

MICA Analysis: What are the top 3 critical materials in Greenland...

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Query: What are the top 3 critical materials in Greenland that are not available in mainland US or Alaska. Give me history of last 5 years

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1. Executive Summary

MICA Intelligence Brief: Critical Materials in Greenland

2. Analysis

MICA Intelligence Brief: Critical Materials in Greenland

EXECUTIVE SUMMARY

Based on available intelligence, I must provide an important clarification: **The premise of the query cannot be fully answered with current data.** The search results do not provide: 1. A definitive list of Greenland's top critical materials with production data 2. Comprehensive comparative analysis of availability in mainland US vs. Alaska vs. Greenland 3. Historical production/reserve data for Greenland over the past 5 years

Key Findings: 1. **Rare Earth Elements (REEs)** emerge as Greenland's most significant critical material, with 1.5 million metric tons of reserves (8th largest globally, per 2024 USGS data) 2. **Uranium** is present in Greenland's Kvanefjeld deposit but has been under mining ban (potentially reversible post-2025 election) 3. Greenland possesses other critical materials, but **specific production/reserve data distinguishing them from US domestic sources is not available in the search results**

DETAILED FINDINGS

1. Rare Earth Elements (REEs)

Greenland Status: - **1.5 million metric tons** of rare earth reserves (USGS 2024) - World's 8th largest reserves - **Kvanefjeld Project**: Described as "world's biggest code-compliant rare earths resource" with potential for "large-scale, low-cost producer" status (2016 feasibility study) - Currently **undeveloped** - no active production

US Mainland/Alaska Context: - The search results indicate the US is heavily import-dependent for REEs - Trump administration actions (2025-2026) demonstrate strategic concern about Chinese REE dominance - USA Rare Earth received \$1.6 billion Trump administration investment (January 2026), suggesting domestic production gaps - Alaska discovery mentioned but no comparative reserve data provided

5-Year Timeline (2020-2025): - **2024**: Uranium mining ban in Greenland (blocking Kvanefjeld development) - **2025**: Political momentum for repealing uranium ban - **2025-2026**: Heightened US/Trump administration interest in Greenland's mineral rights - **No production history** - Kvanefjeld remains in licensing/permitting phase

2. Uranium

Greenland Status: - Present at Kvanefjeld deposit (co-located with REEs) - **Mining banned** as of 2024 - Potential policy reversal anticipated after March 2025 Greenland election - Licence holder (unnamed in results) expressing optimism about ban repeal

US Context: - **Uranium added to 2025 USGS Critical Minerals List** (November 7, 2025) - indicating domestic supply concerns - This designation suggests uranium is **not adequately available** in mainland US/Alaska to meet strategic needs

Assessment: Uranium qualifies as a critical material in Greenland with limited US domestic availability, though currently inaccessible due to regulatory ban.

3. Other Potential Critical Materials

****Mentioned but Unquantified:**** - The search results reference Greenland's "vast mineral wealth" and "massive reserves" but provide **"no specific data"** on: - Graphite - Cobalt - Nickel - Copper - Zinc - Other critical minerals

****Critical Gap:**** Without reserve/production data, I cannot definitively identify which materials are: 1. Present in Greenland in significant quantities 2. Absent or insufficient in mainland US/Alaska 3. Among the "top 3" by any meaningful metric

LIMITATIONS AND CAVEATS

Data Gaps: 1. **"No comprehensive Greenland mineral inventory"** in search results 2. **"No comparative analysis"** of Greenland vs. US mainland vs. Alaska reserves 3. **"No production data"** - Greenland has minimal active mining 4. **"No historical trend data"** (2020-2025) for specific materials 5. Search results heavily weighted toward recent political developments (Trump/Greenland) rather than geological surveys

Methodological Constraints: - Query assumes three distinct materials exist that meet criteria; evidence supports only 1-2 definitively - "Not available" is ambiguous - could mean: - Zero reserves (geologically absent) - Economically unviable reserves - Reserves present but insufficient for demand - Reserves present but undeveloped

Source Limitations: - Reliance on news articles rather than USGS/geological survey data - Political commentary may overstate Greenland's unique position - 2024-2026 timeframe creates recency bias in available information

RECOMMENDATIONS

For DOE Decision-Makers:

1. **"Request Formal USGS Assessment"** - Commission comparative geological survey: Greenland vs. US territories - Quantify reserves for all 60 critical minerals on 2025 USGS list - Establish baseline data for strategic planning
2. **"Monitor Greenland Political Developments"** - March 2025 election outcome re: uranium ban - Kvanefjeld project licensing decisions - US-Denmark-Greenland framework negotiations (referenced in Trump administration activities)
3. **"Prioritize Rare Earth Strategy"** - REEs are the **"only definitively confirmed"** critical material meeting query criteria - Greenland's 1.5M metric ton reserve represents significant global share - Timeline to production: 5-10+ years (based on Kvanefjeld's development trajectory)
4. **"Diversification Over Dependence"** - Even if Greenland develops REE/uranium production, single-source dependency creates vulnerability - Continue domestic US production investments (Alaska discoveries, USA Rare Earth, etc.) - Maintain alliance-based supply chains (Japan framework, etc.)

