# Thermal conductivity according to DIN EN ISO 8497

Test report No: G.2-041a/06

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|---|---|
| **Applicant:** | **L'ISOLANTE K-FLEX S.r.L., Roncello (Mi)/Italien** |
| **Material:** | **K-Flex EC** |
| Labeling: (as given by producer) | 22/13 |
| Material identification: (as given) | Insulation tube of closed cell foam on basis of flexible elastomeric foam, colour: black<br>Designation code according to AGI-Working document Q 143-1: 36.12.01.06.04 |
| Nominal dimensions: | Internal diameter: 22 mm — Insulation thickness: 13 mm — Length: 2000 mm |
| Nominal density: | ----- kg/m³ |
| Sampling: | The samples were taken on 15th March 2006 at the plant Roncello/Italy by employee of FIW. |
| Test equipment: | Test pipe with calculated end caps according to DIN EN ISO 8497 Diameter 24 mm, horizontal, Length 2000 mm |
| Preparation: | Experimental data according to DIN 52275 part 2:<br>Internal diameter: 23 mm — Insulation thickness: 11 mm — Length: 1965 mm<br>Density: 52.8 kg/m³ |
| Installation according to DIN 4140 | Internal diameter: 24.2 mm — Insulation thickness: 11 mm — Length: 2280 mm<br>Density: *) 51.2 kg/m³ — Mass: 0.141 kg |
| Remarks: | The insulation tube was built on the test pipe in state of delivery. |

**Experimental data:**

| Test | Heat flow rate | Temperature of the Warm Side | Temperature of the Cold Side | Average temperature of the specimen | Temperature-difference of the specimen | Thermal conductivity |
|---|---|---|---|---|---|---|
| No | W | °C | °C | °C | K | W/(m·K) |
| 1 | 12.1 | -19.8 | -39.8 | -29.8 | 20.0 | 0.0296 |
| 2 | 12.0 | 10.5 | -7.5 | 1.5 | 18.0 | 0.0334 |
| 3 | 12.2 | 41.2 | 23.6 | 32.4 | 17.6 | 0.0363 |
| 4 | 12.1 | 62.4 | 45.6 | 54.0 | 16.8 | 0.0381 |
| 5 | 11.9 | 80.8 | 65.4 | 73.1 | 15.4 | 0.0393 |
| Uncertainty: < 3% | | Thermal conductivity is calculated for temperature differences on the specimen. | | | | |

Properties of the material after conductivity-measurement up to 80.8 °C warm side: (Values at end of the test)

Density: *) 51.2 kg/m³ — Mass: 0.141 kg — Change in mass: 0.0 %

Remarks: -------

*) The given values of the density refer to the insulation of the specimens installed on the test pipe without facings.

**Results:**

| Mean temperature °C | -20 | 0 | 20 | 40 | 50 | 70 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Thermal conductivity W/(m·K) | 0.031 | 0.033 | 0.035 | 0.037 | 0.038 | 0.039 | ---- | ---- | ---- |

These thermal conductivity values refer to the material in a dry state installed as pipe insulation and are related to the mean temperature of the specimen. ($\lambda_{Lab,R}$ as specified in the guidelines VDI-2055)

**Final remarks:** The thermal conductivity values are conform to the nominal values of the technical data sheet "03 EC" and to requirements of the limitation curve 1, specified by the AGI insulation material designation code for flexible elastomeric foam.

Gräfelfing, 07.07.06

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