

# Metallurgy Standards Roundtable conclusions

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1) What are the national or international **standards your institute uses** in the specification of metallic materials for your **own raw materials procurement** or imposed to your **suppliers and contractors**?

Institute	ASTM	EN	ISO	JIS	MIL
Berkeley	X				x
Fermilab	X				
KEK	x			X	
CIEMAT		X			
INFN		X			
CERN	x	X	x		

- Other questions on material properties DBs
  - Is there a (common) data base for material properties?
  - Fermilab uses NIST databases
  - Lack of data on properties after irradiation
  - It would be interesting to shear material properties DBs

2) Are standards sufficient or you put **specific requirements** on top of them? If so, are specific requirements defined **ad hoc** or you have a **pool of technical specifications, best practice manual** or other kind of internal reference?

- For specific applications special requirements are needed (restrictive values of composition –avoid magnetic phases, minimise activation of Co, ... –, properties not considered in the standards –magnetic permeability, ...-)
- But... comments collected:
  - most of the time values of properties in the standards are enough
  - restrictive values can difficult the procurement
  - over-specifying can unreasonably rise the price
- Specific requirements or material tech. spec. are mainly project oriented.
- CERN reports a collection of tech. spec. ready for procurement of frequent strategic materials.

### 3) Could you report on any experience of equipment malfunction or failure linked to material selection or specification?

- Not much explicit cases reported
- Modification of spec. following some cases of leaking components resulting from macro inclusions in one steel bar. The means of production were not left free anymore, a requirement for electroslag remelting was included on the spec.
- When a counterfeit was detected it was tracked and alert given for other users of the same batch.
- Fermilab validates material providers and impose hold and witness points on material production process.
- Suppliers changing material grade without advice
- One supplier asking for more detailed specification of requirements following a previous problematic experience

4) Identify in your institute a **reference person** who owns a deep experience on material specification and procurement or that capitalises the related know how.

- In many institutes there is no specific service or expert, the knowledge is there but scattered.
- Help for solving problems is obtained through informal networks.
- Problem of lost of knowledge when it is not capitalised in a remaining service and/or documented because of retirement of individuals.
  
- Nevertheless some names were proposed as entry reference:
  - CERN: Stefano Sgobba, EN/MME/MM section.
  - CIEMAT: Teresa Martinez, Laura Sánchez
  - KEK: Michinaka Sugano

5) How and to what level do you ensure the **traceability of the raw materials**, used **in-house** or by **contractors**, in the production, update or repair of accelerator components?

- Fermilab and CIEMAT explicitly report high degree of traceability from products to raw materials. Keep files of records and travellers.
- Berkeley, INFN and KEK also have traceability of raw materials in as-needed basis or depending on criticality of the components.
- Comments on the subject:
  - Cases of old, but nevertheless usable, spare components that cannot be traced to the material certificate.
  - Traceability should be decided in advance.
  - It would be good to define to what level materials should be certified and traceable according to the criticality of the component.

Thank you for your collaboration !

