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EUROPEAN SPACE SECTOR FEEDBACK ON COMMISSION CALL FOR EVIDENCE: ADVANCED MATERIALS ACT

Reference: Call for evidence for an impact assessment - Ares(2025)8964326¹

PREFACE

This is the joint contribution of the European Space Industry, represented by ASD-EUROSPACE – with the support of European Space Agency (ESA), national space agencies and the European Defence Agency (EDA) as an observer – to the European Commission call for evidence for an impact assessment concerning the development of an Advanced Materials Act for the EU.

It has been prepared by the participants of the Materials and Processes Technology Board of the European Space Components Coordination (ESCC MPTB).²

This contribution focuses on **space-specific challenges** and summarises **current material needs** of the European Space Sector.

ADVANCED MATERIALS IN SPACE TECHNOLOGIES

The European space sector is a structurally distinct user of advanced materials. It is characterised by low production volumes, extremely high performance and reliability requirements, long qualification cycles, and mission lifetimes spanning decades. Consequently, disruptions in the availability of advanced materials have disproportionate system-level impacts on European space programmes.

Space systems rely on a limited set of globally sourced advanced materials, including **high-performance metallic alloys, fibres and composites, polymers, resins, silicones, energetic materials (pyrotechnics and propellants), and specialty chemicals (such as solvents, paints, coatings)**. Europe represents only a small share of global demand for many of these materials, weakening industrial incentives to maintain or scale up EU-based production capacity. This

¹ Available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14952-Advanced-Materials-Act_en

² A list of MPTB's participating entities participants can be found at the end of this contribution.

creates structural vulnerabilities when supply chains are affected by geopolitical developments, trade restrictions, or regulatory divergence.

Recent developments have exposed these risks. Export controls introduced by third countries, notably China, on strategic materials and precursors increase uncertainty for European users, even when *space* is not the primary target. At the same time, EU import limitations on materials originating from Russia have reduced access to metals and intermediates historically used in space applications, forcing rapid supply diversification under conditions where alternatives are limited and qualification timelines are long. This dependence on non-EU sources undermines strategic autonomy and sovereignty and exposes Europe to geopolitical risk. The act should prioritise re-establishing and securing EU-based material production capacity and European alternatives.

Environmental and emissions constraints further affect European production capacity. Many space-relevant advanced materials—such as titanium sponge, specialty steels, high-modulus fibres, precursor chemicals, and energetic materials—are energy-intensive and associated with significant environmental loads. While sustainability objectives are essential, increasingly stringent environmental requirements can render EU production economically unattractive compared to other regions. This has contributed to closures or relocations of European facilities producing specialty chemicals and materials for high-reliability applications, reducing Europe’s ability to support space programmes with domestically produced materials. Bringing operations back to Europe and managing the value chain with reuse and circular practices will lower supply risks for space materials.

Advanced material developers also face limited industrial appetite for scale-up and little regulatory and financial incentives for production in Europe. Unlike mass-market sectors, space-specific demand does not justify investments in dedicated production lines and qualification campaigns. Once niche production is discontinued, re-establishing capacity is costly, time-consuming, and often incompatible with programme schedules. As a result, space integrators are increasingly compelled to rely on non-European material sources.

A significant subset of space-critical materials relies on chemical substances subject to restriction, authorisation or other regulatory requirements under EU chemicals legislation, including but not limited to the REACH Regulation (EC 1907/2006), which may trigger obsolescence of space materials and processes and the need for substitution. For space systems, substitution is rarely straightforward and typically triggers extensive requalification over multiple years. Even ahead of binding regulatory requirements (example of the “universal PFAS” restriction proposal and on-going evaluation process³), unpredictable regulatory outcomes therefore increase obsolescence risks and discourage investment in European

³ See recently <https://euospace.org/universal-pfas-restriction-process-under-eu-reach-and-european-space-sector-response-updated-summary-in-different-languages-to-inform-interested-stakeholders/>.

production capacity, in contradiction with growing geopolitical constraints such as trade tensions, Chinese export controls, and EU sanctions.

In this context, the **Advanced Materials Act** offers an **opportunity** to address a clear market failure affecting low-volume, high-criticality sectors such as space. To be effective, the Act should recognise the specific characteristics of space materials,⁴ ensure coordination with trade and chemicals regulation, support qualification and testing infrastructure within the EU, and provide targeted instruments to sustain or re-establish European production capacity. It is essential that the Advanced Materials Act explicitly recognises these needs and provide solutions to mitigate supply chain vulnerabilities and sustain European autonomy. Without such tailored measures, regulatory, environmental, and geopolitical pressures risk further erosion of Europe's advanced material base for space applications.

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⁴ A recent example of such recognition can be found in Recital (19) of Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products ("ESPR"): [...] *As space technologies operate in extreme conditions, any ecodesign requirements for space products should balance sustainability considerations with resilience and expected performance.* [...]

LIST OF MPTB PARTICIPANTS

This contribution has been prepared by the MPTB, which includes the following members:

The European Space Industry, represented by ASD-EUROSPACE, and the following corporations:

AIRBUS DEFENCE AND SPACE

ARIANEGROUP

AVIO

BEYOND GRAVITY

MT AEROSPACE

OHB

SENER

TESAT-SPACECOM

THALES ALENIA SPACE

TNO

the European Space Agency (ESA) and the following national space agencies:

Italian Space Agency (ASI)

National Centre for Space Studies (CNES)

German Aerospace Centre (DLR)

UK Space Agency (UK SA)

the European Defence Agency (EDA), Leonardo Company, and INVENT (for AKRK group) as observers;

REACHLaw Ltd. as consultancy.