

## ThermalSeal 2™ Films for PCR



ThermalSeal 2 sealing film on 96-well PCR plate with agarose gel pattern.

ThermalSeal 2™ improved films for classic thermal cycling applications consist of a 50- $\mu$ m-thick polyester film with a 41  $\mu$ m layer of acrylic adhesive. Compared to the original ThermalSeal® films, ThermalSeal 2 films offer better adhesion, reduced evaporation, longer end tabs for easier handling, and less tendency to tear during removal from the plate. Each ThermalSeal 2 sealing film measures 79.4 x 139.7 mm and offers sufficient sealing area for all PCR plates. The length between the perforations with end tabs removed is 125.1 mm.

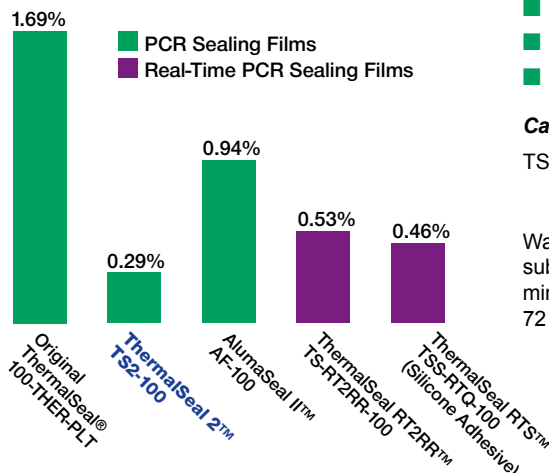
ThermalSeal 2 films are not recommended for raised-rim plates. For raised-rim plate applications, use ThermalSeal A™ films. ThermalSeal 2 sealing films are not pierceable. For applications where piercing with pipet tips or robotic probes is required for product recovery, AlumaSeal® sealing films are recommended. For real-time PCR applications where maximum optical clarity is required, use ThermalSeal RTS™ or ThermalSeal RT™ sealing films.

- **heat resistant, recommended for temperatures from -40 °C to +120 °C**
- **better adhesion; reduced evaporation**
- **longer end tabs for easier handling**
- **does not tear during removal from the plate**
- **easier to apply than aluminum foils, no tendency to roll back**
- **certified DNase-, RNase-, and nucleic-acid- free**

Catalog No.	Description
TS2-100	ThermalSeal 2 Films, Pkg of 100, <b>Non-Sterile</b>

Water samples in ABI MicroAmp® N801-0560 plates were sealed with the films indicated, then subjected to thermal cycling in a LabNet thermal cycler as follows. Pre-heat lid to 105 °C for 5 min. Initial denaturation at 94 °C for 5 min. Then 30 cycles of 94 °C for 30 sec, 55 °C for 30 sec, 72 °C for 30 sec. Final hold at 4 °C. Evaporation was measured by differential weighing.

### Measured 30-Cycle Evaporation Rates

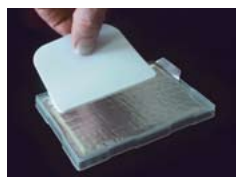


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## Accessories



**Roller**



**Paddle**

Completing application of a plate-sealing film by pressing with the accessory plate roller assures a secure and uniform seal around all wells. Paddles are an alternative to the plate roller and are recommended for films on raised-rim plates because they fit within the plate rim.

Catalog No.	Description
RL-PLT-01	Plate Roller, Pkg of 1, <b>Non-Sterile</b>
PDL-5	Film-Sealing Paddles, Pkg of 5, <b>Non-Sterile</b>

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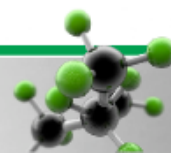
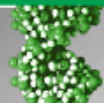


**"The Plate-Sealing and Reagent-Handling Experts"**

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## ThermalSeal® Transparent Sealing Films for PCR and Storage

ThermalSeal® films consist, unless otherwise noted, of 50 µm thick sheets of transparent polymer – polyolefin, polyester, or polypropylene depending on the specific film – with adhesive formulations optimized for specific PCR applications. They are non-pierceable, but easier to apply than AlumaSeal films because they have no tendency to roll back when peeled from their backing sheets. The exceptionally high optical clarity of ThermalSeal RTS and RT films provides superior performance for real-time qPCR applications.

