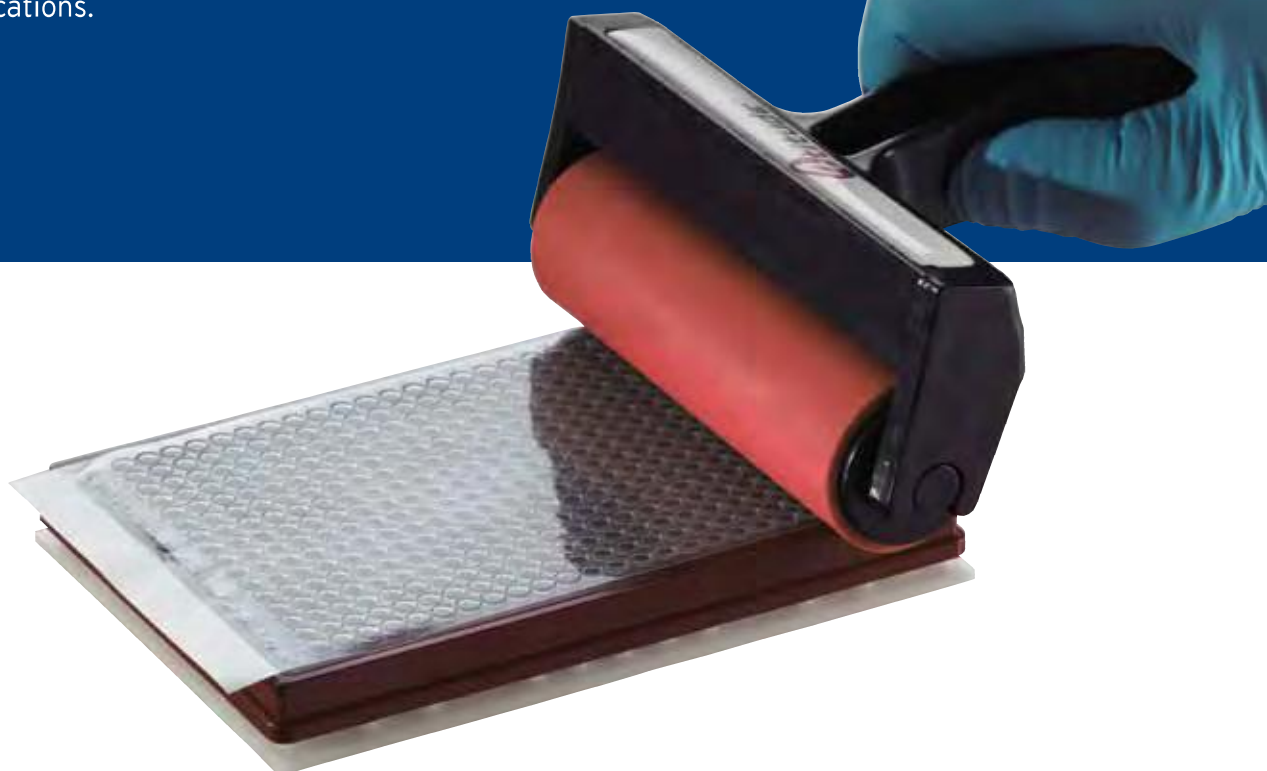


Adhesive Sealing

4titude® offer a wide range of seals from general microplate covers to specialised gas permeable seals for cell culture applications.



