
Dry Ice Calculation Tool

User Guide

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Purpose

The document provides instructions on how to use the online dry ice calculation tool. For more information about dry ice best practices, please refer to Academy Dry Ice course or the Container Operations Manual.

Introduction

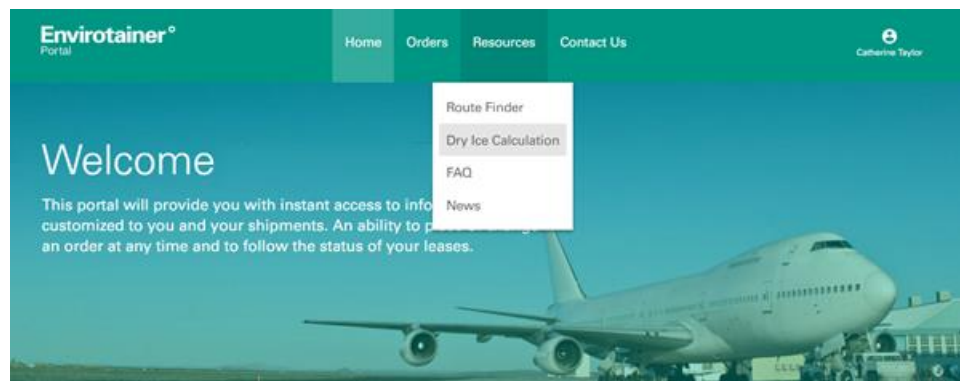
Calculating correct amount and type of dry ice helps ensure container performance. If you do not use enough dry ice, the container will not have enough cooling capacity, and this could cause a 'high temperature deviation' that affects product quality. However, if you use too much dry ice, the container is more susceptible to overcooling if/when ambient (external) temperatures are with-in 5°C of the container set point. This could cause a 'low temperature deviation'.

The online dry ice calculator is a tool used to determine dry ice amounts for RKN t2 and RAP t2 shipments in the following product temperatures ranges:

- Refrigerated (+2°C to +8°C)
- Protect from Freezing (+2°C to +25°)
- Deep frozen (<-18°C)

Do not use the dry ice calculator for Controlled Room Temperature products (+15°C to +25°C) unless both ambient aircraft cargo hold temperatures can be maintained above +25°C (in accordance with RKN t2 and RAP t2 container specifications).

The dry ice calculator can be accessed from the Customer Portal under the Resources tab.



Location of online dry ice calculator

Making a Calculation

There are four ways that you are able to make a calculation:

- New calculation
- From an order
- From the archive
- From a template

New Calculation

Step 1 – Container Information

First, select the container type that you would like to make the calculation for.

Selecting the container type and preconditioning method

Next, select the preconditioning method and container set temperature from the drop down menus.

Note: the most common set temperatures can be found at the top of the list:

Set Temperature selection options

Step Two – Tradelane Information

In this section, enter all of the information about the tradelane which you have already detailed in the transportation schedule including:

- Shipment date
- Origin Airport (search using the IATA airport code or by entering the airport name)
- Duration at origin
- Ambient conditions (either temperature controlled or non-controlled/ambient)
- Flight Duration
- Cargo Hold Temperature
- Destination Airport (search using the IATA airport code or by entering the airport name)

- Duration at Destination
- If reicing will be done
- Ambient conditions (either temperature controlled or non-controlled/ambient)

You can also include any connection information. If the shipment is within the next 10 days, the tool will also forecast the ambient temperature at origin, destination and any connections. The cargo hold temperature is also automatically estimated. If temperature is known, it can be manually entered.

Step Three - Calculate

Once all the information has been entered, the tool will calculate the dry ice amount. The type of dry ice, either wrapped or unwrapped is also noted on this screen. Click the 'Clear All' button on the upper right side of the screen to reset the tool.

The screenshot shows the Envirotainer Portal interface. At the top, there is a navigation bar with 'Home', 'Orders', 'Resources', and 'Contact Us'. The user's name 'Catherine Taylor' is displayed in the top right. The main form contains the following fields:

- Destination Airport:** AUH - Abu Dhabi
- Reicing:** A toggle switch is turned off.
- Duration at Destination:** 7 h
- Ambient Condition:** Non-controlled/Ambient Conditions (selected with a radio button).
- Ambient Temperature:** 44 °C

Below the form, it shows 'Total duration: 19' and buttons for 'SAVE AS TEMPLATE' and 'CLEAR ALL'. The 'Calculation Result' section contains a table:

Tradelane	Duration	Temperature	Amount	Ice Type
LHR-AUH	19h	27.6°C	95 kg	Unwrapped
Total	19h	27.6°C	95 kg	

Below the table, there is a 'REMARKS' section with the following text:

- Follow the shipping and handling guidelines set forth in the container Operations Manual
- Please verify with airline regarding Dangerous Goods labeling, documentation, dry ice restrictions and weight limitations
- If delays exceed the total scheduled time, re-ice with 105 kg for every 24 hour delay

At the bottom of the form, there are two buttons: 'SAVE TO ARCHIVE' and 'EXPORT TO PDF'.

