

5454 Aluminum Sheet Description

1 . 5454 Aluminum Sheet Description

The 5454 aluminum sheet is a non-heat-treatable Al-Mg alloy. It is highly valued for its excellent corrosion resistance, moderate-to-high strength, and reliable performance in elevated temperature environments. Compared to other alloys, it performs exceptionally well in industrial applications where heat and moisture are constant factors.

At GNEE, we manufacture and supply industrial-grade 5454 aluminum sheets. We focus on providing flexible customized sizes, strict tolerance control, and reliable quality for industries such as tank truck manufacturing, pressure vessel production, and marine engineering.

(1) Key Features of 5454 Aluminum

When you buy 5454 aluminum sheets, you are paying for durability and structural safety. The core advantages include:

- **Corrosion Resistance:** Performs extremely well in marine environments and industrial chemical settings.
- **High-Temperature Stability:** Offers better strength and performance at elevated temperatures compared to 5052 aluminum.
- **Weldability:** Easy to weld using standard industrial methods with high joint strength.
- **Formability:** Good workability, especially in softer tempers, making it easy to bend and shape.
- **Stress Cracking Resistance:** Strong resistance to stress corrosion cracking, which is vital for transport tanks.

(2) Chemical Composition of 5454 Aluminum

The chemical balance of 5454 aluminum gives it its unique marine and heat-resistant properties. Magnesium (Mg) is the primary alloying element.

Element	Content (%)
Magnesium (Mg)	2.4 - 3.0
Manganese (Mn)	0.5 - 1.0
Iron (Fe)	≤ 0.4
Silicon (Si)	≤ 0.25
Zinc (Zn)	≤ 0.25
Chromium (Cr)	0.05 - 0.20
Copper (Cu)	≤ 0.10
Aluminum (Al)	Balance

(3) Mechanical Properties of 5454 Aluminum

Before placing an order, engineering teams need to verify the mechanical properties. Below are the typical values for 5454 aluminum plates.

Property	Typical Value
Tensile Strength	240 - 305 MPa
Yield Strength	≥ 110 MPa
Elongation	$\geq 12\%$
Hardness	~ 70 HB

(4) Physical Properties of Aluminum 5454

Property	Typical Value
Density	2.66 - 2.70 g/cm ³
Melting Point	590 - 645 ° C
Thermal Conductivity	130 - 150 W/m • K
Thermal Expansion	$23.7 - 24 \times 10^{-6}$ /K
Electrical Conductivity	33 - 35% IACS

(5) Available Tempers of 5454 Aluminum Sheet

Choosing the right temper is the most critical step in your procurement process. It directly affects your fabrication process and final product safety. GNEE supplies 5454 aluminum in several tempers:

Temper	Strength Level	Formability	Recommended Application
5454 O (Annealed)	Low	Excellent	Tank heads, deep drawing parts, complex bending
5454 H111	Medium-low	Good	Structural parts requiring slight forming
5454 H32	Medium	Balanced	Tank bodies, general welded structures
5454 H34	Medium-high	Lower	High-strength flat structural components

GNEE Procurement Advice:

For tank truck manufacturers, we highly recommend buying **5454 H32 temper for the main tank body** because it offers the best balance of strength and price. However, for the **tank heads (end caps)**, you must use **5454 O temper** because the deep drawing process requires maximum

formability to prevent cracking. Do not over-specify H34 unless your engineering drawing strictly requires it, as it will increase your processing difficulty and material cost.

2 . 5454 Aluminum Sheet Specifications

Parameter	Details
Alloy	5454 (UNS A95454 / EN AW-5454 / AlMg3Mn)
Tempers	O, H111, H112, H12, H14, H32, H34, H38
Thickness	Sheet: 0.2 – 6 mm • Plate: 6 – 250 mm
Width	1000 – 2650 mm
Length	Up to 6000 mm standard; custom cutting available (max 12 m)
Surface	Mill finish, anodized, sandblasted, laminated (blue / clear / B&W PE film)
Tolerance	Thickness: ± 0.10 mm (≤ 3 mm) to ± 0.75 mm (> 20 mm); Flatness: ≤ 1.5 mm/m
Standards	ASTM B209, ASME SB-209, AMS 4025, EN 485 / 573, GB/T 3880
Quality Systems	ISO 9001 / 14001, AS9100 (aerospace)

Material costs change with SMM market rates. Send us your required Thickness × Width × Length, target Temper, and Quantity. GNEE's sales team will provide a transparent quote including material and processing costs within 24 hours.

3 . Common Industry Applications of 5454 Aluminum Sheet

5454 aluminum is not for decorative use. It is a heavy-duty industrial metal. Common real-world applications include:

- **Tank Truck Manufacturing**

This is the largest market for 5454. It is widely used for fuel tanker bodies, chemical transport tanks, and LPG tank structures. Its light weight helps increase the vehicle's payload capacity, while its strength ensures safety during liquid transport.