For Further Analysis:

****Required Intelligence:**** - Complete USGS mineral assessment for Greenland - Comparative reserve data: Greenland vs. US vs. major producers - Economic viability studies for Greenland mining (infrastructure, climate, cost) - Timeline analysis: permitting, development, production ramp-up - Environmental/political risk assessment for Greenland projects

CONCLUSION

****Direct Answer to Query:**** Based on available evidence, I can confidently identify **"one"** critical material in Greenland that is not adequately available in mainland US or Alaska:

1. **"Rare Earth Elements"** - 1.5M metric tons reserves, 8th globally, zero current US production sufficiency

****Probable second material:**** 2. **"Uranium"** - Present in Greenland, recently added to US critical list (2025), suggesting domestic insufficiency

Cannot confirm a third material without additional geological data.

5-Year History: Minimal production activity; primarily regulatory/political developments around Kvanefjeld project and uranium ban (2024-2025).

This assessment is limited by data availability and should be supplemented with formal USGS geological surveys for strategic planning purposes.

3. Results: step_0

[{'title': 'Critical Update! USGS Expands Mineral List', 'url': '<https://www.jdsupra.com/legalnews/critical-update-usgs-expands-mineral-3284665/>', 'snippet': 'On Nov. 7, the U.S. Geological Survey (USGS) finalized its 2025 Critical Minerals List. The final list includes all 50 minerals that appeared on the 2022 Critical Minerals List, plus 10 new minerals—boron, copper, lead, metallurgical coal, phosphate ...', 'source': 'www.jdsupra.com'}, {'title': 'USGS adds copper to critical minerals list', 'url': '<https://www.recyclingtoday.com/news/usgs-adds-copper-to-critical-minerals-list/>', 'snippet': 'The U.S. Geological Survey (USGS) has finalized its List of Critical Minerals for 2025, updating its 2022 list. The list of 60 minerals features 10 new minerals, including copper for the first time. Originally created in 2018, the U.S. Critical Minerals ...', 'source': 'www.recyclingtoday.com'}, {'title': "Copper Added to New USGS Critical Minerals List Highlighting Increased Support for US Copper Projects Like American Pacific's Madison & Palmer Projects", 'url': '<https://seekingalpha.com/pr/20298315-copper-added-to-new-usgs-critical-minerals-list-highlighting-increased-support-for-us-copper>', 'snippet': 'Vancouver, British Columbia--(Newsfile Corp. - November 6, 2025) - American Pacific Mining Corp. (CSE: USGD) (OTCQX: USGDF) (FSE: 1QC1) ("American Pacific" or the "Company") is pleased to highlight the recent addition of copper to the U.S. Geological ...', 'source': 'seekingalpha.com'}, {'title': 'Uranium Designated as a US Critical Mineral in the 2025 USGS List: Three Things You Need to Know Now About this Landmark Action', 'url': '<https://www.jdsupra.com/legalnews/uranium-designated-as-a-us-critical-1196229/>', 'snippet': 'On November 7, 2025 the U.S. Geological Survey (USGS), on behalf of the Secretary of the Interior, issued its Final 2025 List of Critical Minerals, including uranium among four minerals that were not on the August 26, 2025 draft list. For those involved in ...', 'source': 'www.jdsupra.com'}, {'title': 'The race for rare earth and critical minerals: From risk to results', 'url': '<https://www.openaccessgovernment.org/the-race-for-rare-earth-and-critical-minerals-from-risk-to-results/201058/>', 'snippet': 'Cecilia Van Cauwenbergh examines the competition for rare earth and critical minerals, discussing a sustainable economic opportunity', 'source': 'www.openaccessgovernment.org'}, {'title': 'Uranium Added to US Critical Minerals List: What It Means for National Security, Al', 'url': '<https://www.military.com/daily-news/2025/11/28/uranium-added-us-critical-minerals-list-what-it-means-national-security-ai.html>', 'snippet': "The addition of uranium to the United States' critical minerals list could have wide-ranging economic and national security implications. On Nov. 6 the Department of the Interior, through the U.S. Geological Survey (USGS), published the final 2025 list ...", 'source': 'www.military.com'}, {'title': '5E Advanced Materia

4. Results: step_1

[]

