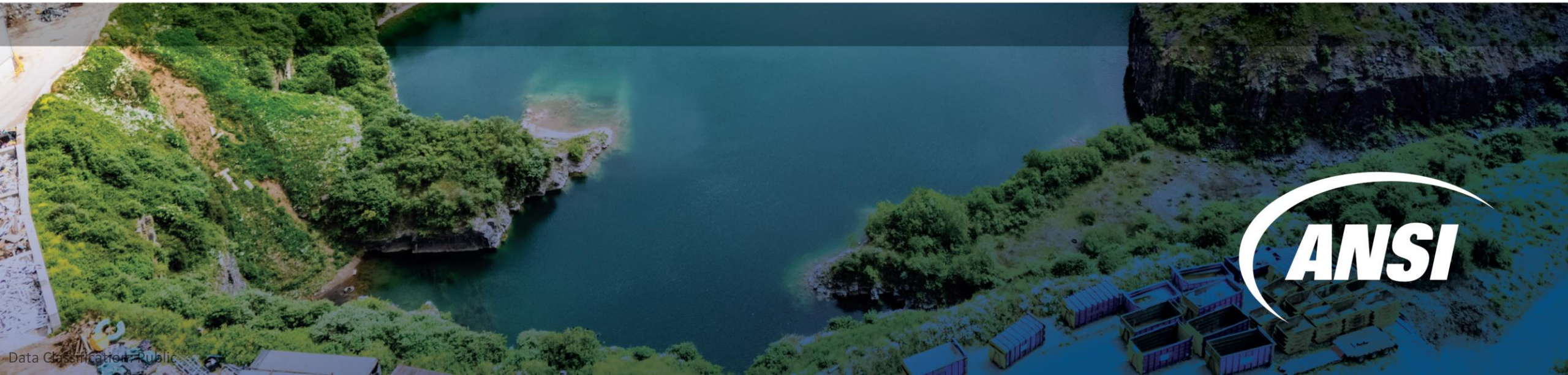




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Magnets & Electromagnetic Materials Deep Dive

Moderated by:
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S Scope | Magnets & Electromagnetic Materials

Technologies Today that rely on permanent magnets and electromagnetic materials for:

- **energy conversion, motion, sensing, and control**, including:
 - *motors*
 - *generators*
 - *actuators*
 - *related equipment*

*Discussion topics may include material and magnet **specifications, performance measurement, testing methods**, and **interoperability** across manufacturing and end-use applications.*

- *What outcomes are stakeholders seeking to achieve in downstream activities, including manufacturing, component production, and end use?*
- *How do downstream requirements depend on upstream inputs and midstream material specifications?*
- *What capabilities are currently in place, and what additional capabilities are needed to support consistent implementation?*
- *What does U.S. leadership in the global market look like, and what are the indicators of success?*
 - *Leadership in standards? Are we there yet?*
 - *Leadership in the market? Are we there yet?*
- *What role do standards play in the desired end-state?*

Reliable domestic and allied magnet supply chains produce qualified magnetic materials with consistent performance specifications, traceability, and market acceptance.

Key Characteristics:

- Standardized magnet qualification
- Trusted material specifications
- Traceability of rare earth inputs
- Consistent performance testing
- Multiple qualified supply sources

- *How do regulatory frameworks, product requirements, trade conditions, and conformity assessment approaches (e.g., testing, inspection, certification) affect downstream applications?*
 - *Do these approaches leverage standards? Which?*
 - *How do these approaches affect (enable or hinder) standards implementation?*
 - *Where do differences across jurisdictions or systems create challenges for implementation or for accepting inputs from upstream and midstream stages?*
- *Where none exist, should they? Why type?*

Feedback Prior to Workshop:

1. DFARS requirements
2. OEM qualification programs
3. Defense sourcing requirements
4. Material testing and certification

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

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Implementation Experience & Barriers | Magnets & Electromagnetic Materials

- *How are standards applied today? Is it effective implementation?*
- *What challenges have stakeholders encountered in integrating materials into manufacturing processes or final products?*
- *What factors (e.g., technical, operational, or commercial) affect the ability to consistently use materials that meet product and performance requirements?*

Feedback Prior to Workshop:

1. Long magnet qualification cycles
2. Limited reference materials
3. Limited testing consistency
4. Single-source dependency risks
5. Variable magnet specifications

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

- *What standards or frameworks currently support downstream activities, including product specifications and performance requirements?*
 - *Organization level feedback is a great start!*
- *Where are gaps, overlaps, or inconsistencies observed, particularly in aligning material inputs with product-level expectations?*

Standards Utilized:

1. IATF 16949
2. ASTM characterization methods
3. ISO quality standards
4. Discussion captured here
5. Discussion captured here

Gaps :

1. Magnet performance benchmarks
2. Rare-earth-free magnet qualification
3. Recycled magnet standards
4. Common test methods
5. Provenance verification
6. Discussion captured here
7. Discussion captured here

- *Where is alignment needed between downstream requirements and upstream/midstream capabilities?*
- *What challenges arise in ensuring that material specifications, data, and performance criteria are compatible across the value chain?*

Feedback Prior to Workshop:

1. Align OEM qualification requirements
2. Standardize performance metrics
3. Harmonize magnet specifications
4. Improve supply-chain data transfer

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

- *What data, definitions, or technical inputs are needed to support downstream applications and their connection to earlier stages of the supply chain?*
- *Are there areas where additional work is needed before standards can be developed or more widely implemented?*

Feedback Prior to Workshop:

1. Magnet reference materials
2. Standard performance datasets
3. Feedstock characterization data
4. Qualification benchmarks
5. Recycled magnet performance data

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here