



**PRODUCT APPLICATION NOTE**



## What is PronGO® Solution?

PronGo® is an innovative solution which enables the transport of temperature sensitive food, beverages and pharmaceuticals through passive cooling. It is segmented into two broad categories on the basis of applications: Frozen (-15°C to -25°C), Chilled (2°C to 8°C).

<b>FROZEN</b> -25°C to -10°C	<b>COLD</b> +2°C to +8°C	<b>TEMPERATURE CONTROLLED</b> +15 to +25°C
<ul style="list-style-type: none"> <li>• Meat, Ffish and poultry</li> <li>• Frozen fruits and vegetables</li> <li>• Ice-cream</li> </ul>	<ul style="list-style-type: none"> <li>• Fresh fruits and vegetables</li> <li>• Milk and dairy products</li> <li>• Flowers and eggs</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-tropical fruits and seeds</li> <li>• Chocolates</li> <li>• Processed foods (pickled, dried, cooked)</li> </ul>

PronGo® solution is available in two segments:

### 1) B2C – Business to Consumer segment.

PronGO® is a reusable and portable bag that can carry and maintain a constant temperature of -15°C to -25°C (ice-cream, frozen meat and vegetables, or +2 to +8°C (insulin, milk and dairy products, flowers) or +15°C to +25°C (chocolates, processed food products) for up to 5 to 10 hours of travel duration at an adverse ambient of 40° to 45°C.

The product is available in carrying capacities of 3 litres portable bags.



**2) B2B – Business to Business segment.**

For extended hours of last mile delivery upto 48 hours, PCMs filled in HDPE bottles (thermotabs) or nylon pouches can be placed within the roto moulded boxes along with the temperature sensitive product. These boxes have a thick insulation cover along the body to protect ingress or loss of heat. Further, the encapsulated PCM acts as a medium to provide the cold backup required for long duration temperature maintenance. In order to freeze the PCM we have a specially designed plate freezer (**PronGO® Recharge Station**).

These roto moulded boxes comes into four variants broadly classified into two categories on the basis of application chilled (+2 to +8°C )and frozen (-15°C to -25°C) for a retention of upto 16 hours for frozen and 48 hours for chilled.

**PronGO® Recharging Solutions** enable efficient and quick charging of Phase Change Materials. PLUS® offers the entire ecosystem of temperature controlled solution customized to the supply chain operations.

Specifications	PronGO® recharging station 80K12H26N	PronGO® recharging station 247K16H26N
Capacity	80 kg PCM	247 kg of PCM
Freezer dimensions	41" x 33" x 46"	49" x 48" x 78"
Minimum temperature achievable in freezer	-35°C at no load. For an ambient of 25°-30°C.	-35°C at no load. For an ambient of 38°-40°C.

**How selection is done?**

**1) B2C – Business to Consumer segment.**

The selection of a portable 3 litres bag is done on the basis of the application which the customer required.

Product	Application	Description
PronGO-3L5C15N	Frozen	This unique PronGO bag is designed to keep ice cream, meats, frozen desserts and any other product that you want keep frozen! for upto 5 hours
PronGO-3LSCV	Chilled & Frozen	This Unique Prongo Bag Is Designed To Keep Freshly Cut Fruits, Salads, Milk, Juices, Chocolates, Energy Bars And Beverages Chilled For Upto 10 Hours and Provides Additional Feature To Keep Ice Cream, upto 5 Hours
PronGO-3LSCM	Medical	This unique PronGO bag is designed to keeps your insulin vials and pens at safe temperatures for upto 10 hours. It is suitable to carry any temperature critical diagnostic product samples such as blood, urine which needs to be stored either between +2 to 8 °C or +15 to +25°C.

**2) B2B – Business to Business segment.**

The selection is done on basis of payload volume, retention hours (time duration) the customer required during transit of goods. We have a pre-defined and validated solution for duration of up to 16 hours and 48 hours for chilled and frozen application respectively.

Similarly PronGO® Recharging Station can be selected on the basis of number of tabs which customer wants to freeze in one cycle.