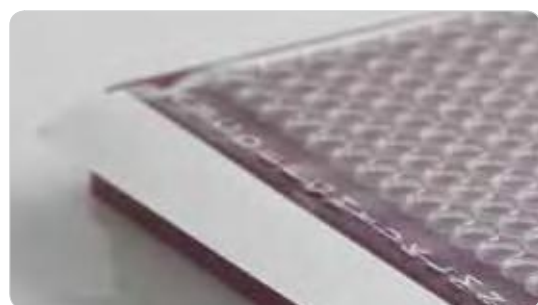
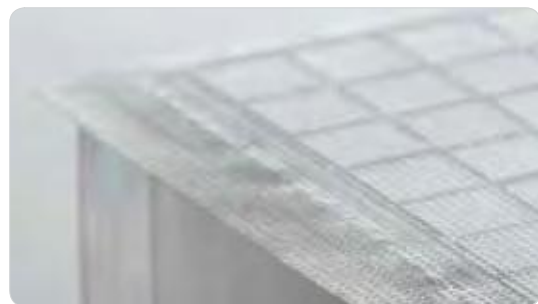
Adhesive seals provide a versatile, yet robust, method for protecting samples. The seals are supplied as sheets and some are also available in roll format. Most adhesive seals are provided with end tabs for easy application and removal.

All our seals are produced and processed under strictly controlled environmental conditions and certified free from DNase, RNase and human genomic DNA.

To choose the most suitable seal please refer to comparison table page 83 which describes the recommended applications and technical features of each seal.

To obtain the best sealing results with adhesive seals we strongly recommended the use of high quality plates like ours with raised rim sealing rings for optimal sealing integrity and guaranteed flatness. To improve seal application we offer supplementary products like the seal roller page 53 and the compression pad see page 52.

We have added three new seals to our range for more specialised applications including gas permeable seals and an InterSeal™ ideally suited for kit manufacturers, p82.



PCR Seal



The PCR seal is a durable transparent polyester film with a strong adhesive layer. This seal enables a high seal integrity and efficiently prevents sample evaporation. It is recommended for PCR, qPCR and other optical applications (e.g. fluorescence or colorimetric measurements) as well as sample storage.

Adhesive free end tabs facilitate application and removal. The seals can be easily peeled from the plate without leaving any sticky residue.

Code	Pack Size/Dimensions
4ti-0500	100 sheets (135mm x 80mm)
4ti-0501	1 laminated roll (100m x 80mm) Approx 700 seals



Applications

- PCR
- qPCR and other optical applications
- low temperature storage and transportation
- available in sheet and roll format
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

Q-Stick™ qPCR Seal



This unique seal combines the strong sealing integrity of our PCR seal with improved optical properties thanks to 96 adhesive-free windows. It is recommended for qPCR and other optical applications (e.g. fluorescence or colorimetric measurements).

The use of adhesive free end tabs enables easy alignment of the windows on a 96well plate as well as easy removal of the seal.

Code	Pack Size/Dimensions
4ti-0565	100 sheets (133mm x 76mm)



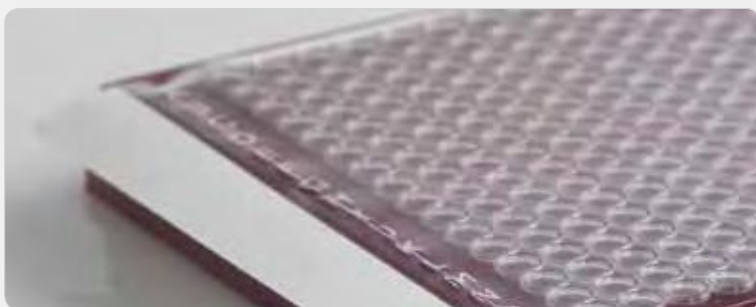
Applications

- Suitable for qPCR and other optical applications
- For use with 96-well plates only
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

qPCR Seal



This optically clear seal was specifically developed for optical applications, particularly qPCR. It is non-tacky to skin and gloves enabling ease of handling and application and positioning. This seal is a pressure activated seal. The polyester film has adhesive held within capsules on the underside, and pressure must be applied to the top-side, around the raised-well rims to activate the adhesive.

