


<p>THE LINDE GROUP</p> 	<p>Insulation - Perlite Filling of Coldboxes</p> <p>Tasks of Preparatory Work and Release Protocol</p>	<p>LINDE STANDARD</p> <p>LS 151-60</p> <p>Form 01</p>
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Project No.:		Code:	
Coldbox No.:		Order No.:	

1 Tasks of Preparatory Work

All of the following listed tasks, but not limited to, shall have been completed and the completion confirmed by PURCHASER in writing prior to start of PERLITE filling:

- ☐ All non-destructive tests, pressure tests and leak tests shall have been successfully completed and recorded.
- ☐ All upper parts of the supporting clamps for side wall installed cryogenic valves (LS 493-15 Part 1, Figure 1, Pos.2) shall have been removed and openings of valve partition boxes have been closed with Aluminium-tape prior to stuffing the bulkheads with mineral wool.
- ☐ All bellows at the Coldbox shall have been sealed.
- ☐ All bulkheads of flanged items, cryogenic fittings, flow measuring devices, etc. shall have been installed, insulated and sealed.
- ☐ All purge gas pipe outlets inside the Coldbox shall have been lagged with glass fibre textile and the purging system shall have been successfully tested and ready for feeding dry and oil free purge gas.
- ☐ The internal Coldbox space, including lateral and diagonal profiles, shall have been completely cleaned and dried by blowing out with dry and oil-free air to remove any residual moisture.
- ☐ In case a separate insulation of PFHE with mineral fibre is required, this insulation work shall have been finished prior to the start of PERLITE filling.
- ☐ Flanged connections inside PERLITE insulation (generally only used for very small Coldboxes or for pump-/turbine ducts) shall be wrapped with mineral fibre and/or glass fibre cloth to protect them from direct contact with PERLITE.
- ☐ All internal scaffolding shall have been completely removed from Coldbox.
- ☐ All necessary safety devices (meshes, nets, barriers, grating covers, etc.) shall have been prepared and fitted to the filling openings, manhole covers and the exhaust openings relief devices on the roof. 8 mbar and 15 mbar relief devices shall have been locked except for filling or venting.
- ☐ During filling all PERLITE-exposed Coldbox relief devices, except relief devices at the highest roof, shall be locked in "transport" or "filling" position with the provided bolting connection.
- ☐ The bottom of the temperature junction boxes shall have been filled with sand covered by a thin concrete layer to ensure gas-tightness.
- ☐ All manhole covers shall have been fitted with their specified seals and have been closed as far as required acc. to Detail Filling Procedure.
- ☐ For ASU-Coldboxes:
All purge gas vent devices, so called gel pots, shall have been prepared for filling.
- ☐ For Non-ASU-Coldboxes:
All pressure retention devices (over- and under-pressure check valves S5 and H4 acc. to LS 489-06) shall have been correctly installed (correct colour coding for spring) and checked for right operation. Glass fibre PERLITE protection shall have been installed.
- ☐ All Coldbox relief devices shall have been checked for tightness (complete and glued in rubber gasket) and for correct function.

- ☐ Connection ducts, pump ducts, turbine ducts, bulkheads, etc. belonging to the Coldbox, which are not be filled with PERLITE together with the Coldbox, shall be closed and sealed.
- ☐ If the Coldbox is connected directly to a concrete foundation, all required beams of the Coldbox shall have been sealed with grouted and sealed to the atmosphere.
- ☐ In case of skirt supported vessels inside the Coldbox, the inside of the skirts shall have been insulated separately up to maximum possible level.
- ☐ Plugs/valves of PFHE dummy passages shall have been removed.
- ☐ The inside of the Coldbox shall be free of water.
- ☐ The connection ducts and/or partition walls shall have been checked for PERLITE tightness.
- ☐ Coldbox shell passages for flexible valves acc. to LS 493-15 Part 2 shall have been filled with PERLITE.
- ☐ All hollow sections of equipment or pipe supports shall have been stuffed with mineral wool or filled with PERLITE.
- ☐ All transport supports of equipment or pipes, generally clearly marked with (red) colour, shall have been de-installed and removed as far as possible.
- ☐ Visual tightness checks of Coldbox shell and components which can be potentially un-tight, such as relief devices, manholes, bellows and welded wall plates, shall have been successfully performed.

2 Release Protocol

Statement of Conformity:

All applicable tasks of preparatory work acc. to Para.1 have been successfully executed, ticked and signed by PURCHASER.

The Coldbox is released for the start of PERLITE filling.

Name/Department of PURCHASER representative: (in capital letters)	
Place:	
Date:	
Signature:	