K-FLEX® K-FONIK Industrial

Sound & Thermal Insulation
design compliant with ISO 15665
INTRODUCTION
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What is ISO 15665?
How does a multilayer acoustic configuration work?

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NB: For installation of the K-FLEX® K-FONIK INDUSTRIAL system please refer to the K-FLEX® INSTALLATION GUIDE and to the K-FLEX® IN CLAD INSTALLATION MANUAL together with the specific instructions given in this manual.
INTRODUCTION ▶ STANDARD FOR INDUSTRY ISO15665

What is ISO 15665?
ISO 15665:2003 defines the acoustic performance of three classes (A, B and C) of pipe insulation. It is applicable to the acoustic insulation of cylindrical steel pipes and to their piping components. It is valid for pipes up to 1 m in diameter and a minimum wall thickness of 4.2 mm for diameters below 300 mm, and 6.3 mm for diameters from 300 mm and above.
ISO 15665:2003 covers both design and installation aspects of acoustic insulation and provides guidance to assist noise control engineers in determining the required class and extent of insulation needed for a particular application. It gives typical examples of construction methods, but the examples are for information only and not meant to be prescriptive.

How does a multilayer acoustic configuration work?
In a correct sound insulation design for industrial application, the configuration must comprise three different mechanisms: sound barrier, decoupling and absorption/dissipation. This is the reason why we need a multilayer configuration, with different materials for specific purposes.


Elastomeric insulation for all applications, both civil and industrial. Designed for the insulation of large surfaces. K-FLEX® ST is ideal for the insulation of large diameter ducts and pipes.

This green elastomeric insulation material is formulated and produced without using halogens. Thanks to its composition, any fumes given off during a fire are transparent and non-toxic to anyone in the vicinity. Approval and certification of product values are part of the company’s strategy aimed at optimizing and continuously improving basic requirements. This policy was rigorously applied to the manufacturing of K-FLEX® ECO, making it an extremely interesting, effective and safe insulation product.

K-FLEX® ST
Elastomeric insulation for all applications, both civil and industrial. Designed for the insulation of large surfaces. K-FLEX® ST is ideal for the insulation of large diameter ducts and pipes.

K-FLEX® SOLAR HT
Elastomeric Insulation EPDM based, the rational and convenient solution for industrial.

K-FLEX® ECO
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DOCUMENTATION → PDF
FEF (pipes, elbows, “T” Fittings, Valves, Flanges) should always be installed according to the K-FLEX® Application Manual. More information at www.kflex.com
INSULATING PIPING WITH K-FLEX® SHEETS

FIRST LAYER

Wrap a strip of K-FLEX® of the same thickness as that to be used around the pipe to be insulated and measure the exact length required.

Wrap the insulation sheet around the pipe and press the glued edges together starting at the ends, then the center and then working along the rest of the length.

Glue the insulating sheeting to the subsequent sections along the length of the pipe.

OTHER LAYERS

Measure the overall diameter with the first sheet in place.

Wrap the insulation sheet around the tubing, ensuring that the seam does not overlap that of the underlying insulation.

Adjacent sections of insulation should be glued at their respective ends.

When installing the second layer, make sure that the seams do not overlap those underneath (see diagram). This ensures that, when the plant is operational, maximum insulating properties are maintained as the materials expand or contract.

NB:

- Recommended glue: K-FLEX® K-414 or K-FLEX® K-420, over 100°C use K-FLEX® K-425 HT for high temperature
- No Overlap
- Adjacent sections of insulation should be glued at their respective ends.
- Thoroughly degrease the surface to be insulated with the producer's specified thinners
FLEXIBLE ELASTOMERIC FOAM LAYER
ELBOWS AND “T” PIECES

SPECIAL PARTS
For all layers of insulation, the FITTINGS (VALVES, FLANGES etc) must be sized, shaped and assembled, glued together, as indicated in the installation manual.

DOCUMENTATION ➤ PDF
FEF (pipes, elbows, “T” Fittings, Valves, Flanges) should always be installed according to the K-FLEX® Application Manual more information at www.kflex.com
INSTALLATION

When installing K-FLEX® K-FONIK OPEN CELL 240 please use the same process as for FEF closed cell sheets. The instructions in the K-FLEX® INSTALLATION MANUAL should therefore be referred to for each stage of the installation, including sizing, cutting and gluing of both the straight sections and any special items such as elbows, fittings, valves, flanges, etc.

NB:

> Recommended glue: K-FLEX® K-414 or K-FLEX® K-420, over 100°C use K-FLEX® K-425 HT for high temperature

> No Overlap

> Adjacent sections of insulation should be glued at their respective ends.

DOCUMENTATION PDF

K-FLEX® OPEN CELL 240 (pipes, elbows, “T” Fittings, Valves, Flanges) should always be installed according to the K-FLEX® Application Manual more information at www.kflex.com
K-FLEX® K-FONIK GK OR GV (MASS BARRIER)

**K-FLEX® K-FONIK GK**

K-FLEX® K-FONIK GK is a viscoelastic acoustic insulation product made with partially reticulated polymers. Its special sound insulation characteristics make this an excellent product for traditional applications in the construction sector, eg. acoustic insulation of brick walls and plasterboards and for O.E.M. application.

**K-FLEX® K-FONIK GV** is a viscoelastic acoustic insulation product made with partially reticulated polymers and fire-proof mineral fillers. Its special sound insulation characteristics make this product an excellent solution for the shipbuilding and railway sectors.