Code	Pack Size/Dimensions
4ti-0560	100 sheets (140mm x 77mm)
4ti-0561	1 roll (100m x 80mm) Approx 700 seals

* (with pressurised heated PCR lid)

- No adhesive to come into contact with samples
- Enhanced optical clarity suitable for qPCR
- Suitable for all plate types
- Peelable without leaving sticky residue on the plate when the seal is peeled off
- Suitable for qPCR and other optical applications
- Available in sheet and roll format
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

PCR Foil Seal



This aluminium foil seal had a strong acrylic adhesive which produces a seal of high integrity. This seal was developed for PCR and other high temperature applications due to its effectiveness in preventing sample evaporation. The PCR Foil Seal is a pierceable seal. When pierced, the irregular manner in which the foil tears prevents the formation of a vacuum.

The seal has perforated end tabs for easy application and removal by peeling.

Code	Pack Size/Dimensions
4ti-0550	100 sheets (130mm x 80mm)
4ti-0551	1 roll (200m x 80mm) Approx 1400 seals

Applications

- PCR and other high temperature applications
- Sample storage
- Suitable for all plate types
- Available in sheet and roll format
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

Pierceable Film*



This strong adhesive seal was developed to facilitate easy sample removal with a manual or automated system. The seal is a transparent polyester film with a strong adhesive layer. 96 adhesive free windows have been cross-cut. This enables access to the sample wells with a tip or probe with minimal pressure.

Sample evaporation is minimized when auto samplers such as HPLC and capillary sequencers are used.

Code	Pack Size/Dimensions
4ti-0566	100 sheets (135mm x 77mm)
4ti-0567	1 roll (100m x 80mm) Approx 700 seals

*Not available in the USA



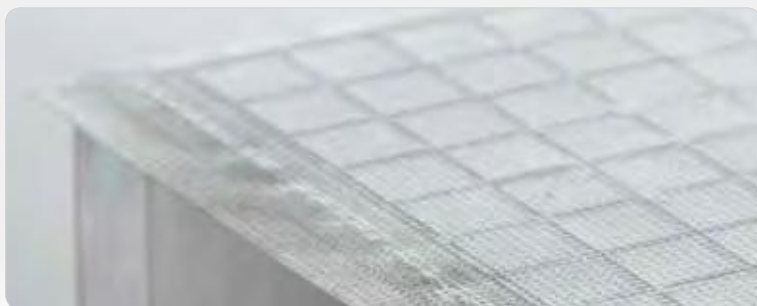
Applications

- Suitable for 96well plates (auto samplers, HPLC, DNA sequencers)
- Pierceable for sample retrieval
- Available in sheet and roll format
- End tabs for ease of application and removal
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

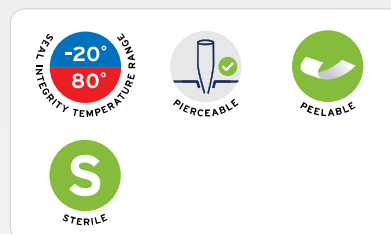
Gas Permeable Seal



This adhesive seal is perforated with micropores so that it is permeable to gases but provides a barrier to bacteria and other solid contaminants. The gas permeable seal is a convenient option for covering cell cultures and can be pierced or peeled without any remaining sticky residue.

End tabs facilitate ease of application and removal.

Code	Pack Size/Dimensions
4ti-0515	50 sheets (135mm x 80mm)
4ti-0515/ST	50 sterile sheets (5 packs of 10 sheets, 135mm x 80mm)
4ti-0515/R	1 roll (100m x 80mm) Approx 700 seals



Applications

- Eukaryotic cell culture, bacterial culture and overnight incubations.
- Moisture Vapour Transmission Rate is 6200g/m²/day
- Air Porosity is 15sec/100cc/in²
- Suitable for all plate types
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

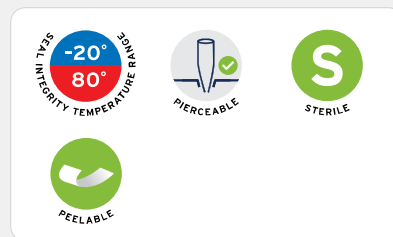
Gas Permeable Moisture Barrier Seal



This is a strong adhesive seal that has 96 or 384 adhesive free windows. These windows allow air and CO² exchange, but prevent moisture evaporation from the sample.

