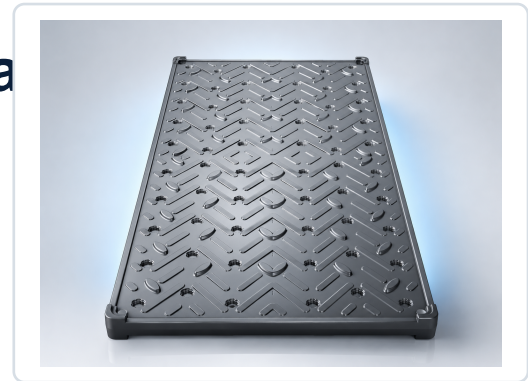




DATA CENTER COLD STORAGE PRODUCT LINE

12C PCM Thermal Storage Plate

Data Center Cold Storage standard product manual based on the 5.0 L plate fill rule.



PHASE POINT

12C

NOMINAL FILL

5.0 L/plate

LATENT RANGE

0.278-0.424 kWh

MATERIAL OPTIONS

3 variants

Core Engineering Data - Plate Template

Parameter	Value	Unit	Source / status
Plate outer dimensions	800 x 400 x 18	mm	Standard plate rule
Nominal PCM fill volume	5.0	L/plate	Standard product rule
Phase point	12	C	Product library
Material option count	3	-	Active Pure PCM products
HDPE single-side wall	1.5	mm	Current plate template
HDPE density	950	kg/m3	Current plate template
HDPE conductivity	0.45	W/mK	Current plate template

Data status: design-calculated; final deployment requires cycling, leakage, compatibility, thermal-curve, and compliance validation.

CORE ENGINEERING DATA TABLES

Material And Performance Data

Material options are active Pure PCM products at 12C, calculated under the 5.0 L fill rule.

Material Property Table - 12C Pure PCM Options

Source product	Type	Density kg/m ³	Latent kJ/kg	k W/mK	Status
PCM-INO-PURE-009	Inorganic	1300	235	0.5	PCM cost library
PCM-ORG-PURE-121	Organic	800	250	0.3	PCM cost library
PCM-COM-PURE-198	Composite	1050	240	1.8	PCM cost library

Calculated Performance Table - Per 5.0 L Plate

Variant	PCM kg	Plate kg	Latent kJ	Latent kWh	vs water 10K	Context
Inorganic	6.50	7.22	1528	0.424	7.3x	Draft calc.
Organic	4.00	4.72	1000	0.278	4.8x	Draft calc.
Composite	5.25	5.97	1260	0.350	6.0x	Draft calc.

Calculation Basis And Boundary Conditions

Item	Basis	Unit	Status
PCM mass	5.0 L x density	kg	Calculated
Latent capacity	PCM mass x latent heat	kJ / kWh	Calculated
Water comparison	5.0 kg water x 4.186 x 10 K	kWh	Reference only
Plate mass	PCM mass + 0.722 kg HDPE estimate	kg	Estimate only

APPLICATION, SELECTION, VALIDATION

Material Selection And Quality

Select the 12C plate by operating window, material priority, plate count, and validation evidence.

Application Fit Matrix

Application	Problem	Engineering objective
Data center cooling buffer	Short load spikes	Thermal ride-through before plant response
HVAC peak shifting	Demand and tariff windows misalign	Store cooling for peak period support
Cold storage stabilization	Door openings or pull-down events	Stabilize recovery near setpoint

Selection Workflow

Step	Decision	Required input
01	Temperature window	Confirm charge/discharge temperatures and approach delta
02	Phase point	Select PCM transition point inside usable operating window
03	Material option	Balance kWh/plate, mass, conductivity, safety, and cost
04	Plate count	Convert required kWh into plate quantity and packaging layout

Qualification Gate Before Customer Release

Item	Evidence required	Status
Cycling stability	Cycle count, method, acceptance threshold	Required
Leakage / containment	Thermal cycling and hold test	Required
Compatibility	Coolant, HDPE, seals, metals, duration	Required
Thermal performance	Flow rate, approach temperature, charge/discharge curve	Required
Safety / compliance	SDS, transport/storage classification, regulatory status	Required