


|   |  |                  |   |
|---|--|------------------|---|
| <br><b>LINDE AG</b><br>Process Engineering and<br>Contracting Division | Specification for the Insulation of<br>Oxygen-Bearing Plant Components<br><br><b>Insulation Type OC and OK</b> |                  | LINDE STANDARD<br><br><b>151-07</b><br>Part 6 |
| Orig.: CAM/Fürb.;Tro.   | Checked: CAM/Kögl.   | Appr.: TAN/Hent. | Total 5 Pages                                 |

LS-Class: BM

Descriptors: Oxygen, Specification, Insulation, Type OC and OK

### Contents

|          |  |          |
|----------|--|----------|
| <b>1</b> | <b>Scope .....</b>                                 | <b>1</b> |
| <b>2</b> | <b>Purpose.....</b>                                | <b>1</b> |
| <b>3</b> | <b>Definitons .....</b>                            | <b>1</b> |
| <b>4</b> | <b>Reference Codes and Standards .....</b>         | <b>1</b> |
| <b>5</b> | <b>Identification of the Insulation Types.....</b> | <b>1</b> |
| <b>6</b> | <b>Materials.....</b>                              | <b>2</b> |
| <b>7</b> | <b>Performance of the Insulation Work.....</b>     | <b>2</b> |
| <b>8</b> | <b>Drawings and Sketches.....</b>                  | <b>3</b> |

## 1 Scope

1.1 This standard shall apply to the condensation prevention insulation and combined condensation prevention and thermal insulation (hot service) of oxygen-bearing plant components with an oxygen content of  $\geq 70\%$  and an operating temperature of  $\geq -10\text{ °C}$  to  $100\text{ °C}$ .

## 2 Purpose

2.1 In supplement to Part 1, this part of the standard describes the design criteria for the application of a functionally effective condensation prevention insulation or condensation prevention insulation with a simultaneous function as thermal insulation (hot service) using foamglass mouldings. The method described here represents an alternative to the insulation using mineral fibre mats as per Linde Standard 151-07 Part 4.

## 3 Definitions

3.1 See Linde Standard 151-07 Part 1, Section 3

## 4 Reference Codes and Standards

4.1 LS 151-07 Part 1, Specification for the Insulation of Oxygen-Bearing Plant Components.

4.2 AGI Arbeitsblatt Q 137, Foamglass as an Insulating Material for Industrial Plants.

## 5 Identification of the Insulation Types

5.1 In the technical documents, the insulation systems are identified with insulation type and insulation thickness in mm.

The insulation types covered by this part of the standard are defined as follows:

**Table 1: Insulation Types**

| Insulation type | Description of the insulation   |
|-----------------|---|
| OC              | Condensation prevention insulation  |
| OK              | Condensation prevention insulation with simultaneous function as thermal insulation (hot service) |

## 6 Materials

### 6.1 Delivery, Storage and Documentation

See Linde Standard 151-07 Part 1, Section 6.1

### 6.2 Supporting and Bearing Structures

See Linde Standard 151-07 Part 1, Section 6.2.2

### 6.3 Insulating Layer

See Linde Standard 151-07 Part 1, Section 6.3.3.

### 6.4 Jacketing

See Linde Standard 151-07 Part 1, Section 6.4

### 6.5 Accessory Materials

Linde Standard 151-07 Part 1, Section 6.5 applies analogously.

## 7 Performance of the Insulation Work

### 7.1 General

See Linde Standard 151-07 Part 1, Section 7.1

### 7.2. Supporting and Bearing Structures

#### 7.2.1 Insulating Layer

Not applicable

#### 7.2.2 Jacketing

See Linde Standard 151-07 Part 1, Section 7.2.2.

### 7.3 Insulating Layer

7.3.1 See Linde Standard 151-07 Part 1, Section 7.3.3. In addition, the following shall be observed:

- A vapour barrier of aluminium foil shall be installed on the foamglass mouldings. The longitudinal and circumferential joints shall be overlapped by at least 50 mm and sealed with self-adhesive aluminium foil. In the area of the flange connections, the vapour barrier shall be attached to the foamglass with a sealing tape.
- The design of the insulating layer on piping and flanged plant components are shown in Figures 1 to 3. The design of the insulating layer on equipment is performed by analogy with Linde Standard 151-07 Part 1, Sections 8.1.1 to 8.1.3.