The seal is primarily used in cell culture for eukaryotic or bacterial cells. It is ultra clear for imaging without having to remove the seal.

Code	Pack Size/Dimensions
4ti-0516/96	50 sheets (5 packs of 10 sheets, 137mm x 77mm), 96 round-well only
4ti-0516/384	50 sheets (5 packs of 10 sheets, 137mm x 77mm), 384 square-well only



- Suitable for eukaryotic cell culture, bacterial culture and long-term live assays
- Suitable for 96 or 384well plates
- Moisture Vapour Transmission Rate is 1g/m².d.bar
- Air Porosity is 600cm³/m².d.bar
- Peelable leaving no residue
- End tabs for ease of application and removal
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

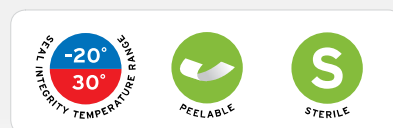
NEW Air-O-Seal



Air-O-Seal is a hydrophobic, gas permeable, adhesive seal which is made from tape with an acrylate adhesive. Air-O-Seal has a much lower moisture transfer rate than our standard Gas Permeable Adhesive Seal (4ti-0515). It is resistant to acids, DMSO, detergents, ethanol, glycerol, isopropanol, sodium hypochlorite (bleach) and suitable for bacterial or cell culture.

Code	Pack Size/Dimensions
4ti-0517	100 sheets (135mm x 80mm)
4ti-0517S	100 sterile sheets (10 packs of 10 sheets, 135mm x 80mm)
4ti-0517R	1 roll (150m x 80mm) Approx 1250 seals

* Not available in the USA



Applications

- Suitable for bacterial or cell culture.
- Moisture Vapour Transmission Rate is 4200g/m²/day
- Air Porosity is 10sec/100cc/in²
- Strong solvent resistance
- Available in sheet or roll format
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

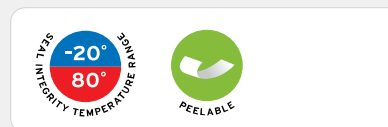
Peelable Solvent Resistant Foil



This seal is based on an aluminium foil with a film layer and silicone adhesive. This laminate has a very high level of solvent resistance and is recommended for long term sample storage.

A single end tab aids application and removal by peeling.

Code	Pack Size/Dimensions
4ti-0512	100 sheet (122mm x 80mm)



Applications

- Suitable for medium to long-term (<5 yrs) storage of samples containing a high concentration (<80%) of DMSO.
- Strong adhesive seal
- Suitable for all plate types
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

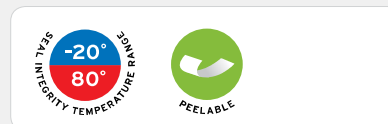
Microplate Seal



This transparent polyester based film has a medium strength adhesive. It is designed as a low cost sealing option and useful for temporary storage and as a cover for applications such as centrifugation.

End tabs allow for easy application and removal. This seal is removable without residue on the plate.

Code	Pack Size/Dimensions
4ti-0510	100 sheet (130mm x 80mm)
4ti-510/R	1 roll (110m x 80mm) Approx 800 seals



Applications

- General microplate cover
- Reduces short term sample evaporation
- Eliminate risk of contamination (Aqueous samples only)
- Suitable for all plate types
- Available in sheet and roll formats
- Free from DNase, RNase and human genomic DNA

For best results

FOR ALL ADHESIVE SEALS, THE BEST SEALING RESULTS ARE ACHIEVED USING THE ADHESIVE SEAL ROLLER (4TI-0502).

NEW Double Skin Breathable Film

This seal is an ultra thin opaque membrane which is gas permeable whilst providing an effective barrier to moisture. Air and CO² exchange is possible, but evaporation is prevented.

End tabs aid application of this seal and its removal by peeling.

