European Aluminium
ANYTHING BUT BASIC

# THE STRATEGIC ROLE OF ALUMINIUM IN EUROPE'S AEROSPACE AND DEFENCE SECTORS

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Aluminium is a critical enabler of Europe's aerospace and defence capabilities. Its unique properties (lightweight, high strength, corrosion resistance, conductivity and versatility) make it indispensable in a wide range of aerospace and defence-related applications, from aeroplanes and naval vessels to land vehicles, communications equipment, advanced weaponry and space rockets. Based on the JRC foresight study[1], aluminium has been recognised as **highly significant across 27 applications in the Green, Digital, Defence, and Aerospace areas**[2]. This recognition builds on a growing body of institutional acknowledgement including within the **EU's Critical Raw Materials Act**[3] where aluminium is classified as a **Strategic Raw Material**, and in December 2024, **NATO identified aluminium as one of 12 defence-critical raw materials** essential for producing advanced military systems and equipment (Annex I)[4].

Aluminium has long played a key role in military innovation and operational effectiveness. Its applications in the defence sector include:

- **Aerospace:** Aluminium alloys are the most used aerospace material in the EU[5], being crucial for the production of military aircraft, drones, missiles, and satellites due to its high strength-to-weight ratio and its light weight which improves agility and fuel efficiency.
- **Armoured Vehicles & Naval Ships**: Its resistance to corrosion and ability to absorb energy make aluminium ideal for shipbuilding, amphibious vehicles, and armour solutions
- **Command, Control, and Communications (C3) Systems**: Aluminium is widely used in components of electronic and communication systems vital to operating in modern conflict zones.
- **Energy & Logistics**: Portable aluminium-based power systems and containers contribute to efficient logistics and reduced operational burdens.
- **Space**: Aluminium has major application across various space activities, including structures for space rockets and satellites, rocket engine components and even scientific payloads, such as telescopes.

**Much of this equipment and technologies also have a dual-use for civilian and military applications**, including robotics, drones, launchers, satellites, and additive manufacturing. Aluminium is integral to many of these technologies—particularly for enabling lightweight, robust platforms with high performance characteristics.

The European Commission's recent white Paper for European Defence – Readiness 2030[6] identifies critical capability areas and presents a way forward to reinforce Europe's industrial defence base. **As Europe seeks to re-arm and**

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[1] JRC study, Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU – A foresight study
[2] 1. Batteries, 2. Fuels cells, 3. Electrolysers, 4. Wind turbines, 5. Traction motors, 6. Solar photovoltaics (PV), 7. Heat pumps, 8. Hydrogen, 9. Data transmission networks, 10. Data storage and servers, 11. Smartphones, tablets and laptops, 12. Additive manufacturing, 13. Robotics, 14. Drones, 15. Space launchers and satellites -//- Additional defence applications X4, Additional aerospace applications X8
[3] Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials – link
[4] https://www.nato.int/cps/en/natohq/news_231765.htm
[5] https://publications.jrc.ec.europa.eu/repository/handle/JRC98333
6 White Paper for European Defence – Readiness 2030 – link

**strengthen its resilience amidst evolving geopolitical challenges, securing a sustainable and reliable European aluminium value chain must be recognized as a national and EU security priority**.

Strengthening the European aluminium value chain can in turn strengthen Europe's defence resilience. To do so, **we recommend to**:

- **Support the full European aluminium value chain** through state aid, carbon leakage protection, and energy cost mitigation.
- Swift implementation of the CRMA, including rolling out **dedicated financing mechanisms** for strategic raw materials and **strategic projects** which in turn can boost the European aerospace and defence sectors.
- **Invest in innovation** to develop next-generation aluminium alloys for lightweighting, enhanced protection, and performance.
- **Introduce export fees on aluminium scrap**, to ensure strategic resources remain within the EU for circular use.
- Integrate **specific considerations in public procurement** policies for strategic raw materials, such as aluminium, by introducing non-price criteria such as resilience.

Aluminium is not just a versatile strategic raw material, but also it is of strategic importance for Europe's security and defence. Europe must ensure it has the material foundations to match its ambitions. A resilient aluminium sector is not only vital to our green and digital transitions but is also a pillar of our collective aerospace and defence capabilities.

European Aluminium and its members stand ready to work with aerospace and defence stakeholders to build a more secure, sustainable, and sovereign Europe.

## ANNEX I: Aluminium a critical raw material for NATO

# SUPPLY RISK FOR CRITICAL RAW MATERIALS IN MILITARY APPLICATIONS: AN INDEPENDENT STUDY IDENTIFIES ALUMINIUM AS BEING AT THE HIGHEST RISK

**Aluminium is not only widely used in defence applications but is also the material most likely to suffer from geopolitical and supply chain disruptions. That's why NATO included aluminium in its list of 12 defence critical materials.**

**Graph: Strategic Raw Materials for Defence - Mapping European Industry Needs (The Hague Center for Strategic Studies, January 2023)**