



## Solar Module Solutions



## Your Partner, Your Solution

Scapa is a leading, global supplier of technical adhesive tapes and films to major industries including automotive, cable, medical, aerospace and electronics.

With decades of experience in the production of high-tech adhesive solutions, Scapa is proud of their innovative approach to delivering new products which meet the evolving requirements of industry standards including IEC 61215:2005 and UL®746C.

To meet the demands of the Photovoltaic (PV) industry, Scapa has developed highly specialised adhesive foams, tapes and films for various applications including frame sealing, junction box mounting, cell positioning, laminate fixing and cable management.

Scapa products can also be tailored to meet individual requirements – our specialist sales and technical personnel are always on hand to recommend the most appropriate product for each particular application.

Within the Photovoltaic industry, adhesive technology is seen as the cleanest, easiest and most flexible solution for most application processes.

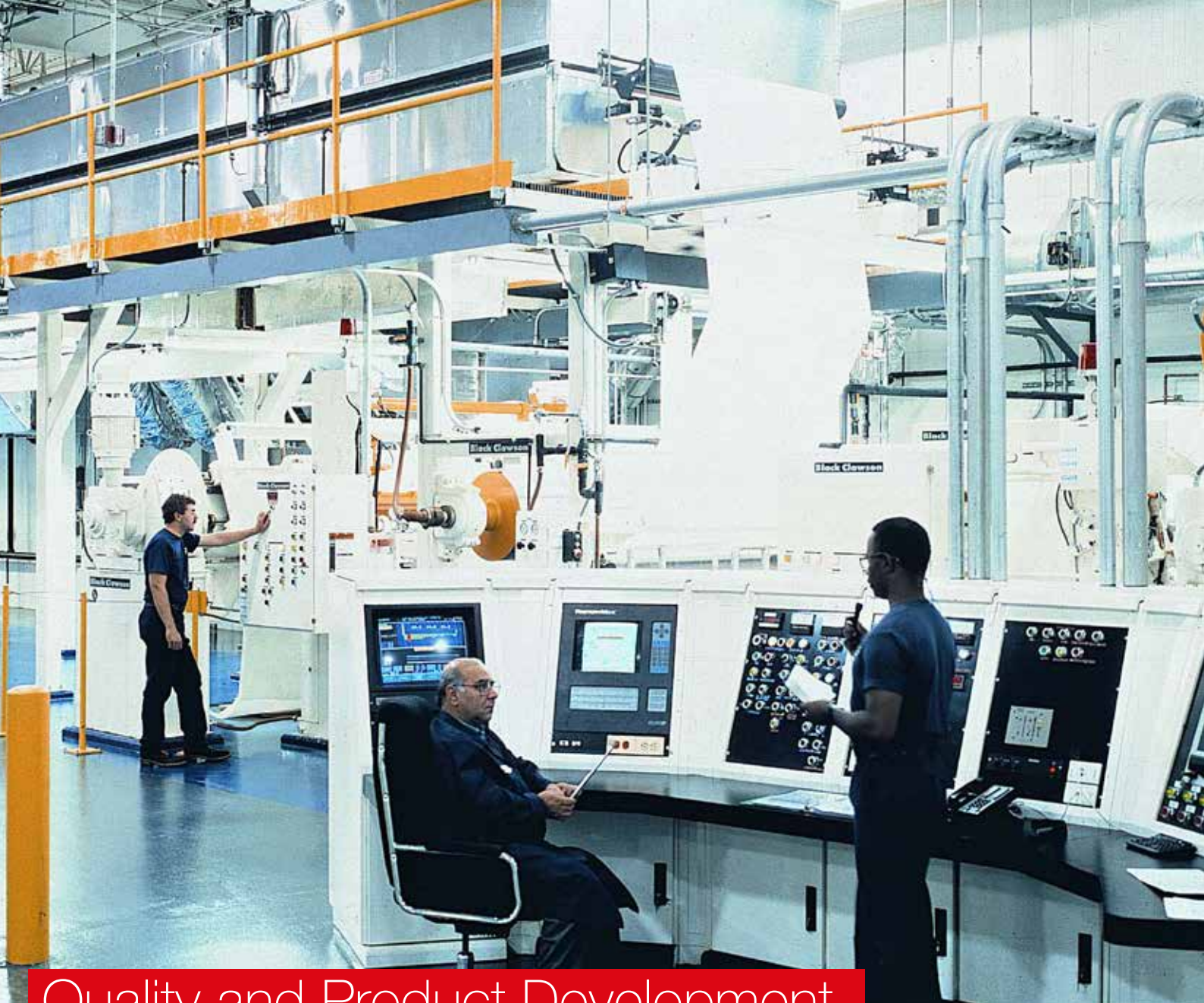
Scapa's global presence and expertise within the industry allows us to offer the best solutions in solar module manufacturing.