Code	Pack Size/Dimensions
4ti-0518	100 sheets (135 x 83 mm)

**Applications**

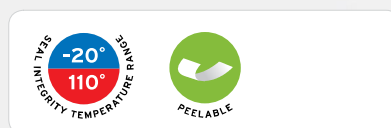
- Bacterial culture
- Cell culture
- Moisture vapour transmission rate of 450gms/m²/day
- Free from DNase, RNase and human genomic DNA
- Suitable for all plate types

NEW InterSeal

A double sided black adhesive microplate film to facilitate the sealing, accessing (piercing) and resealing of VariStrips (4ti-0753) prior to PCR.

The strips or plates are filled with reagent and sealed with 4ti-0530 (Pierce Seal). The InterSeal is overlaid and the strips or plates processed with the Plate Cutter 4ti-3000 into individually sealed strips. The strips can then be transported and opened at a customer site by peeling the protected liner of the InterSeal off and accessing the sample through the pierce seal. The strips can then be sealed with a foil or film which is applied to the exposed black adhesive without the need for a heat sealer.

Code	Pack Size/Dimensions
4ti-0519	100 sheets (148 mm x 98 mm including liner)

**Applications**

- Ideal for kit manufacturers to allow flexible access to individual wells
- For use with VariStrips (in a frame) or Break-A-Way plates
- Re-sealing without the need for a heat sealer
- End tabs for easy application and removal

Also see

VARIPLATES™ (PAGE 42-43)
PLATE CUTTER (PAGE 53)

Adhesive Seal Comparison Table

	PCR Seal	Q-Stick™ for qPCR	qPCR Seal	PCR Foil Seal	Piercable Film	Gas Permeable Seal	Gas Permeable Moisture Barrier Seal	Air-O-Seal	Peelable Solvent Resistant Foil	Microplate Seal	Double Skin Breathable Film	InterSeal
	p77	p77	p78	p78	p79	p79	p80	p80	p81	p81	p82	p82
Application	PCR	qPCR, fluorescence. 96-well microplates only	qPCR & other fluorescent applications	PCR & sample storage	Sample application or retrieval. 96-well plates only.	Cell & bacterial culture	Eukaryotic cell culture, bacterial culture and long-term live assays.	Bacterial or cell culture	Microplate sealing containing solvents incl. DMSO	Aqueous sample storage	Bacteria culture	Diagnostic kit production
Special Properties	Good optical clarity	Discreet optical windows for 96-well plates	Good optical clarity	Irregular tearing when pierced prevents formation of vacuum	Pre-cut with cross which reduces tip or probe becoming clogged	Gas permeable providing barrier to bacteria & other solid contaminants	Gas permeable that allows air and CO2 exchange, but prevents moisture evaporation.	Air-O-Seal has a much lower moisture transfer rate than our Gas Permeable Adhesive Seal (4ti-0515) and is suitable for bacterial or cell culture.	High solvent resistance	Medium strength transparent seal	Thin gas permeable, moisture barrier seal. Allows air and CO2 exchange but prevents evaporation.	2 sealing surfaces Optical windows
Min Temp	-20°C	-20°C	-80°C	-40°C	-80°C	-20°C	-20°C	-20°C	-20°C	-20°C	0°C	-20°C
Max Temp	110°C	110°C	110°C	120°C	110°C	80°C	80°C	30°C	80°C	80°C	40°C	110°C
Sterile							•	•				
Piercable				•	•	•	•				•	
Peelable	•	•	•	•	•	•	•	•	•	•	•	•
RNase / Dnase free	•	•	•	•	•	•	•	•	•	•	•	•
Measurements (mm)*	135mm x 80mm	133mm x 76mm	140mm x 77mm	130mm x 80mm	135mm x 77mm	135mm x 80mm	137mm x 77mm	135mm x 80mm	122mm x 80mm	130mm x 80mm	135mm x 83mm	148mm x 98mm
100 sheets	4ti-0500	4ti-0565	4ti-0560	4ti-0550	4ti-0566	4ti-0515	4ti-0516	4ti-0517	4ti-0512	4ti-0510	4ti-0518	4ti-0519