### 7.4 Jacketing

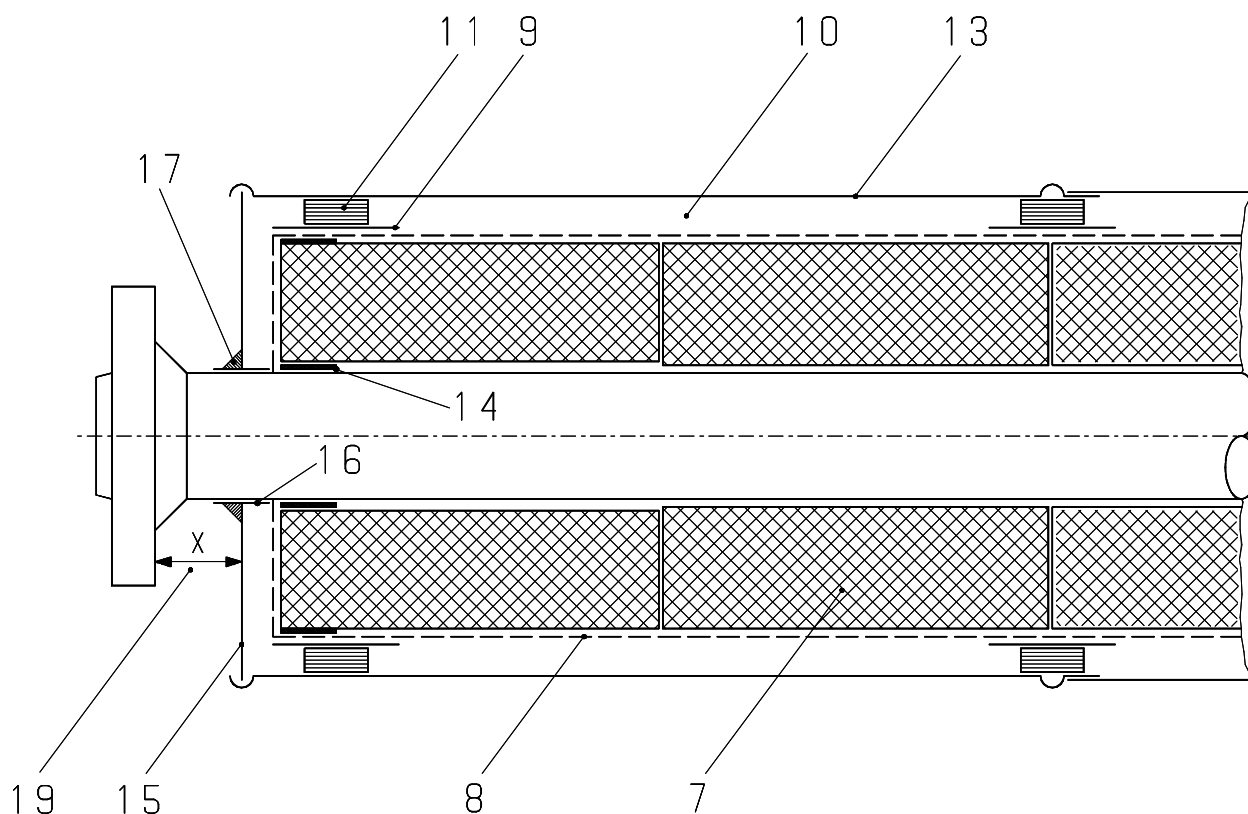
7.4.1 Linde Standard 151-07 Part 1, Section 7.4 applies analogously. In addition, the following shall be observed:

- Insulation end sections in the vicinity of insulated flange connections will not have a jacketing.
- The jacketing is installed at a distance of 20 mm from the insulating layer. The supporting structure for the jacketing is made in accordance with Section 7.2.2. In order to ensure ventilation of the jacketing, 2 holes, 15 mm diameter, shall be provided per metre on the underside of the jacketing. The provision of the ventilation openings is limited here to horizontal sections of plant components. The ventilation openings shall be drilled before installation of the jacketing.
- The design of the jacketing on piping and flanged plant components are shown in Figures 1 to 3. The design of the jacketing on equipment is performed by analogy with Linde Standard 151-07 Part 1, Sections 8.1.1 to 8.1.3.