Our close association with key market players and testing bodies informs us of the latest market trends and keeps us at the forefront of the Photovoltaic market.

Regular testing ensures that all our products meet industry standards and that the high performance of our tapes is maintained during exposure to heat, cold and humidity as well as natural and artificial ageing.

- Unique, flexible development and production competence
- Fully certified and quality audited production and product performance
- Discrete customer solutions
- Worldwide supply chain management
- Optimal solutions for each unique application
- Wide variety of product formats offered
- Individually customised technical tapes
- Aligned adhesive and substrate technology





## Quality and Product Development

### Quality and precision are at the core of Scapa's development process.

All new products are tested using both extensive in-house laboratory facilities, and on a larger scale at customer's plants, to assess robustness, quality consistency and technical performance.

While Scapa has developed a range of specific specialist tapes that are well suited for the key applications within the renewable energy industry, new applications are emerging all the time as the industry evolves and constantly looks to improve its efficiency.

That's why at Scapa – we are constantly working on a number of customer specific or market driven projects to ensure that any bespoke requirements can be catered for. Examples include developments such as:

- High value multi-layer composite tapes and films
- High performance cast films
- Super bonding adhesive film and film laminates

If you have a special requirement or application that needs expert attention, you can be sure of both flexibility and a timely solution from Scapa.



UL Recognised Components:  
File No's: QOQW2 E329950 & E352550



## Core Product Offering

Within the extensive Scapa range three product types are most suited to the specific applications present in this market.

There are many advantages to using pressure sensitive adhesive bonding tapes rather than conventional fixing and fastening methods:

- Tapes allow easy, clean and fast assembly for end users
- The use of tapes eliminates long cure or drying times
- No reworking or cleaning is required
- Tapes can be relied upon for both durability and product performance
- A clean edge finish can be easily achieved using tapes
- Tapes are presented to exact dimensional requirements minimising potential waste



# Scapa single sided pressure sensitive adhesive tapes

## Module assembly tapes

	Laminate fabrication tape	Cell positioning tape	Surface protection tape	Cable management tape
Product properties	Scapa 1801	Scapa 8705B	Scapa 1650	Scapa 1249/1650
Total thickness (µm)	70	55	48	48
Colour	Amber	Transparent	Red translucent	Crystal clear/red translucent
Carrier	Kapton® polyimide film	Polyester	Polyester	Polypropylene/Polyester
Adhesive system	Silicone	Acrylic	Silicone	Acrylic/Silicone
Clean removal	Yes	Yes	Yes	Yes/Yes
Ultra Violet (UV) light resistance	Excellent	Very good	Excellent	Very good/excellent
Normal service temperature	-40 to +250°C	-30 to +130°C	-40 to +130°C	-15 to +110°C / -40 to +130°C
Short term temperature resistance	+400°C	-	20 min at 150°C	20 min at 150°C

# Scapa double sided pressure sensitive acrylic foam tapes (AFT)

## Framed module and junction box bonding and sealing

Product properties	Scapa AS12x0Series	Scapa AS11x00 Series
Thickness range (mm)	0.6 to 1.1	0.6 to 2.0
Colour	Grey	Clear or translucent
Carrier	Acrylic foam	Acrylic foam
Adhesive system	Acrylic	Acrylic
Ultra Violet (UV) light resistance	Excellent	Excellent
Water and moisture resistance	Very good	Very good
Normal service temperature	-30 to +149°C	-30 to +149°C
Release liner availability	Film or paper	Film or paper
Anticipated life expectancy	>25 years	>25 years

