

## KUBE PIR Transmissive Window Films

**For front-windows, lens covers and protective hoods of PIR motion detectors, thermal imaging cameras and non-contact thermometers**

### Features:

- High transmission in the 7 to 14µm central passive infrared (PIR) band
- Excellent visible light absorption available for low false alarm rate / VdS conformity
- Replaces expensive IR windows such as Irtran
- RoHS and TSCA conform
- Suitable for vacuum forming of 3D parts
- Materials exhibit no substantial loss of specification over 10 years



All KUBE PIR transmissive window films are manufactured in Switzerland.

### Opaque (natural colour of the material)

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|---------|
|                |           |                 |              | Stray             | Coll |    |     |    |         |
| 0.05           | 2076      | 500             | 88           | 92                | 73   | N  | N   | Y  | SS      |
| 0.10           | 2077      | 500             | 83           | 87                | 61   | Y  | N   | N  | SS      |
| 0.14           | 2057      | 1050            | 81           | 92                | 50   | Y  | Y   | N  |         |
| 0.22           | 2058a     | 500             | 75           | 84                | 43   | Y  | Y   | Y  | SS      |
| 0.30           | 2059      | 500             | 65           | 77                | 28   | Y  | Y   | Y  |         |
| 0.50           | 2140      | 500             | 62           | 68                | 11   | Y  | N   | N  | SS      |
| 1.00           | 2062      | *               | 41           | 62                | 20   | YY | N   | N  |         |

\* Sheets with dimension 1m x 2m

### White

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks                             |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|-------------------------------------|
|                |           |                 |              | Stray             | Coll |    |     |    |                                     |
| 0.09           | 2023a     | 760             | 81           | 30                | 0.8  | N  | Y   | Y  |                                     |
| 0.11           | 2023      | 500 / 35        | 68           | 57                | 4.5  | YY | N   | Y  | SS                                  |
| 0.11           | 2023d     | 500             | 60           | 46                | 1.9  | YY | N   | Y  | Not available, customer reservation |
| 0.11           | 2023e     | 500             | 74           | 62                | 7.4  | YY | N   | Y  |                                     |
| 0.13           | 2023b     | 760             | 68           | 54                | 2.8  | YY | Y   | N  | Not available, customer reservation |
| 0.22           | 2018      | 500             | 56           | 45                | 1.6  | YY | Y   | Y  | SS                                  |
| 0.22           | 2018c     | 500 / 55        | 55           | 43                | 1.5  | Y  | Y   | Y  |                                     |
| 0.22           | 2018d     | 500 / 55        | 59           | 43                | 1.5  | Y  | Y   | Y  |                                     |
| 0.27           | 2025      | 370             | 43           | 35                | 1.1  | YY | Y   | Y  | suitable for vacuum forming         |
| 0.33           | 2120      | 500             | 55           | 48                | 2.1  | Y  | N   | N  | suitable for vacuum forming         |
| 0.33           | 2120a     | 500             | 52           | 51                | 2.2  | Y  | N   | N  |                                     |
| 0.33           | 2027a     | 500             | 51           | 44                | 1.8  | YY | Y   | Y  | suitable for vacuum forming         |
| 0.50           | 2130      | 500             | 44           | 41                | 1.4  | YY | N   | N  | SS                                  |

## Super – White

Very high IR transmission due to micro-air-bubble technology instead of pigments

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks                    |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|----------------------------|
|                |           |                 |              | Stray             | Coll |    |     |    |                            |
| 0.10           | 2111      | 760             | 85           | 28                | 0.9  | Y  | N   | Y  |                            |
| 0.22           | 2110      | 550             | 73           | 22                | 0.6  | Y  | N   | Y2 | SS                         |
| 0.22           | 2110a     | 670/130/35      | 73           | 32                | 1.2  | Y  | N   | Y2 | SS textured                |
| 0.27           | 2114      | 760             | 49           | 11                | 0.2  | Y  | Y   | Y2 | paper-like texture & color |

## Beige / Ivory

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|---------|
|                |           |                 |              | Stray             | Coll |    |     |    |         |
| 0.09           | 2032      | 500             | 68           | 41                | 1.7  | YY | Y   | Y  |         |
| 0.11           | 2036      | 500             | 64           | 37                | 1.5  | YY | Y   | Y  | SS      |
| 0.11           | 2037      | 500             | 65           | 46                | 2.0  | YY | Y   | Y  | ivory   |
| 0.14           | 2034      | 500             | 65           | 50                | 2.1  | YY | Y   | N  |         |

