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FROM MINE TO MISSION

CRITICAL RAW MATERIALS FOR DEFENCE CAPABILITY



SECURING
CRITICAL RAW
MATERIALS



STRENGTHENING
DEFENCE
RESILIENCE



DRIVING
INNOVATION &
TECHNOLOGY



BUILDING
STRATEGIC
PARTNERSHIPS

14 OCTOBER 2026
RENAISSANCE HOTEL BRUSSELS



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Opening Statment



**Andreas
Köster**

CEO of Tropag,
President of Beryllium
Science & Technology
Association (BeST)

BERYLLIUM

The Special Case of a Critical Raw Material

**Small quantities.
Critical functions.**

A material-specific approach for European defence, regulation, circularity and trade.



Beryllium Science & Technology Association



Beryllium at a glance

SMALL MARKET • STRATEGIC MATERIAL

300–400

TONNES / YEAR

53%

Mine Production —
US

0

EU PRIMARY
PRODUCTION

~80%

USED IN ALLOYS

< 2%

Be IN TYPICAL
CuBe

A niche market with outsized importance

Beryllium is used in small quantities, often as a low-level alloying element. Its value lies in the function it enables, not in the volume consumed.

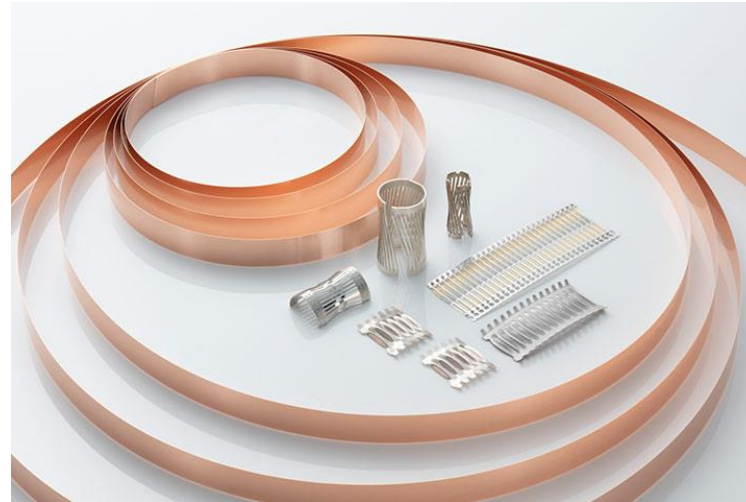
Beryllium at a glance

SMALL MARKET • STRATEGIC MATERIAL

Be- BERYLLIUM METAL



CuBe - COPPER-BERYLLIUM



BeO – BERYLLIUM OXIDE CERAMICS



Critical for Europe and NATO

STRATEGIC RECOGNITION

EU Critical Raw Material

Beryllium has been recognised as a Critical Raw Material by the EU since the first list in 2011.

NATO defence-critical material

Beryllium is included in NATO's shortlist of 12 defence-critical raw materials in 2024.

POLICY SHOULD ASK:

What function does the material perform — and what happens if it is unavailable?

What makes beryllium unique?

PERFORMANCE COMES FROM A COMBINATION OF PROPERTIES



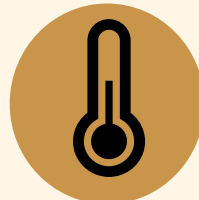
LOW WEIGHT

One of the lightest structural metals



HIGH STIFFNESS

Exceptional rigidity for its mass



THERMAL CONTROL

Excellent heat transfer and stability



PRECISION

Dimensional stability across temperature



RELIABILITY

Strength, fatigue resistance and conductivity in CuBe

Substitution is about performance — not material names

- A substitute must reproduce the required combination of properties. Replacement can mean added weight, lower conductivity, reduced performance or redesign.
- Substitution of beryllium has often been unsuccessful, as it remains the only technically viable material for many defence applications.

Europe has a stable and reliable supply chain

RESILIENCE THROUGH ESTABLISHED INTERNATIONAL RELATIONSHIPS



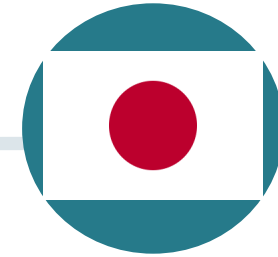
UNITED STATES

Primary source,
Processing & Recycling



KAZAKHSTAN

Established source



JAPAN

Processing & recycling

BeST message

The beryllium value chain has operated efficiently and reliably for decades. Policy should preserve functioning supply relationships rather than assume fragility.