- heat resistant
- non-pierceable
- all have two end tabs
- all certified DNase-, RNase-, and nucleic-acid-free
- easily applied to plates, no rollback tendency

## ThermalSeal RTS™ Films for RT qPCR, Protein Crystallization, and Storage

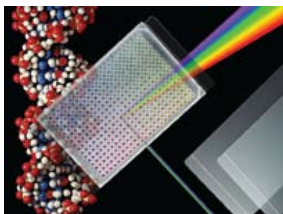
New!



New ThermalSeal RTS™ films are based on patented 3M® 9795 50 µm polyolefin with 50 µm inert encapsulated silicone adhesive. They are optically clear with low autofluorescence. The adhesive is non-tacky until pressed on the plate to form the strongest available heat-resistant seal around each well. Adhesive over sample wells remains encapsulated and inert. ThermalSeal RTS films fit within the edges of raised-rim plates. The non-tacky adhesive surface simplifies handling. Dimensions 76.2 by 133.4 mm. With end tabs removed, length is 113.0 mm. Recommended for temperatures from -70 °C to +100 °C.

<b>Catalog No.</b>	<b>Description</b>
TSS-RTQ-100	ThermalSeal RTS, Pkg of 100, Non-Sterile

## ThermalSeal RT™ Films for Real-Time qPCR and Crystallization

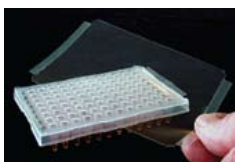


ThermalSeal RT™ films combine optically transparent polyester with a strong, ultra-smooth, non-absorbing, non-fluorescing medical-grade adhesive for superior performance in real-time qPCR applications. A plastic liner, easily removed before use, contributes smoothness and extreme optical clarity to the adhesive. Dimensions 79.4 by 142.9 mm for sealing PCR plates. Length between the perforations with end tabs removed is 121.9 mm. Temperatures from -40 °C to +120 °C. The ultra-high clarity of ThermalSeal RT films has also made them useful for protein crystallization studies.

- “brilliant” optical clarity
- 125 µm film: more rigid, less tendency to wrinkle if frozen

<b>Catalog No.</b>	<b>Description</b>
TS-RT2-100	ThermalSeal RT2, 50 µm Films, Pkg of 100
TS-RT5-100	ThermalSeal RT5, 125 µm Films, Pkg of 100 (see note above)

## ThermalSeal RT2RR™ Films for Raised-Rim Plates



The same consistent ultra-high optical clarity as ThermalSeal RT™ films for more reproducible, reliable, and consistent qPCR measurements. Inert, strong, temperature-resistant adhesive assures reliable sealing around each well. End tabs easily removable at perforated boundaries prevent lifting and higher evaporation rates that can occur when films overlap the plate rim. Dimensions 77.8 by 130.8 mm. With end tabs removed, length is 118.1 mm with 45° corners.

<b>Catalog No.</b>	<b>Description</b>
TS-RT2RR-100	ThermalSeal RT2RR, 50 µm Films, Pkg of 100

## Classic ThermalSeal® Films



Polypropylene films for thermal cycling. (Not recommended for PCR plates with narrow or irregular sealing surfaces: AlumaSeal, ThermalSeal A, or ThermalSeal RT series films are better in such instances.) Each film measures 79.4 x 135.1 mm and offers sufficient sealing area for all PCR plates. Length between the perforations with end tabs removed is 123.1 mm. Recommended for temperatures from -40 °C to +120 °C. MiniStrips seal just one or two 8-well rows at a time.


<b>Catalog No.</b>	<b>Description</b>
100-THER-PLT	ThermalSeal, Pkg of 100, Non-Sterile
STR-THER-PLT	ThermalSeal, Pkg of 100, Sterile
TS-2x8-50	ThermalSeal MiniStrips, Pkg of 200 in 4 zip bags of 50, Non-Sterile

## ThermalSeal A™ Films for Raised-Rim Plates



An advanced version of classic ThermalSeal® polypropylene films with a much stronger and thicker adhesive layer. ThermalSeal A™ films fit raised-rim plates and provide more secure sealing of all wells because the center of the film does not extend over the plate rim. Each film measures 77.8 x 135.5 mm overall. Length with end tabs removed is 118.1 mm. Recommended temperatures: -40 °C to +125 °C. One sealing paddle for ensuring a firm seal on raised-rim plates is included in each package.

