



TCP LUX THERMAL COVER

Standard thermal protection / Technical Data Sheet

Document No.	PRT-TDS-TCP-LUX-00
Revision	00
Product family	TCP™ Thermal Pallet / Cargo Covers
Manufacturer	PROtONE Packaging & Insulation Solutions Ltd, Sderot, Israel

Recommended use: single-use applications

1. Product Description

TCP LUX is PROtONE's standard-tier thermal pallet/cargo cover, providing passive thermal protection for temperature-sensitive goods during storage and transportation. It combines a metallized PET reflective facing with a polyethylene air-bubble insulation layer to reduce the rate of temperature change between the load and the surrounding environment.

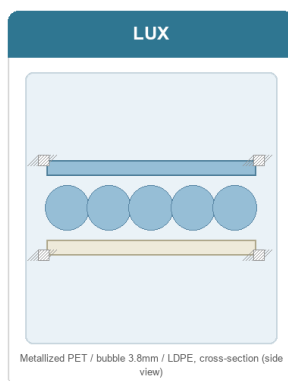
TCP™ covers are custom-made thermal covers intended to reduce the rate of temperature change and protect temperature-sensitive goods against external temperature fluctuations during storage and transportation.

2. Key Benefits

- Reduces the rate of temperature change through radiant, conductive, and convective heat transfer.
- Reflects up to 97% of incident radiant heat via the metallized PET facing.
- Made with at least 30% recycled LDPE.
- Lightweight, compact, and easy to install; designed for efficient single-use protection.
- Custom-made to fit any pallet or cargo configuration.
- Manufactured in Israel (Sderot).

3. Construction

TCP LUX is a three-layer laminate: a metallized PET reflective facing on the outer (ambient-facing) side, a 3.8 mm polyethylene air-bubble insulation layer, and a plain LDPE film on the inner (load-facing) side. This is an ASYMMETRIC construction: only the outer face is reflective, and the inner face has ordinary (non-reflective) plastic emissivity. This is a deliberate PROtONE construction variant: the standard POLYNUM One/Big/Ultra material family uses aluminum foil rather than metallized PET, and is symmetric (reflective on both faces).



4. Technical Data

Property	Value
Insulation material	PROtONE construction, metallized PET reflective facing
Layer structure	Metallized PET (outer) / bubble layer / plain LDPE (inner); asymmetric, one reflective face
Bubble layer thickness	3.8 mm
Nominal overall thickness (published)	3.5 mm $\pm$ 10%
Reflective facing type	Metallized PET film (outer face only)
Reflectivity (radiative heat reflection)	Up to 97%
Emissivity	0.05–0.07 (outer face; inner LDPE face is not low-emissivity)
Installed cover thermal resistance (2×25 mm air cavity configuration)	3.6 ft ² ·°F·h/BTU (0.63 m ² ·°C/W), tested on the TCP-1LPM1LB0SO configuration
EPS equivalence (same test configuration)	55 mm; specific to this construction
Recycled content	At least 30% recycled LDPE
Temperature limits	Not specified

Values not directly supported by source documentation are marked “Not specified.” No values in this table have been estimated to fill a gap.

5. Cover Configuration & Options

- Custom dimensions manufactured to customer requirements; no fixed standard size.
- Opening can be located on any side of the cover according to customer requirements.
- Opening secured by hook-and-loop (VELCRO®) closure.
- Optional transparent Packing List document pouch; location and dimensions to customer requirements.
- Other configurations, materials, and closures can be supplied upon request.

6. Applications

TCP LUX Thermal Cover is suited to applications where passive thermal protection is required, including:



- Pharmaceutical logistics (vaccines, insulin, and other temperature-sensitive drugs)
- Food products and food e-commerce
- Temperature-sensitive industrial goods
- Air freight
- Road transportation
- Storage applications