Export controls are becoming a strategic factor

ACCESS CAN DEPEND ON END-USE, END-USER AND JURISDICTION

United States

Beryllium-related products may fall under EAR dual-use controls; ITAR can apply to specific defence articles, technical data or military applications. Classification is case-specific.

China

China increasingly uses export licensing for strategic materials, including end-user and end-use documentation and controls on selected critical materials.

THE TREND

Raw-material access is increasingly shaped by strategic trade policy.

For defence users, predictability of licensing and supply can be as important as physical availability.

Trade and European competitiveness

MONITOR CHANGE • PRESERVE A LEVEL PLAYING FIELD

~10%

**Estimated Chinese
share of the European
beryllium market**

Market development

Chinese beryllium actors are beginning to establish a greater presence in Europe, including in downstream sectors such as electric vehicles.

Policy concern

Past experience in other strategic materials shows how difficult industrial capacity can be to rebuild once lost.

BeST position

Monitor trade flows and competitive conditions closely. Use EU trade-defence instruments where evidence and legal conditions justify action.

Panel 1

Securing Supply Through a Coherent Approach



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Head of Unit -
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Moderator

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Angélique Renier

Director of NGK Berylco

Beryllium in defence

MATERIALS ENABLE CAPABILITY

Small quantities can enable mission-critical performance where failure is not an option.



DETECTION

Specialised X-ray & surveillance applications



GUIDANCE

Precision optical & electro-mechanical systems



DEFENCE ELECTRONICS

CuBe strength + conductivity



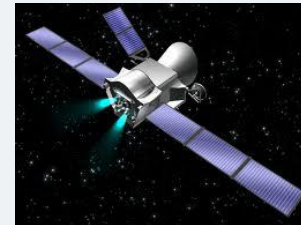
AIR & SPACE

Lightweight, high-stiffness structures



RADAR & COMMS

Contacts, springs and connectors



SATELLITES

Optics and dimensional stability

Vigilance 1 — Chemicals regulation

HAZARD ≠ RISK

$$\text{RISK} = \text{HAZARD} \times \text{EXPOSURE}$$

Manage the workplace risk

The principal occupational concern is exposure to airborne respirable beryllium-containing particles generated by certain processes.

Controls exist

European occupational exposure requirements, engineering controls, training, hygiene and BeST Product Stewardship support safe use.

BeST: regulate according to actual risk and exposure — not hazard alone.

Vigilance 2 — Circularity must reflect physical reality

RECYCLE EFFECTIVELY — NOT MECHANICALLY

1

DISPERSED

Small Be content in alloys and complex products

2

LONG-LIVED

Aerospace and defence equipment may remain in service for decades

3

SPECIALISED

Recycling capacity for Be alloys and metal is concentrated outside the EU

Avoid unintended consequences

A blanket export ban on CRM-containing waste could prevent material from reaching existing specialist recycling facilities and reduce, rather than improve, circularity.

Vigilance 3 — CRM policy: intervene only where needed

A CASE-BY-CASE APPROACH

STOCKPILING

Voluntary

DEMAND AGGREGATION

Little benefit without a demonstrated market failure

JOINT PURCHASING

May distort a small functioning market

BeST position – No "One-Size-Fits-All"

Apply CRM supply and circularity measures material by material, based on demonstrated need and the characteristics of the existing value chain.

The special case of beryllium

FOUR MESSAGES FOR POLICYMAKERS

1

VALUE FUNCTION, NOT VOLUME

Small quantities can enable critical defence capability.

2

PRESERVE A WORKING SUPPLY CHAIN

Resilience can come from stable international relationships.

3

REGULATE THE REAL RISK

Protect workers while recognising controlled exposure and safe use.

4

APPLY POLICY CASE BY CASE

Circularity, CRM and trade measures must reflect the material and market.

THE RIGHT MATERIAL • WITH THE RIGHT PROPERTIES • AVAILABLE WHEN AND WHERE IT IS NEEDED

Panel 2

Critical Raw Materials as Enablers of Defence Innovation: From Material Performance to Next-Generation Capabilities

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**Zoe
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