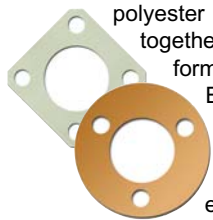




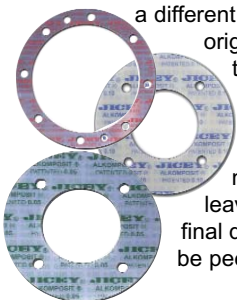
PEELABLE SHIMS ALKOMPOSIT

ALKOMPOSIT LAMINATED PEELABLE SHIMS

Alkomposit laminated peelable shims are shims for adjustment made from a composite material. They consist of a stack of basic polyester (Mylar) or polyimide (Kapton) leaves, joined together by gluing over the whole surface, thereby forming a laminated set of compact appearance. Each basic leaf constituting the stack can be peeled off extremely easily, in complete safety and by hand, until the exact thickness desired is obtained. The shim is therefore perfectly and easily adjusted to compensate accurately for the play in a mechanical assembly. They can satisfy all types of new applications where it is important to introduce concepts of insulation and lightness over a wide range of temperatures (see properties overleaf). Alkomposit shims can be used advantageously to replace machined or ground solid metal shims.



Alkomposit Viewtek laminated peelable shims are dual composition adjustment shims (that is, consisting of basic leaves of a different thickness on each side) using an exclusive, original and patented marking process. They therefore offer a convenience in use that is unequalled to this day. Owing to the marking written in full over the whole surface, you can see immediately, and with no risk of error, the thickness of the basic leaves you are removing to obtain the desired final dimension. These are the first shims that can be peeled off with the fingers and by eye.



ADVANTAGES:

- Low density (50% of that of aluminium)
- Fineness of basic thickness: from 0.025 to 0.1mm
- Cleaving without tools, by hand
- Safety in use (almost zero risk of cuts)
- Excellent resistance to chemical agents
- Immediate identification of basic thickness by the exclusive, patented Viewtek process (marking + colour code: 0.025mm, 0.05mm and 0.10mm)
- Can be used for damping or as an anti-vibration filter
- Resistance to a wide range of temperatures: from - 70°C to + 220°C (Mylar) and up to + 400°C (Kapton)
- Avoids problems of contact corrosion
- Facilitates bending and adaptation to curved surfaces
- Peeled leaves can be reused
- Dual functionality (shimming + sealing) under certain conditions

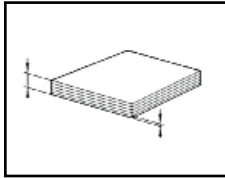


SHAPES AVAILABLE

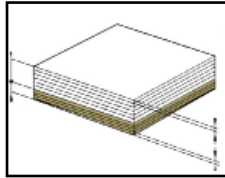
Alkomposit peelable shims can be produced in any geometrical shape, by cutting out or machining, to your dimensions and specifications. If the dimensions are large, it is possible to produce shims in several parts, mechanically connected or otherwise. Peelable U shims are also available in standard dimensions.

THICKNESS COMPOSITION

Alkomposit peelable shims may consist solely of basic leaves of the same thickness (single composition) or of leaves of different thickness on each side (dual composition).



Single-composition



Dual-composition

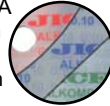
(An example of dual composition is a shim of total thickness 1 mm made up from 8 leaves of 0.1 mm and 4 leaves of 0.05 mm)

DUAL COMPOSITION AND THE VIEWTEK PROCESS

With dual composition, the thickness is obtained commencing by peeling off the thickest basic leaves, then the fine adjustment is obtained by peeling off the thinnest basic leaves. This process is extremely economical since, firstly, it reduces the assembly time and, secondly, it reduces purchasing costs by use of the maximum number of thick basic leaves.



To optimise the use of dual composition peelable shims, Jicey has developed the Viewtek process. This exclusive and patented process relies on marking the thickness of the basic leaves, written in full, on the central part of the shim. Therefore, because Mylar leaves are transparent, you can see and identify the thickness of the individual leaves you are removing at any time. A colour code makes identification of the various thicknesses (0.025, 0.05 and 0.1mm) even easier.



CHOICE OF MATERIAL

Alkomposit peelable shims are available in polyester (Alkomposit Mylar) or polyimide (Alkomposit Kapton). Alkomposit Viewtek dual composition peelable shims are available only in polyester (Alkomposit Mylar). Alkomposit shims have physical, chemical and electrical properties (opposite) that are extremely advantageous for all applications in which there are essential requirements for electrical insulation, excellent resistance to chemical agents, high resistance to temperature, low density (50% of that of aluminium) and also good safety in use. In addition, the use of Alkomposit shims prevents problems of contact corrosion.



