# Aluminum Types (6061, 5052)

FRC teams commonly use two types of aluminum: **6061** and **5052**. They look similar but are used for very different purposes in robot construction.

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## 6061-T6 Aluminum

6061-T6 is the most common **structural aluminum extrusion** used in FRC.

**Properties:**

- High strength and stiffness
- Excellent for machining and tapping
- Holds threads well
- Common in standardized extrusions (like 1x1, 2x1, 2x2 tubing)

**Best uses:**

- Robot frames and drivetrains
- Structural extrusion systems
- Tapped holes for mounting mechanisms
- Load-bearing assemblies

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## 5052 Aluminum

5052 is most commonly used for **custom cut sheet metal plates**, often provided by sponsors or local suppliers.

**Properties:**

- More flexible and bendable than 6061
- Excellent for sheet metal forming
- Not ideal for tapped threads
- Resistant to cracking when bent

**Best uses:**

- Custom gussets and brackets
- Sponsor-cut plates

- Panels, covers, and guards
- Lightweight structural sheet parts

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# 6061 vs 5052 (Quick Comparison)

- **6061-T6 → extrusion, rigid, machinable, structural**
- **5052 → sheet metal, bendable, laser/waterjet cut plates**

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# Key Idea

6061-T6 is primarily used for **extruded structural tubing**, while 5052 is used for **custom sheet metal plates**, often cut by sponsors. Choosing the correct material improves both strength and manufacturability in FRC designs.

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