



# AFFORDABLE ALUMINUM

WHITE PAPER

## 6005A vs. 6061 Aluminum

A Practical Comparison for Extruded Profiles

**INTRODUCTION**

Affordable Aluminum focuses on providing high-quality extrusions using 6005A and 6063 alloys. This white paper explains why 6005A is a strong and cost-effective alternative to 6061 for many applications.

**EXTRUDABILITY AND SURFACE FINISH WITH 6005A AND 6061**

6005A is significantly easier to extrude than 6061, resulting in faster production rates, lower die wear, and improved surface finishes. This reduces manufacturing costs and improves dimensional tolerances, making 6005A highly suitable for complex or tight-tolerance profiles.

In contrast, 6061 requires an immediate water quench after extrusion. This often leads to higher warpage and increased scrap rate, a greater risk of die breakage, schedule risk, and a more complex, costly production process.

**UNDERSTANDING 6005 VS. 6005A**

While 6005 and 6005A are similar aluminum alloys, there are important differences. 6005A contains slightly higher levels of silicon and lower levels of copper compared to 6005, resulting in improved extrudability and slightly better corrosion resistance. Affordable Aluminum exclusively extrudes 6005A to provide better consistency, surface finish, and performance.

PROPERTY	6061 - T6	6005A-T6	UNIT	DIFFERENCE (%)
ULTIMATE TENSILE STRENGTH	45 ksi	38 ksi	ksi	-15.6%
YEILD STRENGTH	40 ksi	35 ksi	ksi	-12.5%
ELONGATION AT BREAK	12%	10 %	%	-16.7%
DENSITY	2.70	2.70	g/cm <sup>3</sup>	0%

While 6061 offers slightly higher strength, the differences are less than 16% and are negligible for most structural applications.

Both 6005A and 6061 are available in the T6 temper. T6 temper means the material has been solution heat-treated and artificially aged to achieve maximum strength.

## CORROSION RESISTANCE

Both 6005A and 6061 provide excellent corrosion resistance for architectural, outdoor, and marine environments. While 6061 performs marginally better in extremely harsh environments, 6005A is fully sufficient for most outdoor and marine applications.

## WELDABILITY

6005A offers good weldability similar to 6061. Although post-weld strength in 6005A is slightly lower, the difference is minimal for most practical applications.

## COST AND AVAILABILITY

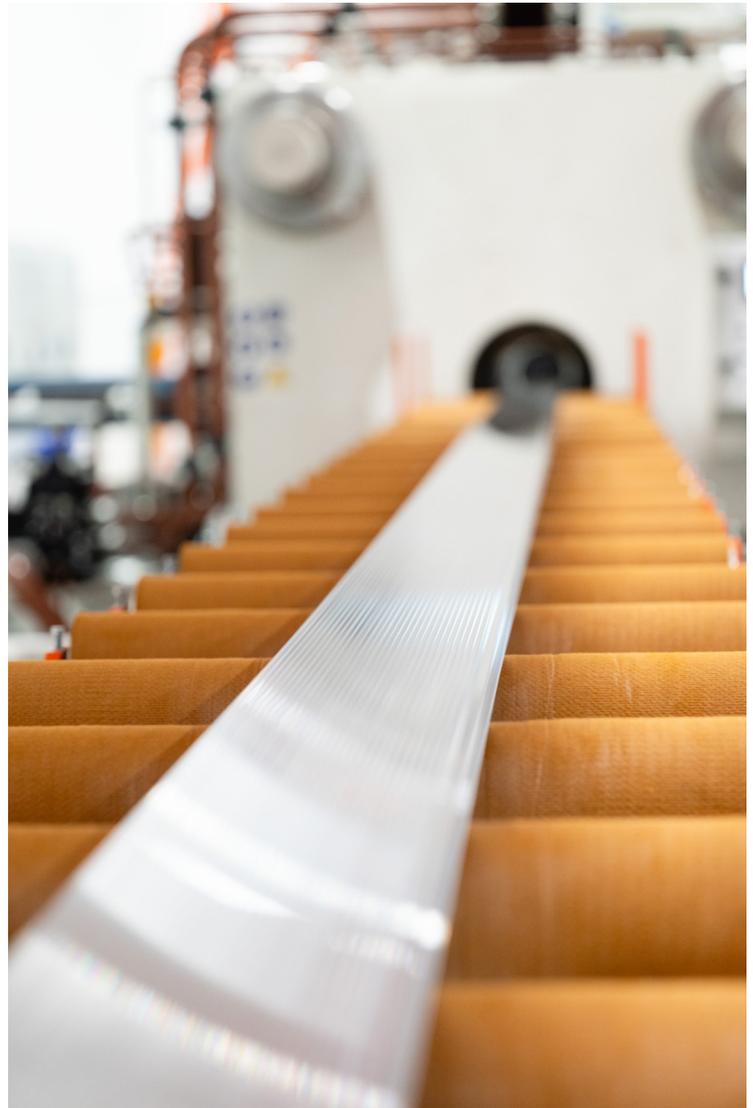
6005A extrudes faster, causes lower die wear, and has reduced scrap rates compared to 6061, resulting in more affordable extrusions and lower project material cost.

## APPLICATIONS

6005A is ideal for structural frames, architectural components, truck and trailer bodies, platforms, stairways, and walkways. Unless extreme mechanical loading is required, 6005A is the preferred choice.

## PROVEN IN REAL-WORLD APPLICATIONS

Affordable Aluminum's parent company, Safespill, invested in an extrusion line to produce extrusions for its aircraft hangar fire protection flooring system, also known as ILDFA. Approximately 95% of Safespill's flooring system consists of aluminum extrusions. During the development of the ILDFA system, Safespill engineers evaluated the potential of using 6005A instead of 6061. Switching to 6005A significantly improved billet availability, reduced lead times, and lowered material costs from both extruders and billet suppliers. Aircraft hangars equipped with Safespill's flooring system have been in operation for over five years, with daily aircraft jacking and heavy floor use. No structural issues or material failures have been observed with the use of 6005A extrusions.



## **CONCLUSION**

For customers seeking cost-efficiency, superior surface finish, and production flexibility without sacrificing performance, 6005A is a highly recommended alternative to 6061. Affordable Aluminum is your reliable partner for premium 6005A extrusions.

## **DISCLAIMER**

Material selection for specific applications requires careful consideration of design, environmental, and performance requirements. It is the responsibility of engineering, architectural, and technical professionals to determine if the use of 6005A is appropriate for their specific project. Affordable Aluminum does not provide design or engineering advice and assumes no liability for damages, losses, or failures arising from the use of its products.

## **SOURCES**

- thyssenkrupp Materials NA: [6005A-T6](#) and [6061-T6](#) Material Data Sheets
- Hydro Extrusion: [6005A Aluminum Alloy Data Sheet](#)
- Aalco Metals Ltd: [6005A-T6](#) and [6061-T6](#) Aluminum Datasheets
- AZoM: Technical Articles on [6005A Aluminum Properties](#) and [6061 Aluminum Properties](#)