# Scapa double sided pressure sensitive adhesive foam tapes

## Framed module and junction box bonding and sealing

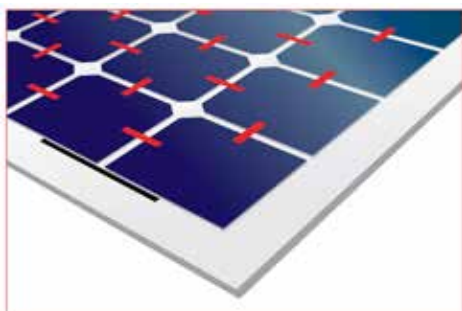
Product properties	Scapa 5469 or 5464	Scapa 5499	Scapa 5669
Thickness range (mm)	1.0 - 2.0	0.5 - 0.8	0.4 - 0.8
Colour	Black or white	Black	Black
Carrier	Polyethylene (PE) foam	Polyethylene (PE) foam	Polyurethane (PUR) foam
Adhesive system	Acrylic	Acrylic	Acrylic
Ultra Violet (UV) light resistance	Very good	Very good	Very good
Water and moisture resistance	Very good	Very good	Very good
Normal service temperature	-40 to +100°C	-40 to +100°C	-40 to +120°C
Release liner availability	Film or paper	Film or paper	Film or paper
Anticipated life expectancy	>25 years	>25 years	>25 years



# Applications

Within the manufacturing process of photovoltaic modules, there are a number of key applications for which specialist tapes play an integral part.

## Reverse side cell positioning

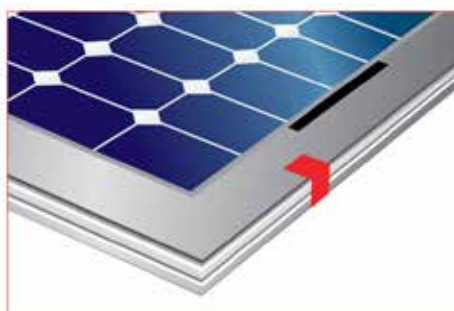


### Scapa polyester film

- Transparent and tear resistant
- Resistant to UV, water and various chemicals
- High immediate adhesion

The tape holds the cells in place during the lamination process.

## Laminate securing

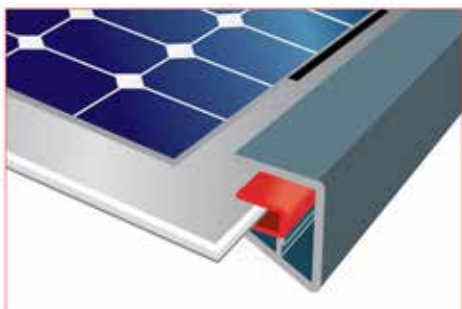


### Scapa laminate securing tape

- High immediate adhesion
- Highly temperature resistant
- Residual free removal
- High thermal resistance
- Highly chemical resist

The tape holds the composite parts together during the lamination process.

## Frame mounting



### Scapa double sided foam tape

- Quick and clean application process
- UV and water resistant
- Shock absorbing

The double sided foam tape provides a permanent, durable bond between the frame and the module.

## Junction box mounting



### Scapa double sided foam tape

- High immediate adhesion to Tedlar® and many other plastic substrates
- Conformable foam compensates for any junction box production tolerances
- High ultimate bonding strength
- UV and water resistant

The double sided foam tape provides a clean and durable bond of the junction box to the reverse side of the module.



## Case Study

### Leading manufacturers, working in partnership

#### The Challenge

In today's marketplace, manufacturers are constantly searching for new ways to reduce costs through Improvements in processing speed, lower priced materials and reduction of process waste – all without adversely affecting product performance. Consequently, there is a real need to identify suitable alternative materials that meet all current manufacturing requirements and have the capability to fulfil the demands of state-of-the-art automated production equipment.