## 8 Drawings and Sketches

### 8.1 Piping

#### 8.1.1 Insulation of Horizontal Piping

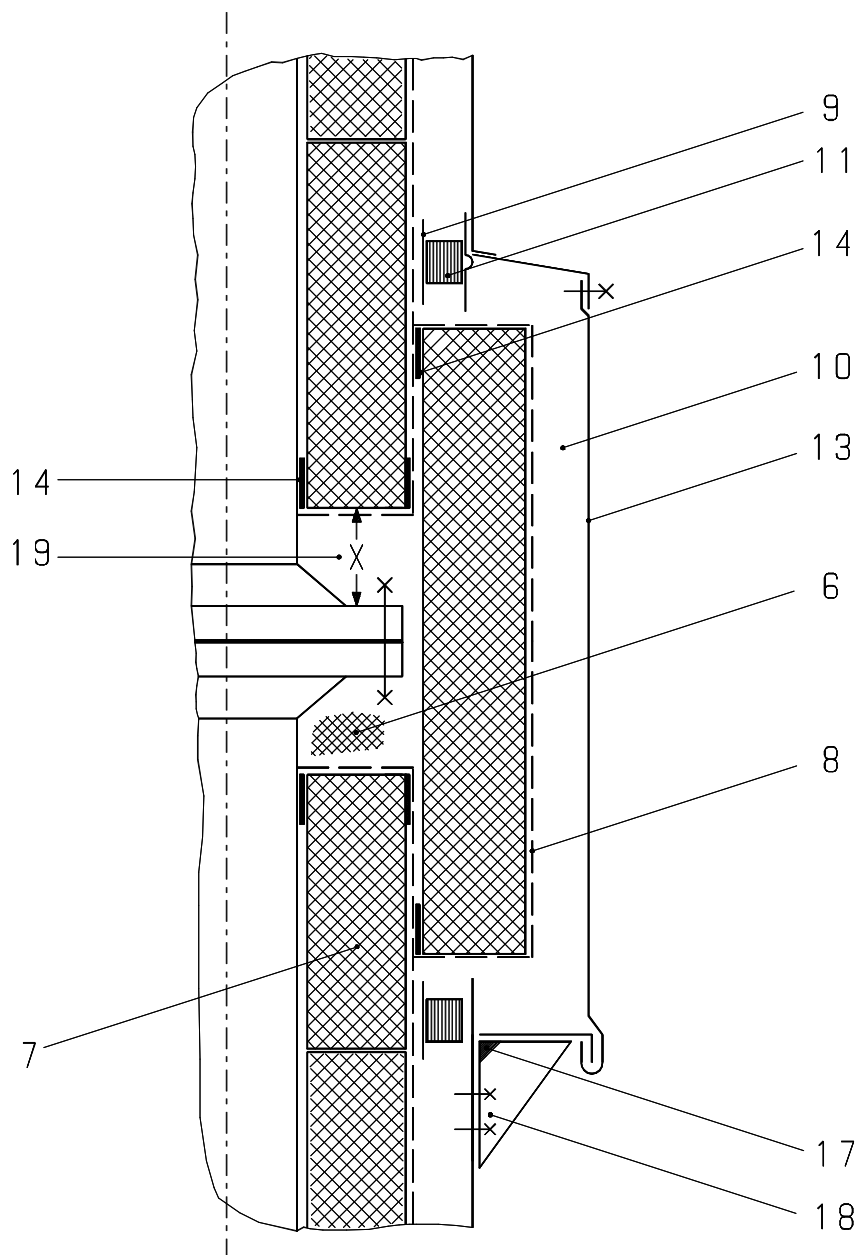


**Figure 1**

- 7 Foamglass mouldings
- 8 Vapour barrier
- 9 Protective sheet metal strips
- 10 Air gap
- 11 Corrugated profile strip
- 13 Jacketing
- 14 Sealing tape
- 15 Insulation end section
- 16 Glassfibre tape
- 17 Gun-grade sealing compound
- 19  $x = \text{Bolt length} + 20 \text{ mm}$