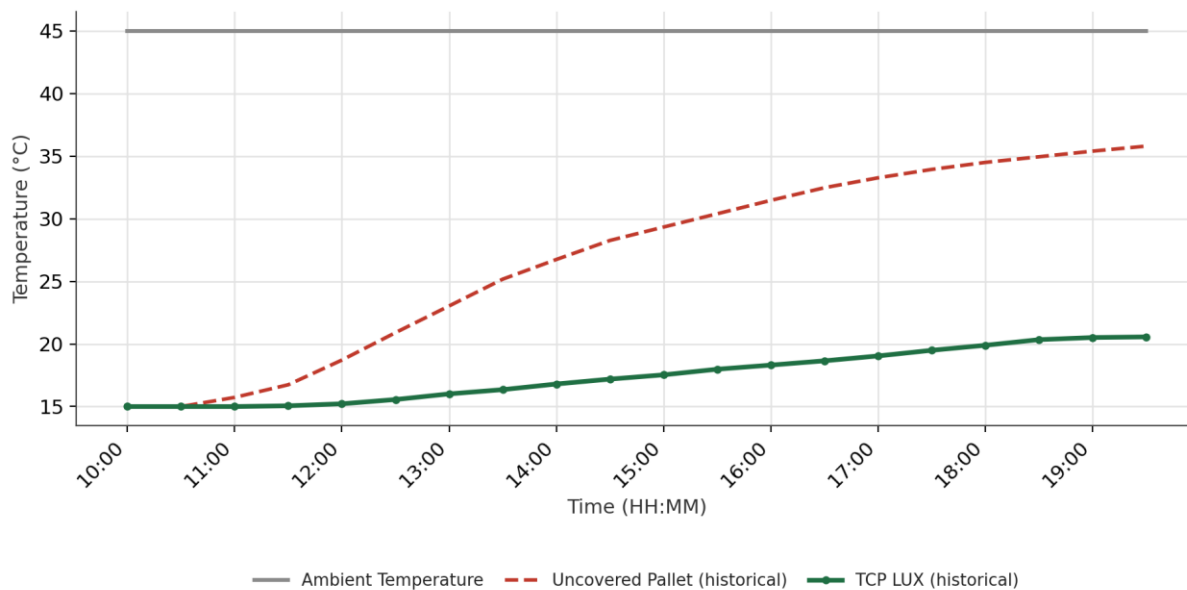


7. Representative Thermal Performance

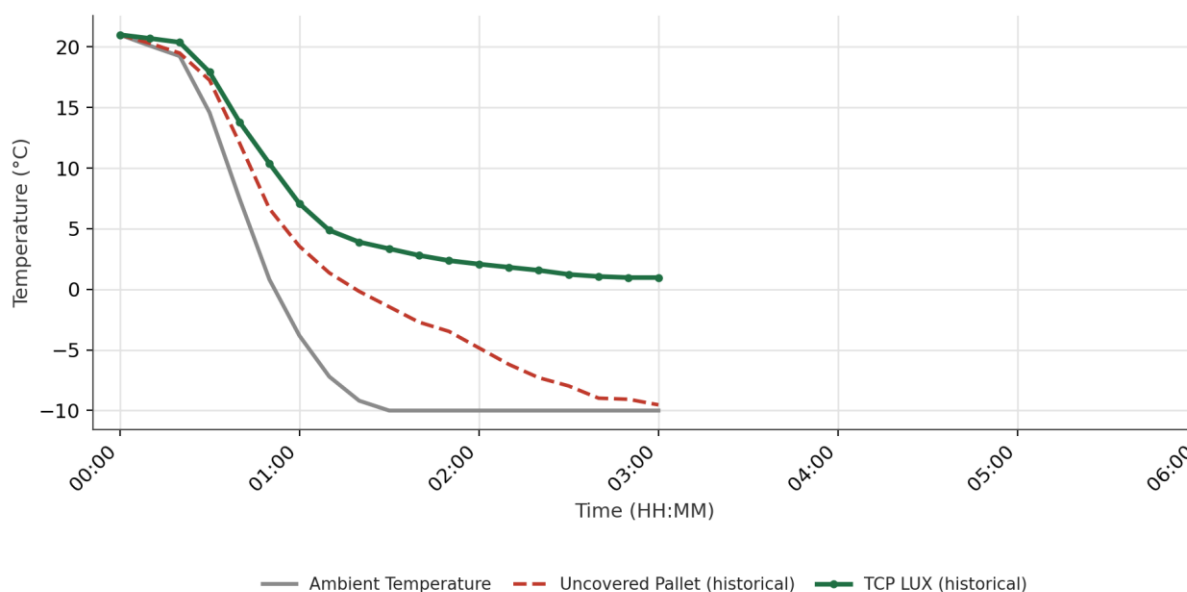
The following performance data for TCP LUX is based on historical chamber-test measurements of the TCP-1LPM1LB0SO configuration: a 9.5-hour hot-environment test at an ambient temperature of approximately 45°C, and a 3-hour cold-environment test with ambient falling to approximately -10°C.

8. Performance Graphs

Representative Thermal Performance - Hot Environment
(TCP-1LPM1LB0SO chamber test, ambient ≈45°C, 9.5 h)



Representative Thermal Performance - Cold Environment
(TCP-1LPM1LB0SO chamber test, ambient to ≈-10°C, historical to 3h)





These curves are historical chamber-test measurements. This chart demonstrates observed behavior under the stated test conditions only; actual performance depends on load configuration, thermal mass, initial temperature, ambient conditions, air movement, solar exposure, cover fit, and closure quality.

9. Technical Notes / Limitations

- Historical data is clearly distinguished from calculated/modeled data throughout this document and in the performance graphs.
- PROtONE does not claim regulatory qualification for pharmaceutical use for this product; suitability for a specific regulated application should be validated by the customer.
- Covers are manufactured to order; lead time and minimum order quantity depend on the specific configuration requested.
- Values presented as "typical" or "representative" describe expected comparative behavior and are not a guarantee of performance in any specific use case.