3003 H22 vs 3003 H24 Aluminum Tread Plate

When purchasing bulk aluminum diamond plates, choosing between the H22 and H24 tempers is the most common dilemma. Both belong to the 3003 aluminum-manganese alloy family and offer excellent corrosion resistance and anti-slip properties, but they perform differently during processing and heavy usage.

Here is the quick rule for your purchasing decision:

- Choose 3003 H22 if your project requires metal forming, bending, or shaping (better formability).
- Choose 3003 H24 if your project demands high load-bearing capacity, impact resistance, and durability (higher strength).

For most general flooring and walkway applications, both tempers are acceptable. However, for specialized commercial applications, understanding their exact differences is crucial for safety and cost control.

1．What is the Difference Between 3003 H22 and 3003 H24 Aluminum Checker Plate?

The core difference between these two products is not what they are made of but how they are processed at the factory. The term "tempered" refers to the hardness and strength of the metal.

Temper Grade	Technical Definition	Key Feature for Buyers
3003 H22	Strain hardened + partially annealed (1/4 Hard)	A great balance of moderate strength and high formability.
3003 H24	Strain hardened + partially annealed (1/2 Hard)	Higher tensile strength, more rigid, but less ductility.

What this means for you:

When you buy wholesale 3003 aluminum tread plate, the temper decides how the metal acts in your workshop. 3003 H24 is physically stronger and harder. It can take more weight before it dents. However, because it is harder, it is more likely to crack if you try to bend it at a sharp 90-degree angle. 3003 H22 is softer ("quarter hard"), meaning it will yield and bend smoothly without breaking, making it easier for processing.

2．Mechanical Properties Comparison of 3003 H22 and H24 Aluminum

Property	3003 H22 Aluminum Tread Plate	3003 H24 Aluminum Tread Plate
Tensile Strength	~130 - 140 MPa	~140 - 180 MPa
Yield Strength	~85 - 95 MPa	~100 - 125 MPa
Elongation	≥ 10%	≥ 6% - 8%
Hardness Level	Lower (More flexible)	Higher (More rigid)
Bending Formability	Better (Good for sharp bends)	Moderate (Requires larger bend radius)

Conclusion from the Data:

The H24 temper has a higher tensile and yield strength. Yield strength is the amount of stress the aluminum can take before it permanently deforms. Because H24 has a higher yield strength (up to 125 MPa), it is much better for industrial floors where heavy equipment rolls over it. On the other hand, the H22 temper has higher elongation (over 10%). Elongation measures how much the metal can stretch before breaking. This makes H22 the winner for complex fabrication jobs.

Not sure which 3003 aluminum tread plate temper fits your factory's processing limits? Contact GNEE today! Tell us your application, and our engineers will recommend the most cost-effective thickness and temper for your project. Email us for a quick wholesale price list.

3．Chemical Composition of 3003 Aluminum

A common mistake buyers make is thinking H22 and H24 have different chemical ingredients. They do not. Both are made from the standard 3003 aluminum alloy, which is widely known as an anti-rust alloy.

Element	Content (%) in 3003 Aluminum Alloy
Aluminum (Al)	≥ 96.8%
Manganese (Mn)	1.0% - 1.5%
Copper (Cu)	0.05% - 0.20%
Iron (Fe)	≤ 0.7%
Silicon (Si)	≤ 0.6%

Key Point:

The primary alloying element is Manganese (Mn). This addition of manganese makes the 3003 series about 20% stronger than the pure 1100 series aluminum while maintaining excellent corrosion

resistance. Whether you buy H22 or H24 3003 aluminum corrugated plate, you get the exact same rust prevention, making both choices perfect for outdoor and wet environments.

4 . Application of 3003 H22 vs H24 Aluminum Diamond Plate

Choosing the right temper depends entirely on what you plan to build. Let's look at common real-world applications for both grades.

Application	Recommended Temper	Reason for Recommendation
General Flooring / Walkways	3003 H22 or H24	Both work well. It depends on whether you value lower processing cost (H22) or higher wear resistance (H24).
Truck Beds & Trailers	3003 H24	Requires high load-bearing capacity to handle heavy goods and pallet jacks without denting.
Cold Storage Rooms	3003 H22	Provides excellent anti-slip properties, handles low temperatures well, and is easy to cut and fit into room corners.
Industrial Stair Treads	3003 H24	Stairs take high foot traffic. H24 is more wear-resistant, keeping the safety pattern intact longer.
Decorative Wall Panels	3003 H22	Often requires bending, pressing, and shaping. H22 is flexible enough for cosmetic architectural work.

High-Frequency Conclusion for Buyers:

If your product is used for **heavy industry, carrying loads, or flat wear surfaces**, buy **3003 H24**.

If your product is used for **decorative purposes, complex fabrication, or tight corner wrapping**, buy **3003 H22**.

5 . Recommended Thickness Guide for 3003 Aluminum Diamond Plate

Besides temper, selecting the correct thickness is vital for safety and cost control. Here is a realistic thickness guide based on standard industry orders.