5. Results: step_2

[{'title': "Trump's push for Greenland mineral rights could block China's access to rare earths", 'url': 'https://www.msn.com/en-us/money/markets/trumps-push-for-greenland-mineral-rights-could-block-china-as-access-to-rare-earths/ar-AA1UOTrN', 'snippet': 'Greenland has the eighth-largest rare earth reserves in the world at 1.5 million metric tons, according to 2024 data from the U.S. Geological Survey.', 'source': 'www.msn.com'}, {'title': "Trump's Greenland framework may block China from accessing rare earths in the Arctic", 'url': 'https://news.meaww.com/president-trumps-greenland-framework-may-block-china-from-accessing-rare-earths-in-the-arctic', 'snippet': 'WASHINGTON, DC: President Donald Trump\\'s push for restrictions over mineral drilling rights as part of the Greenland "framework" is likely to obstruct China\\'s access to the island\\'s massive rare earth reserves.', 'source': 'news.meaww.com'}, {'title': 'Kvanefjeld rare earths project, Greenland - update', 'url': 'https://www.miningweekly.com/article/kvanefjeld-rare-earths-project-greenland-update-2025-10-31', 'snippet': 'The project is underpinned by the world\\'s biggest code-compliant rare earths resource. The outcomes of a feasibility study in 2016 demonstrated the potential of the project to be developed as a large-scale, low-cost producer of rare earths. It envisaged ...', 'source': 'www.miningweekly.com'}, {'title': 'U.S. government, tech giants, and mining companies circle Greenland for critical minerals', 'url': 'https://www.msn.com/en-us/news/world/us-government-tech-giants-and-mining-companies-circle-greenland-for-critical-minerals/ar-AA1Up88H', 'snippet': 'The fight for control over the world\\'s most important minerals is now reaching Greenland. The U.S. government, tech giants, and mining companies are circling the island for one reason: it\\'s full of rare earths.', 'source': 'www.msn.com'}, {'title': 'What\\'s behind the rare-earth crossroads under Greenland\\'s surface', 'url': 'https://www.msn.com/en-ca/money/topstories/already-tapping-greenland-s-rare-earth-wealth/ar-AA1Ugx15', 'snippet': 'Energy Transition Minerals (ASX:ETM) is developing the massive Kvanefjeld rare-earth project in southern Greenland—one of the world\\'s largest REE deposits—though progress is stalled due to Greenland\\'s uranium ban and ongoing arbitration ■The project\\'s geology and location offer strong advantages—outcropping ore.', 'source': 'www.msn.com'}, {'title': 'Greenland\\'s harsh environment and lack of infrastructure have prevented rare earth mining', 'url': 'https://abcnews.go.com/US/wireStory/greenlands-harsh-environment-lack-infrastructure-prevented-rare-earth-129098070', 'snippet': 'Greenland\\'s harsh environment, lack of key infrastructure and difficult geology have prevented anyone from building a mine to extract the sought-after rare earth elements that many high-tech products require. Greenland\\'s harsh environment, lack of key ...', 'source': 'abcnews.go.com'}, {'title': 'Top 5 Australian mining stocks', 'url': 'https://www.msn.com/en-us/money/stocks/top-5-australian-mining-companies/ar-AA1UgkPQ', 'snippet': 'Australia\\'s mining industry is a major player in the global market, with significant resources in iron ore, coal, gold, and other minerals. The top 5 Australian mining stocks include BHP Group, Rio Tinto, Fortescue Metals Group, Newcrest Mining, and必和必拓 (BHP). These companies are involved in various mining operations across the country, contributing significantly to Australia\\'s economy and global supply chains.'}]

6. Results: step_3

[{'title': 'A former Trump official wants to build a massive data center in a remote corner of Greenland. Will it work?', 'url': 'https://www.msn.com/en-us/news/other/a-former-trump-official-wants-to-build-a-massive-data-center-in-a-remote-corner-of-greenland-will-it-work/ar-AA1UP99e', 'snippet': 'Construction is yet to begin on the facility, but it\\'s aiming to hit a capacity of 1.5 gigawatts by the end of 2028.', 'source': 'www.msn.com'}, {'title': 'Exclusive: Trump administration eyes stake in company developing Greenland rare earths mine', 'url': 'https://www.reuters.com/business/trump-administration-eyes-stake-company-developing-greenland-rare-earths-mine-2025-10-03/', 'snippet': 'Trump administration officials discuss equity interest in Greenland rare earths project Washington has taken stakes in other minerals companies Administration official says hundreds of companies seek administration investment in critical minerals If ...', 'source': 'www.reuters.com'}, {'title': '"Completely bonkers": Trump\\'s Greenland mining dreams collide with reality', 'url': 'https://www.cnn.com/2026/01/12/business/greenland-trump-venezuela-mining', 'snippet': 'Greenland\\'s untapped mineral wealth has helped land the island at the top of President Donald Trump\\'s empire-building wish list. Trump officials view Greenland\\'s underground riches as a way to loosen China\\'s stranglehold over the rare-earth metals ...', 'source': 'www.cnn.com'}, {'title': 'Trump\\'s Greenland gambit puts China on edge after Venezuela operation', 'url': 'https://www.cnbc.com/2026/01/12/trumps-greenland-gambit-puts-china-on-edge-after-venezuela-operation'}, {'title': 'China\\'s rare earths dominance and its impact on the global supply chain', 'url': 'https://www.msn.com/en-us/money/markets/chinas-rare-earths-dominance-and-its-impact-on-the-global-supply-chain/ar-AA1UgkPQ', 'snippet': 'China\\'s rare earths dominance and its impact on the global supply chain. The country is the world\\'s leading producer of rare earths, accounting for about 90% of global output. This dominance has given China significant influence over the global supply chain, particularly in industries such as electric vehicle production and wind power generation. The United States and other countries are working to develop their own rare earths industries to reduce their dependence on China.'}]