Final calculation results

Calculations with Connections

For tradelanes with connections, click the 'Add Connection' button after entering the Origin information.

Adding a connection

Here, you can enter information about the connection such as:

- Connecting airport
- If reicing will be done
- Duration at connection
- Ambient conditions
- Flight duration
- Cargo Hold Temperature

You can also add multiple connections or remove the connection from your calculation.

Saving and Exporting a Calculation

There are three options for saving the data:

- Save as a template
- Save to Archive
- Export to PDF

Save as a template

Click 'Save as Template' to retain the information as a template. It allows you to avoid reentering the data every time you want to make a similar calculation.

Save to Archive

Click the 'Save to Archive button' so the calculation can be referred to at a later date. The calculation can be given a name (we recommend using the HAWB or MAWB) to make it easier to find at a later date. After entering a name for the calculation, click 'Save'.

Name your Calculation

Your calculation is not associated with an order. To make it easier to locate in the archive, please give it a name. We recommend to enter a HAWB, MAWB or any other form of shipment identification number if available.

Name

CANCEL SAVE

Naming your Calculation pop-up

Export to PDF

The export option allows you to download a PDF version of your calculation so that you can store or share with other persons. As with archiving your calculation, you will be asked to give it a name, and then a PDF format of that calculation will be downloaded to your desktop.

Envirotainer^o

The Active Cold Chain

support@envirotainer.com

Dry ice recommendations

Date: 25 June 2019 at 16:55
Reference: Example Name

Dry ice recommendation for shipment HKG-SIN on 27 June 2019

Dry ice amount per RAP t2 (LD9) container

135 KG (297.6 lb) of Unwrapped slices per container, at origin HKG

Please see remarks for further instructions Calculation performed by: Catherine Taylor, Envirotainer

Shipment information

Shipment date:	27 June 2019
Route:	HKG-SIN
Container type:	RAP t2 (LD9)
Set temperature:	5°C
Precooling method:	Dry ice

Transportation schedule

Activity	Duration	Temperature
Origin	10	33
First flight	4	18
Destination	8	31
Total time and average temp	22	29.5

Remarks

- Follow the shipping and handling guidelines set forth in the container Operations Manual
- Please verify with airline regarding Dangerous Goods labeling, documentation, dry ice restrictions and weight limitations
- If delays exceed the total scheduled time, re-ice with 120 kg for every 24 hour delay

Example PDF

Including re-icing in your calculation

To add re-icing in a calculation, either at a connection or at destination, click the 'Reicing' button. Then, enter the hours before reicing (this is the amount of time from when the shipment arrives to when it is reiced) and the hours after reicing (the amount of time from reicing to when the shipment departs).

For example, a shipment arrives Dubai at 10am, is reiced at 8pm, and departs for the next flight the next morning at 2am. For this calculation, the Before reicing is 10 hours and the After reicing is 6 hours.

The screenshot shows a form for entering reicing information. It includes a dropdown menu for 'Connection 1' set to 'DXB - Dubai Intl'. A 'Reicing' toggle switch is turned on. There are input fields for 'Before reicing' (set to 10) and 'After reicing' (set to 6), both with 'h' for hours. Under 'Ambient Condition', 'Non-controlled/Ambient Conditions' is selected with a radio button. The 'Ambient Temperature' is set to 35 °C.

Screen to enter reicing information

Creating a Calculation from an Order

Making a calculation based on a container order will save time by pre-populating some of the information provided when the container order was made, such as container type, tradelane and shipment dates.

Step 1 – Select and order

Click on 'Get from Order'

The screenshot shows the 'Envirotainer Portal' interface. The top navigation bar includes 'Home', 'Orders', 'Resources', and 'Contact Us'. The user 'Catherine Taylor' is logged in. The main heading is 'Dry Ice Calculation'. Below this, there are three buttons: 'Get from Order' (highlighted with an orange box), 'Get from Archive', and 'Get from Template'. To the right, there are fields for 'Order' (EWS40582) and 'Air Waybill' (125-49213533). Below these is a 'Container Information' section with 'Select container type' (showing 'RAP t2' and 'RKN t2' options), 'Preconditioning Method' (set to 'Dry ice'), and 'Set Temperature' (set to '0 °C').