Mylar



Mylar Viewtek



Kapton

ELECTRICAL PROPERTIES (ALKOMPOSIT MYLAR)

| Property | Characteristic Value | Unit | Test Method |
|--|----------------------|-------|---------------|
| Dielectric strength alternating current 25°C, 50Hz, 50mm electrode | 6400 | Volt | ASTM D149-64 |
| Dielectric constant 25°C, 1KHz | 3.2 | | ASTM D150-81 |
| Loss factor 25°C, 1KHz | 0.005 | | ASTM D150-65 |
| Volumetric resistivity 25°C | 10 ¹⁸ | Ω cm | ASTM D257-78 |
| Surface resistivity 25°C, 30% relative humidity | 10 ¹⁶ | Ω cm | ASTM D257-78 |
| Corona resistance 1,000 volts | 5 | hours | ASTM D2275-80 |

PHYSICAL PROPERTIES (ALKOMPOSIT MYLAR)

| Property | Characteristic value | Unit | Test Method |
|--|---------------------------|-------------------|---------------|
| Tensile strength at 25°C - machine direction - | 200 | MPa | ASTM D882-80 |
| Density at 25°C | 1.395 | g/cm ³ | ASTM D1505-66 |
| (Kinetic) friction coefficient at 25°C | 0.33 | | ASTM D1003-61 |
| Refractive index (AB 8E at 25°C) | 1.64 | nD25 | ASTM D542-50 |
| Hygroscopic expansion coefficient | 1.0 x 10 ⁻⁶ | mm/mm % RH | |
| Melting point | 253-255 | °C | ASTM D3418-82 |
| Shrinkage, 150°C, 30mm machine direction cross direction | 1.5 1.2 | % % | ASTM D1204-78 |
| Linear thermal expansion coefficient | 1.7 x 10 ⁻⁶ | cm/cm/°C | ASTM D696-44 |
| Specific heat, 25°C | 1.32 | J/g/°C | |
| Thermal conductivity | 0.15 | W/mK | |
| Flammability | Slowly self-extinguishing | | |

CHEMICAL PROPERTIES (ALKOMPOSIT MYLAR)

| Property | Characteristic Value | Unit | Test Method |
|---|----------------------|---|-------------------|
| Humidity absorption (immersion 24h at 23°C) | Less than 0.8 | % | ASTM D570-63 |
| Permeability Gas Carbon dioxide at 25°C | 6 | cc / (m ²) (24h) (atm) / (mm) | ASTM D1434-72 |
| Hydrogen at 25°C | 39 | cc / (m ²) (24h) (atm) / (mm) | ASTM D1434-72 |
| Nitrogen at 25°C | 0.4 | cc / (m ²) (24h) (atm) / (mm) | ASTM D1434-72 |
| Oxygen at 25°C | 2,3 | cc / (m ²) (24h) (atm) / (mm) | ASTM D1434-72 |
| Acetone vapours at 40°C | 0.87 | g / (m ²) (24h) / (mm) | ASTM E96-80 (Mod) |
| Benzene at 25°C | 0.14 | g / (m ²) (24h) / (mm) | ASTM E96-80 (Mod) |
| Carbon tetrachloride at 40°C | 0.03 | g / (m ²) (24h) / (mm) | ASTM E96-80 (Mod) |
| Ethyl acetate at 40°C | 0.03 | g / (m ²) (24h) / (mm) | ASTM E96-80 (Mod) |
| Hexane at 40°C | 0.05 | g / (m ²) (24h) / (mm) | ASTM E96-80 (Mod) |
| Water at 37.8°C | 0.70 | g / (m ²) (24h) / (mm) | ASTM D96-80 |

| Property | Tensile strength Percentage retained | Elongation Percentage retained | Tear strength Percentage retained |
|---|--------------------------------------|--------------------------------|-----------------------------------|
| Chemical resistance to: | | | |
| Glacial acetic acid | 100 | 100 | 100 |
| Hydrochloric acid (10%) | 100 | 100 | 100 |
| Soda (2%) | 100 | 100 | 70 |
| Ammonium hydroxide (10%) | 0 | 0 | 0 |
| Trichloroethylene | 100 | 100 | 100 |
| Hydrocarbon oil (500h immersion at 100°C) | 92 | 88 | 87 |
| Ethanol | 100 | 100 | 100 |

The above numerical values are typical results obtained for a good quality polyester film. However, in the interests of quality improvement, Jicey reserves the right to change any of the characteristics and specifications contained herein at any time, without prior notice.

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JICEY
PRECISION SHIMS