



Technical Guideline

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B-MT

Incoming Goods Inspection of Cryogenic Modules and Components

Status

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1. Scope

- 1) This document defines special requirements and processes for the incoming goods inspection of cryogenic modules and components of cryogenic modules like
 - cryo-magnetic modules
 - cryogenic supply systems
 - cryogenic transport systems
 - cryogenic current lead boxes
 - auxiliary cryogenic systems
 within FAIR accelerators.
- 2) This document must NOT be considered as a replacement for [1] and [2].
- 3) This document is NOT related to any other purpose as aforementioned.

2. Definitions

- 1) *Cryogenic modules* in terms of this document are assembly like cryogenic equipment being fit for installation on site of operation.
- 2) *Cryogenic components* in terms of this document are any components of cryogenic equipment, foreseen for being assembled to a cryogenic module.

3. Codes and Standards

- 1) The general requirements on packaging for shipment of components and equipment to the FAIR site are defined in [1].

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- 2) The general quality standards for FAIR logistic processes are defined by [2].
- 3) Detailed requirements on packaging of cryogenic components and equipment are defined by [3].

4. Basic Requirements

4.1. Surrounding conditions

- 1) The incoming goods inspection must be performed in a well illuminated, low dust and dry surrounding.

4.2. Required Equipment

- 1) Adequate handling and lifting tools; as defined by [1]; for unloading freight must be available on site of unloading.
- 2) The following tools must be available on site of inspection:
 - adequate tooling as defined by [1] for opening any transportation box or outer packaging,
 - torch light with sufficient illuminance,
 - measuring tape (metric system),
 - marker pen for marking damages,
 - digital camera for photographic documentations.

4.3. Required Documentation

- 1) All documentation as defined by [1] to [3] must be available.
- 2) A list of documentation required, must be prepared in due time and available on site at the date of delivery.
- 3) An adequate protocol form fulfilling the requirements of [2] with an appendix, fulfilling the requirements of chapter 6 must be prepared in due time and being available on site at the date of inspection.

4.4. Required Qualifications

- 1) For checking of logistics issues apart from the special requirements of packaging as defined by [3], only personnel trained for such issues is allowed to perform the logistics related incoming goods inspection and any transportation process.
- 2) For checking special requirements of packaging as defined by [3] only personnel trained for such issue is allowed to perform the incoming goods inspection dedicated to such packaging issues.

5. Inspection procedure

- 1) All results of the inspection procedure must be documented in detail within a dedicated protocol as defined by 4.3.

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5.1. Documentation Check

- 1) All documentation as defined and listed (see 4.3) must be checked for completeness. In case the documentation is incomplete, the incoming goods inspection must be declared as failed. In case, the further procedure as defined by [1] and [2] must be adhered.

5.2. Situation at the Loading Platform

- 1) This check must be performed by trained personnel in terms of 4.4.1) only.
- 2) The situation on the loading platform must be inspected closely. Any situation appearing as irregular shall be documented by a photographic picture.

5.3. Labelling Check

- 1) This check must be performed by trained personnel in terms of 4.4.1) and 2).
- 2) All labelling as defined by [1] must be checked for completeness.
- 3) In case of labelling is incomplete, unreadable or damaged, the inspection must be declared as failed. Incomplete, Unreadable and damaged labelling must be documented and if possible also by a photographic picture.
- 4) In case any indicator like Shock-watch[®], Tilt-Watch[®] etc. was activated the inspection must be declared as failed. Activated labelling must be documented by a photographic picture.
- 5) In case of indicators activated, special attention must be spend on the further processes.

5.4. Outer Damages and Contaminations

- 1) This check must be performed by trained personnel in terms of 4.4.1) and 2).
- 2) The outer packing of the shipment must be checked for
 - loosen closure elements
 - damages
 - contaminationIn case of irregular appearance of the outer packing, the situation must be documented in detail also with photographic pictures. I possible a length reference (e.g. measuring tape) shall be applied in the pictures. The irregularities must be marked after documentation.
- 3) In case of irregular appearance, special attention must be spend on the further processes.

5.5. Unloading Process

- 1) The unloading of modules and components must be performed by commissioned and authorised personnel only.
- 2) The personnel performing the unloading process must be aware of the special requirements on handling and unloading of cryogenic modules and components as documented within the unloading- and handling documentation.



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- 3) After unloading, all Shock-Watch[®] - Indicators must be cross checked anew. In case of Indicators being activated during the unloading and handling process, the situation must be documented within the protocol.
- 4) For the unpacking of the shipment, the freight must be transported to a well illuminated, clean and dry surrounding. Special requirements on transportation as defined in the documentation (see chapter 4.3) must be adhered.

5.6. Unpacking

- 1) This process must be performed by trained personnel in terms of 4.4.2).
- 2) The personnel performing the unpacking process must be aware of the special requirements on handling of cryogenic modules and components as documented within the handling documentation.
- 3) After transportation, all Shock-Watch[®] - Indicators must be cross checked anew. In case of Indicators being activated during the transportation and handling process, the situation must be documented within the protocol.
- 4) The unpacking of the outer packaging must be performed with special care. In case special requirements on processes are documented within the handling documentation, those must be adhered.
- 5) The outer packaging, except the base of the outer packing (e.g. pallet, special support girder), must be removed carefully, following the relevant process description (if existing).

5.7. Checking for Outer Contamination, Visible Damages and Correct Closure and Fixation

- 1) All fixations to supports as defined by [3] must be checked for correct fixation or visible damages.
- 2) All openings and flanges must be checked for being closed correctly with adequate blank flanges or special caps as defined by [3].
- 3) All electrical connectors must be checked for adequate closures as defined by [3].
- 4) All required labelling, as defined by [3], must be checked for existence.
- 5) In case of incorrect or damaged fixation (see [3]) the inspection must be declared as failed.
- 6) In case of contamination, damages or missing labelling, the inspection must be declared as failed.
- 7) Irregularities must be documented and also by photographic pictures. Any irregularity must be marked if possible.

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6. Documentation

- 1) All described checks must be documented in a testing form fulfilling the requirements as defined below.

6.1. Inspection Protocol Requirements

- 1) The Inspection protocol must show a comprehensible structure and content documenting each single check executed.
- 2) The following information shall be at least documented within the cover sheet:
 - Test identification,
 - Address of Company or Institute,
 - Identification of Department,
 - Names of inspecting personnel,
 - Name of inspection leader,
 - Date and time,
 - Identification of inspected shipment,
 - Serial number of inspected module or component,
 - Inspection result,
 - Number of pages (including photo prints).
- 3) All processes, described in the chapter 5 must be documented at least with
 - registered non-conformities,
 - photos of non-conformities (if applicable),
 - single ratings,
 - full inspection rating.
- 4) All defined procedures must be signed by the executing personnel.
- 5) A conclusion page must indicate the all over inspection result clearly. In case the full inspection failed a brief explanation must be stated.
- 6) The protocol must be crosschecked and signed by personnel, responsible for the shipment quality of cryogenic modules and components.
- 7) The original inspection protocol must be handed out to the contracting entity.
- 8) A digital version must be stored in EDMS following the relevant guidelines for EDMS access and usage. The EDMS storage shall be agreed with the contracting entity.



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7. References

- [1] Technical Guideline No. 9.XYe: Transport, F-TG-T-01e Transport 20101101; 2010
- [2] Quality Standards for FAIR Logistic Processes
- [3] Technical Guideline No. 9.11e: Packaging of Cryogenic Modules and Components; F-TG-K-9.11e__Packaging_Cryogenic_Modules_Components_20101221; 2010