## Gray

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|---------|
|                |           |                 |              | Stray             | Coll |    |     |    |         |
| 0.11           | 2022      | 500             | 68           | 21                | 2.4  | YY | N   | Y  |         |
| 0.22           | 2020      | 500             | 58           | 12                | 0.9  | YY | Y   | Y  | SS      |

## Black (also used as white light filter behind Fresnel lenses)

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks                                       |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|---|
|                |           |                 |              | Stray             | Coll |    |     |    |   |
| 0.10           | 2041      | 760             | 72           | 16                | 6    | Y  | Y   | Y  | SS for white light filtering<br>Not available |

## Brown

| Thickness [mm] | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks |
|----------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|---------|
|                |           |                 |              | Stray             | Coll |    |     |    |         |
| 0.11           | 2038      | 500             | 51           | 5                 | 0.2  | Y  | Y   | Y  | SS      |

## Special products (different colours)

| Thickness [mm]    | Kube Type | Roll width [mm] | IR-Trans [%] | Visible 555nm [%] |      | UV | Fla | Ad | Remarks  |
|-------------------|-----------|-----------------|--------------|-------------------|------|----|-----|----|--|
|                   |           |                 |              | Stray             | Coll |    |     |    |  |
| 0.22<br>white/red | 2115      | 700             | 69           | 7                 | 0.1  | Y  | N   | Y  | SS only<br>visible light blocking layer<br>white front / red rear side |
| 0.05<br>silver    | 2056      | 250             | 65           | 2                 | <0.1 |    |     |    | one side semiconductor<br>coated to block visible light                |

## Film samples (sheet size A5)

- individual choice, or
- assorted set, includes film types marked **SS** (Sample Set) in "Remarks" column

## Film orders

- cut by the meter
- as original roll
- special cuts or punched on request

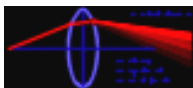
Price List on [www.kube.ch/downloads/pdf/kube\\_window\\_films\\_prices.pdf](http://www.kube.ch/downloads/pdf/kube_window_films_prices.pdf)

## Glossary

|                   |  |
|-------------------|--|
| <b>Thickness</b>  | is nominal, typically within $\pm 10\%$ , maximum $\pm 15\%$ of the indicated thickness  |
| <b>Roll width</b> | tolerances are +30mm / -0mm  |
| <b>IR-Trans</b>   | Infrared transmission in the central 7 to 14 $\mu$ m (microns) PIR band  |
| <b>Stray</b>      | Transmission of visible light at 555nm wavelength, considering reflection losses   |
| <b>Coll</b>       | Transmission of a collimated beam of 555nm wavelength, considering reflection and stray light losses. The test arrangement corresponds to a motion detector with 22mm focal length lens. The number indicates the portion of a narrow beam that reaches the sensor |
| <b>UV</b>         | <b>N</b> Not recommended for extended use under daylight conditions<br><b>Y</b> UV and light protection adequate for indoor use<br><b>YY</b> Recommended products for outdoor use  |
| <b>Fla</b>        | <b>N</b> No special flammability protection<br><b>Y</b> Flame retardant to IEC 695-2-1   |
| <b>Ad</b>         | <b>N</b> No special surface treatment<br><b>Y</b> Surface treatment to ease adhesion of glue, inside as rolled except where noted<br><b>Y2</b> Treated on both sides   |
| <b>SS</b>         | Type included in Film Sample Set   |

KUBE plastics are not certified for permanent skin contact or similar medical applications.

## Technical information For more details refer to:



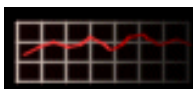
Optical, thermal and mechanical properties

[www.kube.ch/downloads/pdf/kube\\_plastics\\_properties.pdf](http://www.kube.ch/downloads/pdf/kube_plastics_properties.pdf)



Processing of injection moulding granulates

[www.kube.ch/downloads/pdf/kube\\_granulates\\_processing.pdf](http://www.kube.ch/downloads/pdf/kube_granulates_processing.pdf)



Long term stability and answers to FAQ

[www.kube.ch/downloads/pdf/kube\\_plastics\\_quality.pdf](http://www.kube.ch/downloads/pdf/kube_plastics_quality.pdf)



How to fix, glue and weld

[www.kube.ch/downloads/pdf/kube\\_plastics\\_glue.pdf](http://www.kube.ch/downloads/pdf/kube_plastics_glue.pdf)



Flammability

[www.kube.ch/downloads/pdf/kube\\_plastics\\_flammability.pdf](http://www.kube.ch/downloads/pdf/kube_plastics_flammability.pdf)



Material safety data sheet

[www.kube.ch/downloads/pdf/kube\\_plastics\\_safety.pdf](http://www.kube.ch/downloads/pdf/kube_plastics_safety.pdf)