Application Type	Recommended Thickness	Recommended Temper
Light indoor flooring / Ramps	2.0 mm - 3.0 mm	3003 H22
Heavy industrial flooring	3.0 mm - 4.0 mm	3003 H24
Truck bed floors / Fire trucks	4.0 mm - 6.0 mm	3003 H24
Decorative trailer guards / Trim	1.0 mm - 2.0 mm	3003 H22

The Most Popular Order Combination:

For general commercial use, the most frequently ordered combination from our factory is **3.0 mm + 3003 H24 + 5 Bar Pattern**. This offers the perfect middle ground between high structural strength, excellent anti-slip performance, and reasonable material cost.

6．Cost Difference Between 3003 H22 and 3003 H24

- Material Price: Generally, 3003 H24 is slightly more expensive than H22. This is because H24 requires more precise rolling and work-hardening control during production to achieve that specific higher strength level.
- Processing Cost: H22 can be more economical if your project involves a large area of shaped application. Because it is softer, it wears down your cutting and bending tools much slower, saving you money on factory machinery maintenance.

Purchasing Advice:

If your project does not strictly require high structural strength, choosing 3003 H22 can save you money on both the raw material and the fabrication process. However, if the plate is going into a heavy-load environment like a truck trailer, buying the slightly more expensive 3003 H24 is much cheaper in the long run because it will not need to be replaced as quickly.

7．Differences in manufacturing processes between 3003 H24 and H22 aluminum checkered plates

Both 3003 H22 and H24 aluminum tread plates are produced through a similar basic process: rolling the aluminum slabs and embossing the raised patterns (like 1 bar, 3 bar, or 5 bar) onto the surface. The difference lies entirely in the final thermal treatment (annealing level).

- 3003 H24 Processing: The aluminum is heavily cold-rolled (work hardened) to increase its strength, and then partially annealed at a specific temperature. The "4" indicates it is half-hard.
- 3003 H22 Processing: The aluminum is also work hardened but receives a slightly different partial annealing treatment. The "2" indicates it is quarter-hard, leaving it softer and more workable than H24.

8．Quality Control Standards

When you buy aluminum corrugated plate or tread plate in bulk, you need to ensure the factory has strict quality control. At GNEE, our inspection process before shipping includes:

- Chemical Composition Testing: Ensuring the Manganese content meets ASTM and EN standards.
- Mechanical Property Testing: Checking tensile strength and yield strength to guarantee the plate performs exactly like an H22 or H24 should.
- Thickness Tolerance Inspection: Using precise micrometers to ensure the base thickness matches your order requirements without negative tolerance tricks.
- Surface Defect Inspection: Ensuring there are no oil stains, scratches, or oxidation spots on the plate surface.
- Pattern Uniformity Check: Ensuring the 5-bar or diamond patterns are crisp, high, and provide a genuine anti-slip function.

Packaging & Delivery for Export

Aluminum plates can easily be scratched or damaged by moisture during long sea voyages. We eliminate buyer worries with our standard export packaging system.

(1) Export Packaging Method:

Plates are placed on strong, seaworthy wooden pallets or steel pallets.
Wrapped in waterproof kraft paper and thick PE plastic film to prevent moisture and sea salt corrosion.
Hard edge protectors are applied to prevent the corners from bending during container loading and unloading.

(2) Delivery & Terms:

- Lead Time: 7 to 25 days, depending on factory schedule and order volume.
- Shipping: Global shipping available to main ports in Europe, the Americas, Southeast Asia, and the Middle East. We guarantee the goods arrive with zero scratches, zero deformation, and zero white rust.

9．Why Choose GNEE as Your Aluminum Supplier?

GNEE is a professional and reliable aluminum supplier with over 18 years of direct export experience. Whether you need standard 3003 aluminum tread plate, 5052 marine grade checker plate, or custom 3003 aluminum corrugated plate for roofing, we have you covered.

- Stable Supply: We maintain large factory capacities for 3003, 5052, and 5083 alloys.
- International Standards: All our products strictly comply with ASTM B209 and EN standard specifications.
- Customization: Custom sizes, thicknesses, and specific patterns (1 bar, 3 bar, 5 bar, diamond) are always available.
- Reliable Service: We offer fast delivery times, a strict QC system, and transparent pricing.

10．FAQ

Q1: Which is overall better, 3003 H22 or 3003 H24?

There is no "better" grade, only the right grade for your specific use. It entirely depends on your application. Choose H24 for raw strength and load-bearing. Choose H22 if you need to bend, stamp, or form the metal into specific shapes.

Q2: Is 3003 H24 aluminum tread plate more expensive than H22?

Yes, it is slightly higher in price due to the longer and more controlled processing required to achieve the higher strength. However, the price difference is usually quite small, so you should make your decision based on mechanical needs, not just price.

Q3: Can 3003 H22 be used for truck bed flooring?

Yes, it can be used for light-duty trucks. However, for standard commercial trucks, heavy trailers, or environments where heavy cargo is dropped, we strongly recommend H24 because its higher yield strength prevents the floor from denting.

Q4: Do you offer different patterns for both tempers?

Yes. Both H22 and H24 can be manufactured in 1 bar, 3 bar, 5 bar, compass, and diamond patterns. A 5-bar is the most common pattern for both tempers.