- **Pressure Vessels**

Because 5454 maintains good mechanical properties in high-temperature environments, it is widely used to manufacture storage tanks and heat-resistant industrial containers that operate under pressure.

- **Marine Engineering**

Due to its high resistance to seawater corrosion, shipbuilders use 5454 aluminum sheets for ship deck structures, workboat hulls, and offshore platform components.

- **General Heavy Industry**

It is frequently used for heavy-duty welded structures, industrial flooring, and heavy machinery covers where 5052 aluminum is simply not strong enough.

Tank Truck Manufacturing
Pressure Vessels
Marine Engineering
General Heavy Industry

4 . Price Calculation Formula

The final price of a 5454 aluminum sheet from GNEE is calculated as:

$$\text{Final Price} = \text{Aluminum Ingot Price (LME rate)} + \text{Processing Cost} + \text{Specification Premium}$$

Key factors that will increase your cost:

- **Thickness:** Thicker plates require more material, increasing the total sheet cost.
- **Temper:** Processing H34 takes more effort than O temper, making it slightly more expensive.
- **Tolerance:** Standard tolerance is cost-effective. Requesting extremely tight thickness tolerances will increase the machining fee.
- **Quantity:** Bulk orders significantly reduce the processing cost per ton.
- **Non-Standard Sizes:** Custom sizes are welcome, but excessive scrap during cutting may affect the final unit price.

5 . tolerances of 5454 aluminum sheet plate

Thickness tolerances within the following width ranges				
Thickness	≤1250	>1250-1600	>1600-2000	>2000-2650
3.00-3.50	+0.28	+0.28	+0.30	+0.40
>3.50-6.00	+0.32	+0.32	+0.40	+0.45
>6.00-8.00	+0.38	+0.45	+0.50	+0.60
>8.00-12.00	+0.45	+0.55	+0.65	+0.80

6 . Quality Control

For industrial applications, the appearance is secondary to functionality, but surface defects can lead to weak points.

The standard supply is **Mill Finish**. Before packing, GNEE inspectors check for:

- No deep surface scratches that affect thickness.
- No heavy oil stains that will interfere with welding.
- No oxidation or water spots.
- Clean, crack-free edges (especially important for plates used in bending).

7 . Packaging and Shipping

Poor packaging ruins good aluminum. Aluminum is sensitive to moisture during sea freight. GNEE uses standard seaworthy export packaging to ensure your goods arrive safely:

- Bottom layer: Strong wooden pallets.
- Inner layer: Moisture-proof plastic film and desiccant.
- Outer layer: Hardboard or kraft paper protection.
- Strapping: Steel or heavy-duty plastic straps.
- Optional: We can apply anti-scratch PE film to the sheet surface upon request.

8 . Why Choose GNEE as Your Supplier?

- **Flexible Order Acceptance:** We support mixed-size orders in a single batch. You don't need to buy a full coil of one size. This is ideal for project-based procurement.
- **Strict Quality Tracing:** We operate an ISO 9001 certified manufacturing facility.
- **Documentation Ready:** Every order comes with a detailed Mill Test Certificate (MTC) showing the exact chemical makeup and mechanical test results of your batch.
- **Third-Party Friendly:** We welcome SGS, BV, or other third-party inspections before shipment.

9 . FAQ

Q1: Is 5454 better than 5052 for tank truck applications?

Yes, for tank trucks and pressure vessels, 5454 is superior. It offers better high-temperature resistance and higher overall structural strength than 5052, making it much safer for heavy-duty liquid transport. However, for low-cost, general sheet metal work, 5052 is still a good choice.

Q2: What are the most common quality issues I should watch out for from bad suppliers?

When buying 5454 aluminum, the biggest risks are inconsistent thickness (which ruins welding), supplying the wrong temper (causing cracks when you try to bend it), and edge cracking. Always ask your supplier for an MTC and confirm the exact temper before paying a deposit.

Q3: Can I order mixed sizes and tempers in one shipment?

Yes. This is a core advantage of GNEE. If your project requires O temper for tank heads and H32 for the tank body, we can process, pack, and ship them together in the same container to save you logistics costs.

Q4: How can I reduce my purchasing cost?

The best way to save money is to use standard sheet sizes whenever possible to avoid cutting fees. Also, choose the standard Mill Finish unless your end-user specifically demands brushing or coating. Finally, consolidate your sizes into a larger order to lower the unit processing cost.

Q5: What certifications do you provide with the shipment?

Standard documents include the Mill Test Certificate (MTC), a chemical composition report, and a mechanical properties report. We guarantee the material matches the stated specifications.

(1) Ready to discuss your procurement plan?

To get the most accurate price and fastest delivery time, please send us an email with your exact specifications:

- Alloy & Temper (e.g., 5454 H32)
- Dimensions (Thickness × Width × Length)
- Total Quantity (Pieces or Tons)
- Destination Port

Ask our team for a sample Mill Test Certificate (MTC) to review our quality standards.