## 8.2 Flanged Plant Components

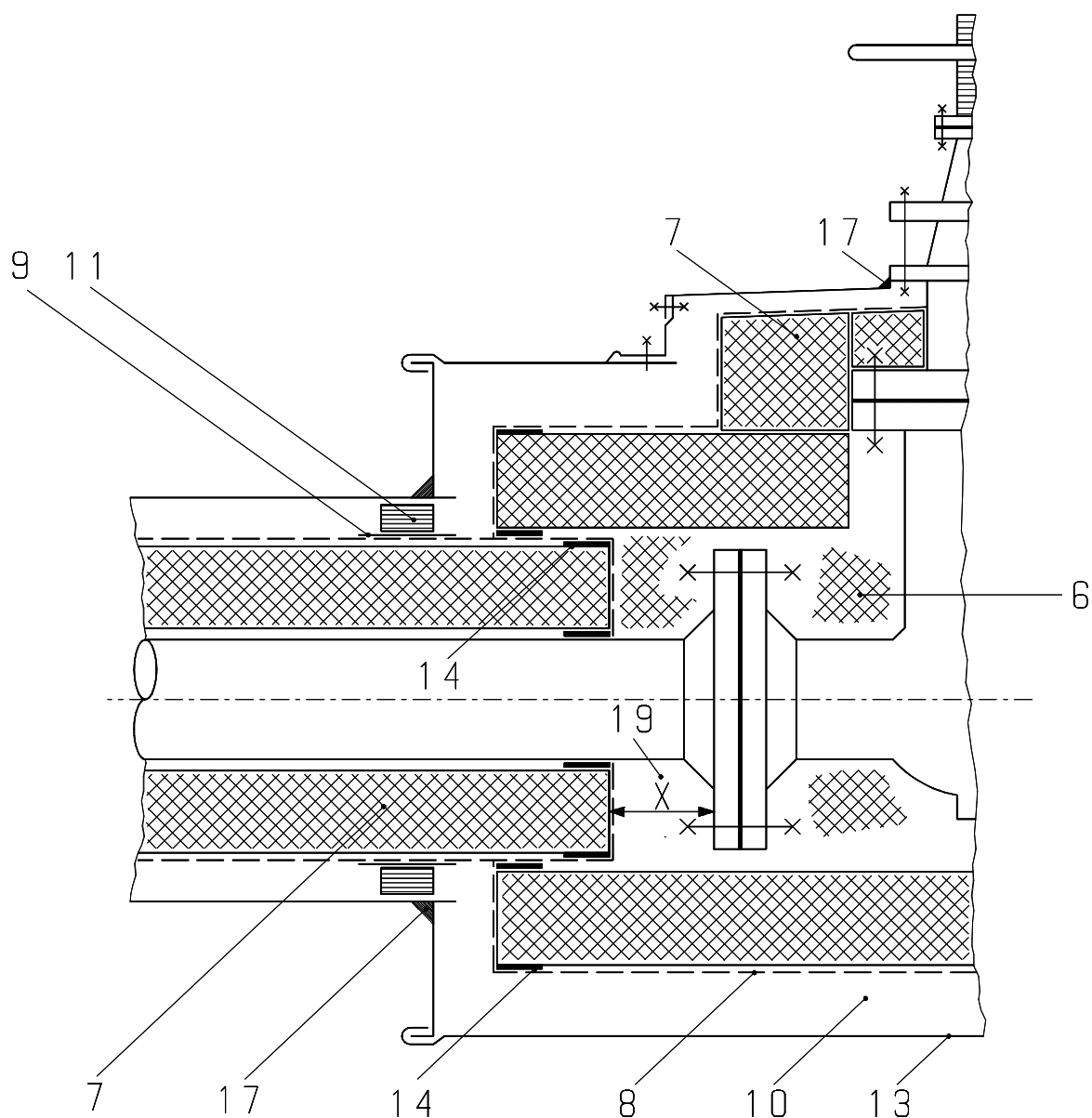
### 8.2.1 Insulation of Flanges



**Figure 2**

- 6 Loose ceramic fibre wool
- 7 Foamglass mouldings
- 8 Vapour barrier
- 9 Protective sheet metal strips
- 10 Air gap
- 11 Corrugated profile strip
- 13 Jacketing
- 14 Sealing tape
- 17 Gun-grade sealing compound
- 18 Cap support
- 19  $x = \text{Bolt length} + 20 \text{ mm}$

## 8.2.2 Insulation of Valves



**Figure 3**

- 6 Loose ceramic fibre wool
- 7 Foamglass mouldings
- 8 Vapour barrier
- 9 Protective sheet metal strips
- 10 Air gap
- 11 Corrugated profile strip
- 13 Jacketing
- 14 Sealing tape
- 17 Gun-grade sealing compound
- 19  $x = \text{Bolt length} + 20 \text{ mm}$

Revision: -

Previous Issues: -

Copyright reserved.