Sr. No.	Capacity	Application	No. of thermotab 600 required*	Retention Hours
<b>Frozen (-25 to -15 degree C), 16 Hours Backup</b>				
1	25lt	Frozen	13	16
2	50lt	Frozen	19	16
3	100lt	Frozen	26	16
4	150lt	Frozen	31	16
<b>Chilled (2 to 8 degree C), 48 Hours Backup</b>				
1	25lt	Chilled	13	48
2	50lt	Chilled	24	48
3	100lt	Chilled	26	48
4	150lt	Chilled	31	48
<b>PronGO® Recharging Station</b>				
1	PronGO® Recharging Station 80kg	Plate freezer to freeze around 120 nos. thermoTabs in 12 hours.	120	12
2	PronGO® Recharging Station 247kg	Plate freezer to freeze around 490 nos. thermoTabs in 12-16 hours.	490	15

\*thermoTab600 is an HDPE based cartridge having dimension 190mm x122mm x36mm with incorporable capacity of 0.61kg per unit.

**How is it used?**

I) B2C – Business to Consumer segment.

- 1) Keep PCM packs in your freezer for at least 36 hours or until completely frozen.
- 2) To ensure fast freezing place the PCM packs in flat position and do not stock it one above the other.
- 3) For optimal performance leave the PCM packs in the freezer itself so that PronGO is always ready to go when you need it.
- 4) The freezer temperature has to be set to the coldest mode.
- 5) During use insert the PCM packs in each of the slots provided in the PronGO bag and place your food products.

II) B2B – Business to Business segment.

- 1) Put the HDPE bottles (thermotabs) in the recharge station to cool.
- 2) Place the charge (cooled) thermotabs inside the box.
- 3) Load the product and get ready to **GO**.

## Steps of freezing & loading

1 Put the thermotab in the recharge station to cool



2 Place the charged (cooled) thermotabs inside the box



3 Load your product & get ready to GO



## How is it better than conventional systems?

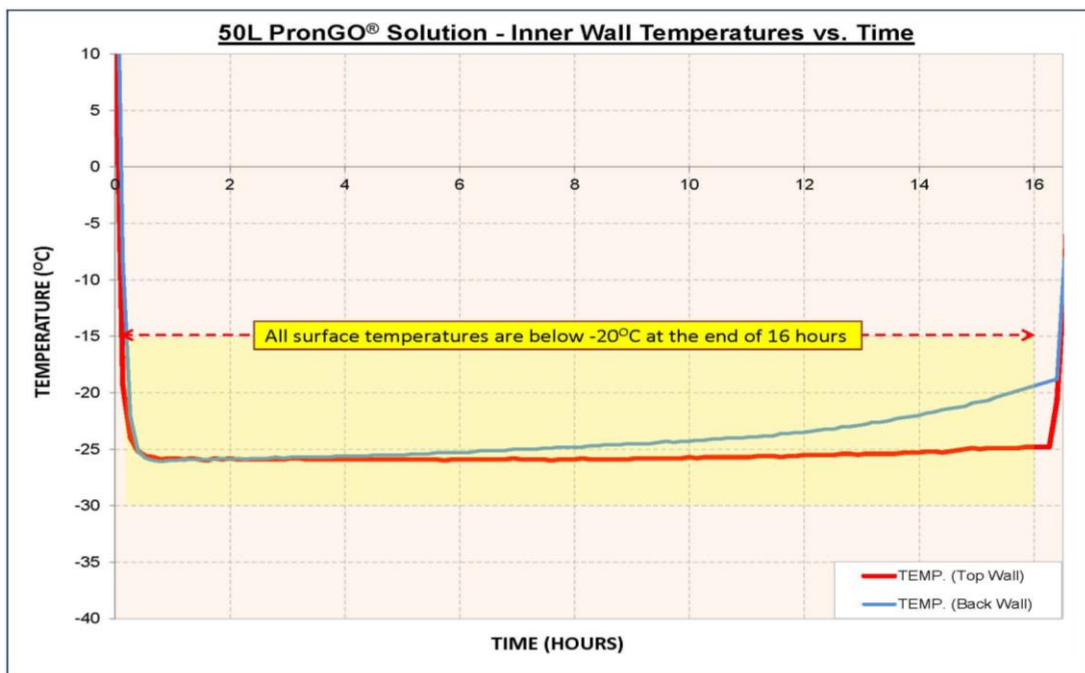
- This system is reusable thus reduces the recurring cost of dry ice thus reduces the operational cost.
- It is long lasting, washable and leak proof.
- It uses a temperature controlling technology that maintains the integrity of frozen and chilled products, shielding them from harsh outdoor ambient.

- It increases the shelf life of the product by constantly maintaining the desired temperature for a given period of time. In case of using a gel pack or ice pack the temperature started to rise once the ambient temperature increases.

