

5083 aluminum is a prominent member of the 5xxx series alloys. Its primary alloying element is magnesium, which gives the metal a solid combination of strength and resistance to rust.

When you see the "O" temper, it means the aluminum has been fully annealed. In this state, the material is at its softest. For manufacturers, this is crucial. The soft state allows the aluminum coil to be bent, rolled, and drawn into deep shapes without cracking or tearing. As the material goes through these mechanical forming processes, it naturally undergoes work-hardening, which increases its final strength. This makes 5083 O aluminum coil an ideal raw material for manufacturing cylindrical pressure vessels.

(1) Why 5083 O Aluminum Coil for Cylinders?

Air cylinders require materials that can withstand internal pressure while remaining safe and intact. Using 5083 O aluminum coil brings several practical benefits to production lines and end-users.

1. Excellent Formability

Producing a cylinder often involves continuous processing, such as rolling, deep drawing, and spinning. The O temper ensures maximum ductility. This prevents material failure, reduces the scrap rate on your production line, and allows for the precise shaping of seamless or welded cylinder bodies.

2. Reliable Corrosion Resistance

Air compressors and storage systems often deal with moisture. When air is compressed, condensation happens. 5083 aluminum naturally forms a stable, dense oxide layer on its surface. This protects the inside of the tank from rusting due to water buildup, and protects the outside from industrial environments, dirt, and mild chemicals.

3. High Weldability

Welding is a critical step in air cylinder manufacturing. 5083 aluminum performs exceptionally well with both TIG (Tungsten Inert Gas) and MIG (Metal Inert Gas) welding methods. It maintains high joint efficiency and does not suffer from hot cracking during the welding process. This ensures the weld seams can handle high air pressure safely.

4. Structural Strength

Even though it starts in the soft O temper, 5083 is one of the strongest non-heat-treatable aluminum

alloys. After the mechanical forming and welding processes, the finished cylinder retains enough structural integrity to hold compressed air safely over years of repeated use.

5. Lightweight and Cost-Effective

Compared to traditional carbon steel tanks, aluminum cylinders are significantly lighter. In mobile applications—like automotive air brakes—this reduces vehicle weight and saves fuel. For stationary setups, lighter tanks are easier to ship, handle, and install, which cuts down on labor and freight costs.

(2) 5083 O Aluminum Coil – Chemical Composition (wt.%)

Element	Content (%)
Silicon (Si)	≤ 0.40
Iron (Fe)	≤ 0.40
Copper (Cu)	≤ 0.10
Manganese (Mn)	0.40 - 1.00
Magnesium (Mg)	4.00 - 4.90
Chromium (Cr)	0.05 - 0.25
Zinc (Zn)	≤ 0.25
Titanium (Ti)	≤ 0.15
Others (each)	≤ 0.05
Others (total)	≤ 0.15
Aluminum (Al)	Remainder

This composition follows international standards such as ASTM B209 and EN 573-3, ensuring consistent corrosion resistance and mechanical stability.

(3) Mechanical Properties of 5083 O Aluminum Coil

Property	Value
Tensile Strength	275 - 350 MPa
Yield Strength (0.2% offset)	≥ 125 MPa
Elongation	$\geq 12\%$
Hardness (HB)	~65
Elastic Modulus	~70 GPa

(4) Physical Properties of 5083 O Aluminum Coil

Property	Value
Density	2.66 g/cm ³
Melting Range	~570 - 640° C
Thermal Conductivity	~121 W/m • K
Electrical Conductivity	~29% IACS
Coefficient of Thermal Expansion	23.8 ×10 ⁻⁶ /° C

2 . 5083 O Aluminum Coil for Air Storage Tech Specs

When you buy 5083 O aluminum coil from a reliable aluminum coil supplier, you need exact specifications. Below are the standard parameters we supply for air cylinder production.

Property	Specification Details
Alloy Grade	5083 (Al-Mg Series)
Temper	O (Fully Annealed)
Thickness	Typically 2.0mm - 4.0mm (e.g., 2.8mm is common)
Width	100 mm - 2650 mm (Custom slitting available)
Surface Finish	Mill finish (Clean, oil-free, flat)
Corrosion Resistance	Excellent
Weldability	Excellent

(Note: Thickness and width can be custom-slit according to your production equipment requirements.)

GNEE offers wholesale 5083 aluminum roll prices. If you know the exact thickness and width your cylinder project requires, [Click Here to Send Us Your Specs](#) for a quick price check. We handle custom dimensions with fast lead times.

3 . Common Applications of 5083 O aluminum

Because of its safety and long lifespan, 5083 O aluminum is used in everyday commercial and industrial pneumatic systems. You will not find it used in extreme high-pressure diving tanks (which use different alloys), but it is the standard for:

- Commercial Vehicle Air Tanks: Used in air brake systems for trucks, buses, and trailers.
- Workshop Air Compressors: The storage tanks attached to factory or garage air compressor units.

- **Industrial Pneumatic Systems:** Buffer tanks used to maintain stable air pressure in manufacturing plants.
- **Portable Air Tanks:** Lightweight tanks used by technicians for mobile tire inflation or pneumatic tools.

4 . Quality & Standards

Safety is the top priority for pressure vessels. As an experienced 5083 O aluminum coil supplier, GNEE ensures strict quality control before the material leaves our facility.

- **Standard Compliance:** We manufacture according to international standards, including **ASTM B209** and **EN 485**.
- **Defect-Free Surface:** We ensure the coil surface is flat, clean, and free from scratches, oil spots, or oxidation marks, preventing weak points during forming.
- **Certification:** We provide a Mill Test Certificate (MTC) based on **EN 10204 3.1** with every shipment, verifying the chemical composition and mechanical properties.

5 . Packing & Shipping

We know that aluminum coils must arrive at your factory in perfect condition. Sea freight requires robust protection against moisture and physical damage.

- **Packaging:** Export standard seaworthy packing. Coils are wrapped in plastic film and waterproof kraft paper, then secured with steel bands.
- **Pallets:** Heavy-duty wooden pallets (fumigated) or steel pallets are used for safe forklift handling.
- **Protection:** Eye-to-wall or eye-to-sky packaging options available. Hard cardboard is applied to protect the coil edges from dents.
- **Delivery Lead Time:** Generally 15–30 days depending on the order volume.

6 . Why Choose GNEE?

GNEE is a professional aluminum coil supplier based in China with extensive experience in the 5xxx series alloys.

- Customization: We slit coils precisely to your machine's width, reducing your edge waste to zero.
- Stable Supply: We support long-term contracts to ensure your production line never stops.
- Flexible Orders: We accept trial orders so you can test our material's formability and weldability before committing to bulk purchases.

7 . Get a Quote Today

Secure a stable supply of high-grade aluminum cylinder materials. To help us provide you with the most accurate and competitive 5083 aluminum price, please send us an inquiry including:

- Required Thickness and Width
- Estimated Order Quantity or Coil Weight
- Application Details (e.g., Truck air brake tanks)
- Destination Port

[Click Here to Contact Our Sales Team](#) – We process all inquiries quickly and will respond with a detailed quotation within 24 hours.