#### The Applications

Module aluminium frame bonding and sealing.

#### The Offering

Scapa offers solid core Acrylic Foam Tapes (AFT) as well as a selection of double-sided, closed cell foam tapes that are coated with acrylic pressure sensitive adhesives. All of the products have been assessed and meet the demands of IEC 61215:2005 and UL®746C. They will effectively bond PV panels and the framing material whilst forming a durable seal to prevent both water and moisture ingress.

#### The Solution

Scapa's range of double-sided bonding and sealing products for PV module framing, includes acrylic adhesive systems that offer resistance to moisture and extreme environmental conditions and exhibit excellent ultraviolet (UV) light resistance. In fact, the adhesives often improve if further UV exposure occurs. The anticipated life expectancy of Scapa foam products is in excess of 25 years, underpinning our standards of quality and durability.

The use of tape solutions during the fabrication of framed modules minimises waste because only the required quantity of material can be used. Utilising pressure-sensitive adhesives with their initial tack, enables the modules to be fabricated and transported immediately without waiting for the adhesive/sealant to cure. This in turn improves production flow. Precise customising of tape dimensions allows for easy manual application or rapid automated processing – and using only the width and thickness required leads to minimal waste and a clean-to-use frame mounting assembly with no reworking and a clean edge finish. The adhesive mounting tapes can be supplied in roll, spool wound and die-cut formats to suit both manual and automated applications.



Scapa  
America

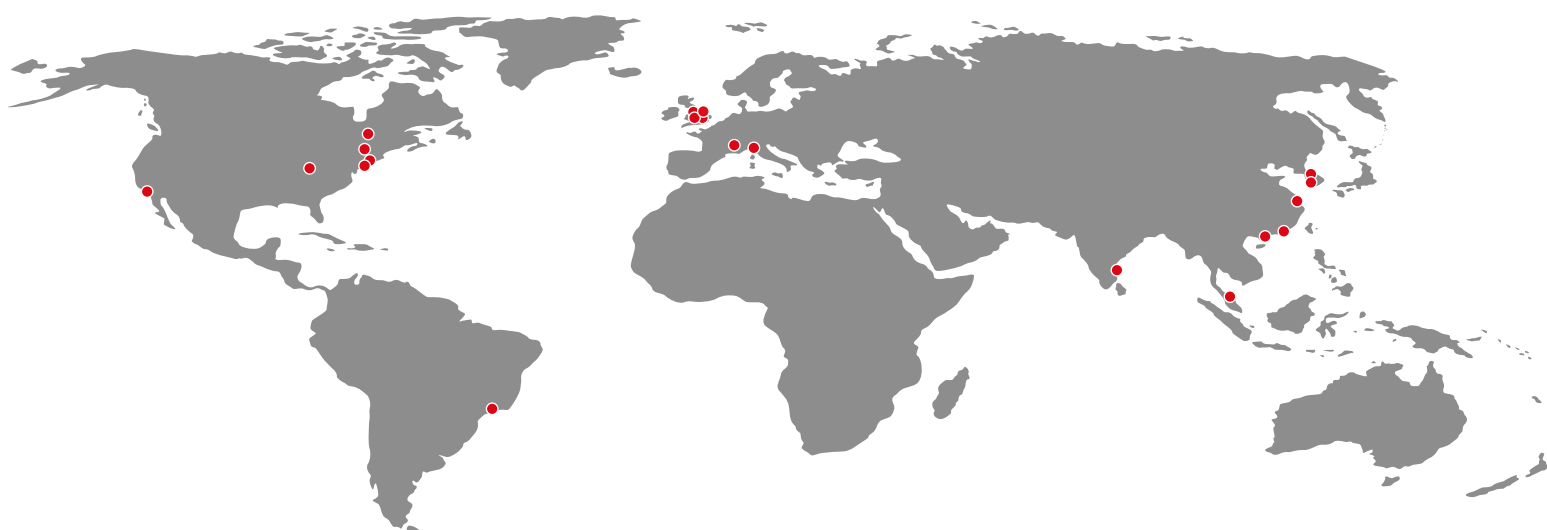
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