**NB:**
To install the acoustic material where required, please use the correct procedure as follows:

- The acoustic barrier shall be secured tightly around the whole of the insulated equipment using stainless steel bands, 20 mm wide x 0.50 mm thick secured with a suitable buckle type fixing. Each one metre length of installation requires a minimum of 3 steel bands.
- All fabricated items shall, where applicable, have a minimum 50 mm overlap on all seams and joints. Before securing the stainless steel bands, it is important to apply K-FLEX® K-420 or K-FLEX® K-414 adhesive with a brush onto both surfaces of the overlap area.

**HIGH-DENSITY ELASTOMERIC ACOUSTIC INSULATING PANEL,**
AVAILABLE PRE-CUT TO SIZE FOR OEM AND INDUSTRIAL APPLICATIONS.
Example of multilayer installation: configuration for purely illustrative purpose

## INSTALLATION

### 1. Preparation of IN CLAD Jacketing
- From a roll of K-FLEX® IN CLAD, cut a sheet with the same width as the circumference of the insulated tube, adding an excess of roughly 50 mm for the longitudinal overlap.

### 2. Installation
- Apply a layer of K-FLEX® K-420 glue along the section of the tube to be covered with K-FLEX® IN CLAD.
- Position the K-FLEX® IN CLAD on the area where the glue has been applied and from that point wrap the K-FLEX® IN CLAD sheet around the whole section.
- Securely press down the K-FLEX® IN CLAD covering along the whole circumference, in order to obtain a tightly fitting cover.
- With a brush, apply K-FLEX® K-420 adhesive on both ends in order to obtain a perfect seal against water between the covering and the insulation material. NB: Take care to stagger the edges of the insulation and the edges of K-FLEX® IN CLAD to avoid continuity with the underlying. Each sheet of K-FLEX® IN CLAD should be positioned in such a way as to overlap the next sheet by at least 50 mm. Use K-FLEX® K-420 on both the longitudinal and transverse overlaps.

### 3. Applying marine sealant
- Apply a 10 mm width and 4 mm thick layer of marine sealant K-FLEX® sealant on both sides of all the joints. edge.

K-FLEX® IN CLAD Jacketing should always be installed according to the K-FLEX® IN CLAD Application Manual or K-FLEX® IN CLAD Jacketing Application Manual more information at www.kflex.com
1. Where there are space restrictions and it is not possible to fully insulate pipe supports and steel installations to the correct specified thickness, the insulation layer must be trimmed closely around the steel support leaving no gaps.

2. All cut-away areas must be sealed with the appropriate K-FLEX® adhesive and K-FLEX® Sealant to protect them from the environment and maintain maximum insulation.

3. All steel work connected directly to the main installation must be insulated to the same thickness and combination of insulation materials so as to avoid acoustic bridging and maintain optimum performance.
K-FLEX® K-FONIK INDUSTRIAL ▶ “A2”

Test Result Class A2

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<tr>
<th>Weight:</th>
<th>Octave band centre frequency, Hz</th>
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<td>5 Kg/m²</td>
<td>125 250 500 1000 2000 4000 8000</td>
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1 Layer K-FLEX® SOLAR HT, 1 Layer K-FLEX® IN CLAD

K-FLEX® K-FONIK INDUSTRIAL ▶ “B2”

Test Result Class B2

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<tr>
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1 Layer K-FLEX® SOLAR HT, 1 Layer K-FLEX® K-FONIK 240, 1 Layer K-FLEX® IN CLAD

K-FLEX® K-FONIK INDUSTRIAL ▶ “C2”

Test Result Class C2

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<td>25 Kg/m²</td>
<td>125 250 500 1000 2000 4000 8000</td>
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1 Layer K-FLEX® SOLAR HT, 1 Layer K-FLEX® K-FONIK 240, 2 Layers K-FLEX® K-FONIK GK, 1 Layer K-FLEX® IN CLAD
K-FLEX® K-FONIK INDUSTRIAL

K-FLEX® ACOUSTICAL CONFIGURATIONS FOR ISO 15665 CLASSES

K-FLEX® K-FONIK INDUSTRIAL ™ “C2”

Test Result Class C2
nom. pipe-Ø: ≥ 300mm to < 650 mm

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<th>2000</th>
<th>4000</th>
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<td>27 Kg/m²</td>
<td>-0.5</td>
<td>4.5</td>
<td>16</td>
<td>24</td>
<td>38.5</td>
<td>51.5</td>
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K-FLEX® K-FONIK INDUSTRIAL ™ “D2”

Test Result Class D2 - SHELL
nom. pipe-Ø: ≥ 300mm to < 650 mm

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<td>29 Kg/m²</td>
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<td>8.5</td>
<td>24.5</td>
<td>38.5</td>
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<td>55</td>
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<td>28 Kg/m²</td>
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<td>20.5</td>
<td>37</td>
<td>52</td>
<td>55.5</td>
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<td>30 Kg/m²</td>
<td>-1</td>
<td>8.5</td>
<td>20</td>
<td>36</td>
<td>51</td>
<td>56</td>
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PROJECTS
K-FONIK OPEN CELL

K-FLEX® K-FONIK INDUSTRIAL
Example of multilayer installation: configuration for purely illustrative purpose
HEALTH, SAFETY AND MATERIAL STORAGE

GLOVES
GOGGLES
HELMET

GENERAL RECOMMENDATIONS

> Always use Personal Protection Equipment
> Follow manufacturer’s recommended guidelines
> Please observe all the installation site safety recommendations

All technical documentation in electronic format can be found at the L’ISOLANTE K-FLEX® website in our online data-base* at: www.kflex.com, by clicking on the voice “Download area” in the menu.

*It is necessary to register on the “Download area” page to receive your password. This will allow you to enter into our on-line database.