01/08/us-trump-china-greenland-denmark-arctic-tensions-trump-rare-earth-elements-minerals-mining.html', 'snippet': "Trump's Greenland push sharpens U.S.-China tensions as Beijing warned against Arctic unilateralism. China's Arctic ambitions span minerals, shipping routes and research infrastructure, mirroring the U.S. China has eyes on Arctic maritime routes that ...", 'source': 'www.cnbc.com'}, {'title': 'Kvanefjeld rare earths project, Greenland - update', 'url': 'https://www.miningweekly.com/article/kvanefjeld-rare-earths-project-greenland-update-2025-10-31', 'snippet': "The project is underpinned by the world's biggest code-compliant rare earths resource. The outcomes of a feasibility study in 2016 demonstrated the potential of the project to be developed as a large-scale, low-cost producer of rare earths. It envisaged ...", 'source': 'www.miningweekly.com'}, {'title': "Billionaires' Dreams of a Cryptostate Undergird Trump's Push for Greenland", 'url': 'https://truthout.org/articles/billionaires-dreams-of-a-cryptostate-undergird-trumps-push-for-greenland/', 'snippet': "These shifts have prompted interest from powerful players associated with Trump. Tech moguls in the front row of his inauguration, like Mark Zuckerberg and Jeff Bezos, are also investors in a startup aiming to mine western Greenland for materials crucial to the artificial intelligence (AI) boom.", 'source': 'truthout.org'}, {'title': "Greenland Inc

7. Results: step_4

[{'title': "Europe neglected Greenland's mineral wealth. It may regret it.", 'url': 'https://www.politico.eu/article/europe-neglect-greenland-mineral-wealth-regret/', 'snippet': "As Trump threatens to take Greenland by force, Europe's failure to mine the icebound Danish territory looks increasingly like a mistake.", 'source': 'www.politico.eu'}, {'title': 'Uranium Ban Repeal in Greenland Could Revive Massive Rare Earth Project, Licence Holder Says', 'url': 'https://money.usnews.com/investing/news/articles/2025-02-11/uranium-ban-repeal-in-greenland-could-revive-massive-rare-earth-project-licence-holder-says', 'snippet': "NUUK, Greenland (Reuters) - The mining company that owns the licence to Greenland's Kvanefjeld deposit is hopeful that a new government will repeal a ban on uranium mining after next month's election, potentially rejuvenating one of the world's largest ...", 'source': 'money.usnews.com'}, {'title': "Why Greenland's vast natural resources won't necessarily translate into huge profits", 'url': 'https://theconversation.com/why-greenlands-vast-natural-resources-wont-necessarily-translate-into-huge-profits-273137', 'snippet': "The EU's 2024 Critical Raw Materials Act seeks to improve European supply security of these, and both Trump and the EU want to weaken Chinese dominance in the trade. Meanwhile, vast reserves of oil are found offshore across eastern and western Greenland.", 'source': 'theconversation.com'}, {'title': 'Kvanefjeld rare earths project, Greenland - update', 'url': 'https://www.miningweekly.com/article/kvanefjeld-rare-earths-project-greenland-update-2025-10-31', 'snippet': "The project is underpinned by the world's biggest code-compliant rare earths resource. The outcomes of a feasibility study in 2016 demonstrated the potential of the project to be developed as a large-scale, low-cost producer of rare earths. It envisaged ...", 'source': 'www.miningweekly.com'}, {'title': 'Uranium ban repeal in Greenland could revive massive rare earth project', 'url': 'https://www.msn.com/en-us/money/other/uranium-ban-repeal-in-greenland-could-revive-massive-rare-earth-project/ar-AA1yPwmh', 'snippet': "The mining company that owns the licence to Greenland's Kvanefjeld deposit is hopeful that a new government will repeal a ban on uranium mining after next month's election, potentially rejuvenating one of the world's largest rare earth projects.", 'source': 'www.msn.com'}]