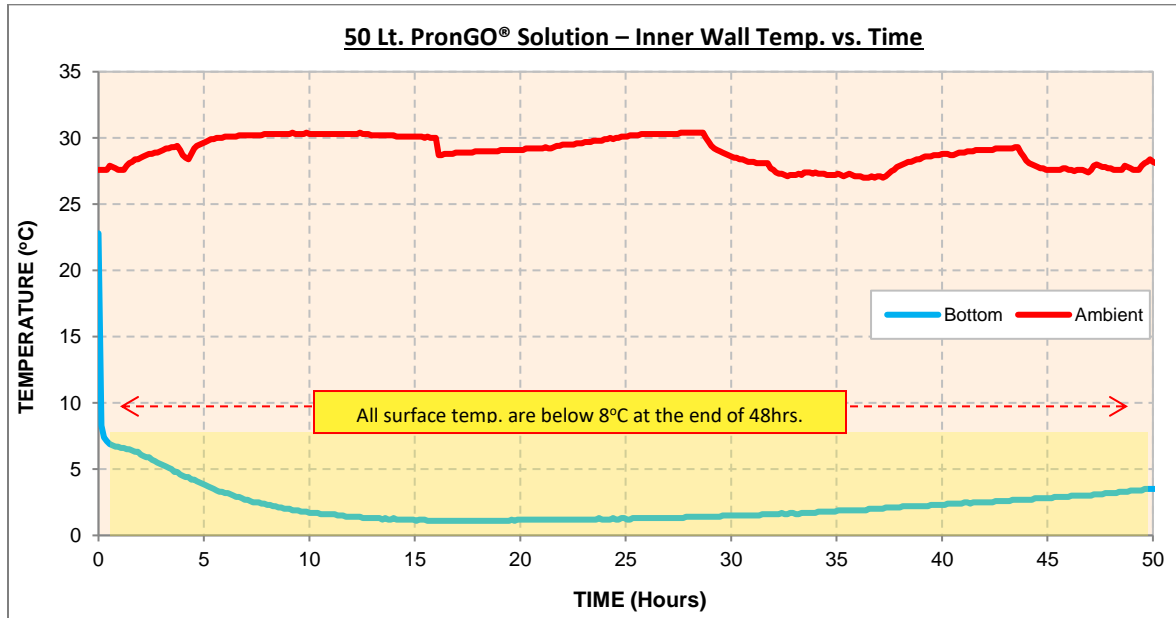
## Sample Case Study:



- Over 2000 orders of chilled, frozen and ambient products are packed between 11pm in the night until commencement of delivery at 7am.
- High risk of temperature exposure between packing and delivery.



- PronGO® 50lt Frozen model performance graph in ambient of 35° to 40°C



• PronGO® 50lt Chilled model performance graph in ambient of 35° to 40°C

### Cost Benefit Analysis for PronGO® Solution:

Description	Qty.	With PronGO	With Dry ice	Remarks
<b>Capital Cost</b>				
1. ThermoTabs	960	240,000	-	Total number of thermotabs required
2. Freezer (Recharging Station) 247 kg	1	395,000	-	Freezer of 247 kg PCM capacity
<b>Total Capital Cost</b>		<b>635,000</b>	-	
<b>Operating Cost</b>				
Freezer (Electricity bill per month) - Unit per hour x No. of freezers x 12 hours x 30 days	1,260	16,380	-	INR 13/unit electricity with 3.5 units consumed per freezer for 12 hours for 30 days
Dry ice cost (Cost per month)	3,000	-	81,000	2.5 kg of dry ice used in 40 boxes for 30 days @35/kg
<b>Total Annual operating cost saving</b>		<b>775,440</b>		
<b>Payback of Investment Capital (in yrs.)</b>		<b>0.8</b>		Payback period is 8-9 months

**\*Assumptions: 1) 3.5 Units of electricity consumed per hour of operation @ Rs. 13 per unit; 2) There are 40 PronGO® boxes and 24 thermotabs to be used in each box for retention of 10 hours; 3) 2.5 kg of dry ice to be used in each of 40 boxes for 30 days @ Rs.35/kg**

**Disclaimer:**

The information given here is meant as a guide to determining suitability of our products for the stated applications. It is based on trials carried out by our laboratories and data selected from literature and shall in no event be held to constitute or imply any warranty. The products are intended for use in industrial applications. The users should test the materials before use and satisfy themselves with regard to contents and suitability in the desired application. Our formal specifications define the limits of our commitment. Recommendation herein may not be construed as freedom to infringe/operate under any third party patents. In the event of a proven claim, our liability is limited only to replacement of our material and in no case shall we be liable for special, incidental or consequential damages arising out of usage of our material. This datasheet is subject to change without notice.