<b>Catalog No.</b>	<b>Description</b>
TSA-100	ThermalSeal A, Pkg of 100, Non-Sterile



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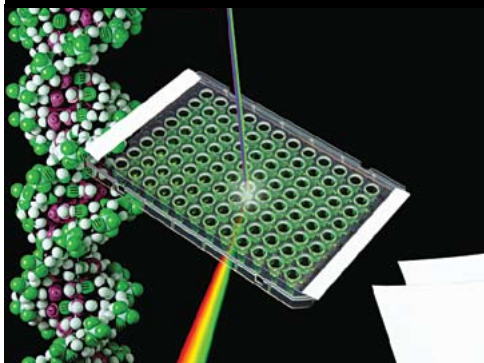
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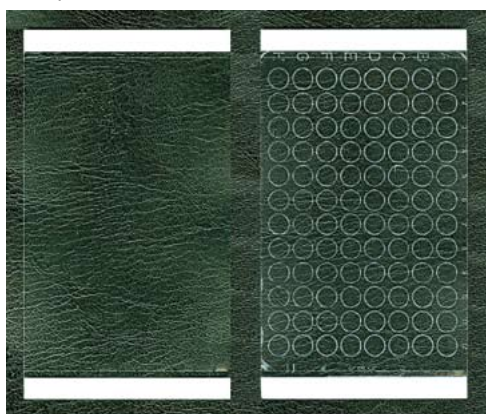
[www.excelscientific.com/thermalseal\\_content.html](http://www.excelscientific.com/thermalseal_content.html)

**New!**

## ThermalSeal RTS™ Films for RT PCR, Storage & Protein Crystallization



ThermalSeal RTS sealing film on 96-well raised-rim PCR plate.



Scans of ThermalSeal RTS sealing film against black leather background before (left) and after (right) sealing to 96-well microplate. Areas of light scattering (white) show release of active adhesive.

ThermalSeal RTS™ sealing films are based on patented\* 3M® 9795 50 µm polyolefin films with 50 µm inert encapsulated silicone adhesive. They are optically clear, with low autofluorescence, and are especially suited for real-time qPCR, storage, and protein crystallization applications. The encapsulated silicone adhesive is non-tacky until pressed against the sealing surface, at which time adhesive is released only in sealing areas to form the strongest available heat-resistant seal around each well on the plate. Adhesive on non-sealing areas of the film, such as directly over sample wells, remains encapsulated and inert.

Excel ThermalSeal RTS films are sized to fit within the edges of raised-rim 96-well plates. Their consistent high optical clarity makes possible reproducible, reliable, and consistent DNA amplification measurements and crystal detection. Two end tabs assist in positioning the film on the plate, and the non-tacky adhesive surface simplifies handling. Easy removal of the end tabs at perforated boundaries prevents lifting and higher evaporation rates that can occur with films that overlap the plate rim. Dimensions 76.2 by 133.4 mm. With end tabs removed, length is 113.0 mm.

- high optical clarity
- minimal to no autofluorescence
- chemically inert; no extractables except at extreme pH
- DMSO resistant for HTS
- heat resistant; recommended for temperatures from -70 °C to +100 °C
- certified DNase-, RNase-, and nucleic-acid- free
- fit within raised plate rim to prevent loss of seal due to film lifting
- silicone adhesive forms the strongest available seal for evaporation prevention
- non-tacky adhesive layer simplifies handling of film prior to sealing

<i>Catalog No.</i>	<i>Description</i>
TSS-RTQ-100	ThermalSeal RTS, 50 µm Films, Pkg of 100

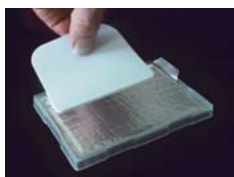
\* U.S. Patent 6,703,120. March 9, 2004. "Silicone adhesives, articles, and methods."

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