Location of the 'Get from Order' button

Then, search for the relevant order by Tradelane, Order ID, AirWaybill or, scroll down the list of your orders. Click on the relevant order.

The screenshot shows the 'Dry Ice Calculation' tool in the Envirotainer Portal. At the top, there are navigation links for Home, Orders, Resources, and Contact Us, along with the user's name, Catherine Taylor. The main content area is titled 'Dry Ice Calculation' and features three buttons: 'Get from Order', 'Get from Archive', and 'Get from Template'. Below these is a 'Container Information' section with two container options: 'RAP t2' and 'RKN t2'. To the right of the containers are 'REQUIRED' and 'Preconditioning' sections, with 'Dry ice' selected under 'Preconditioning' and '0 °C' under 'Set Temperature'. A 'Get from Order' pop-up window is open on the right, showing a search bar and a list of orders with their Order IDs and AWBs.

Searching for your order pop up

Step Two – Fill in information

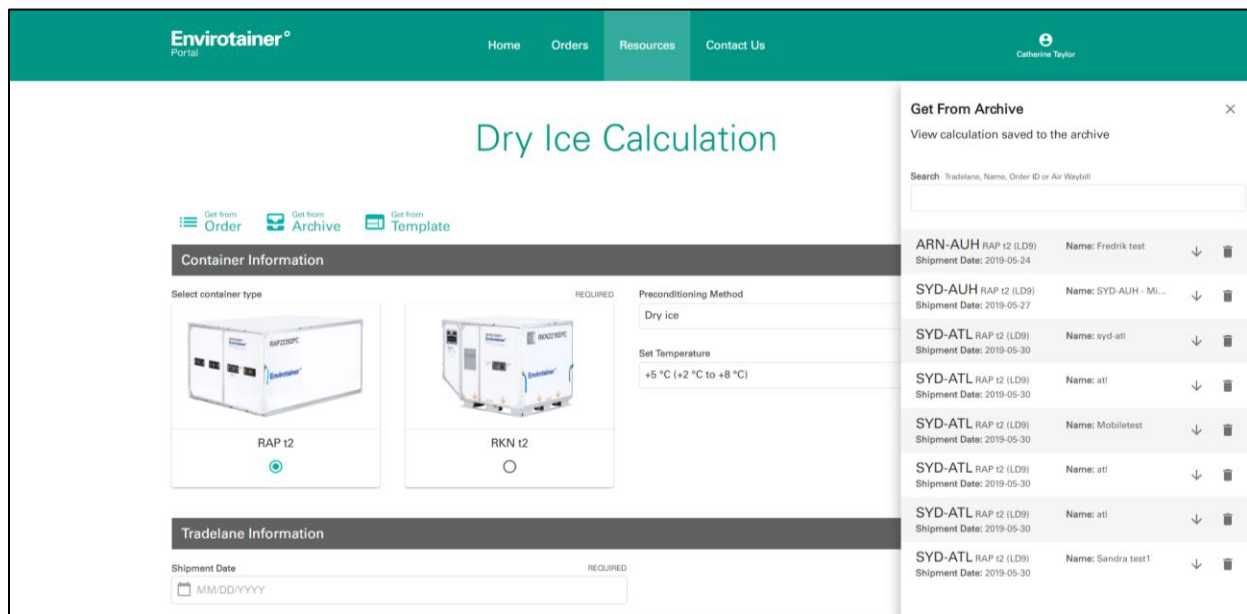
Enter the information in those fields that were not pre-populated from the container order. If any of the mandatory fields were not completed, the calculation will not be made and the incomplete fields will be shown. Once you have entered all of the information, the calculation can be saved or exported as a PDF.

The screenshot shows the 'Calculation Result' section of the tool. At the top, there is a radio button for 'Non-controlled/Ambient Conditions'. Below this, the 'Total duration' is shown as 0. There are buttons for 'SAVE AS TEMPLATE' and 'CLEAR ALL'. The main content is a box titled 'Calculation Result' with the text 'Please make sure all these fields are filled:' followed by a list of fields: Shipment Date, Origin Site Duration, Origin Site Temperature, Origin Flight Duration, Origin Flight Temperature, Destination Site Duration, and Destination Site Temperature. At the bottom of this box are buttons for 'SAVE TO ARCHIVE' and 'EXPORT TO PDF'. The footer contains the Envirotainer logo and links for Terms & Conditions, Privacy Policy, and Contact us, along with the copyright notice '© Envirotainer 2019'.

Missing Information example

Getting a Calculation from Archive

Retrieve a previous calculation from archive by clicking the 'Get from Archive' button.

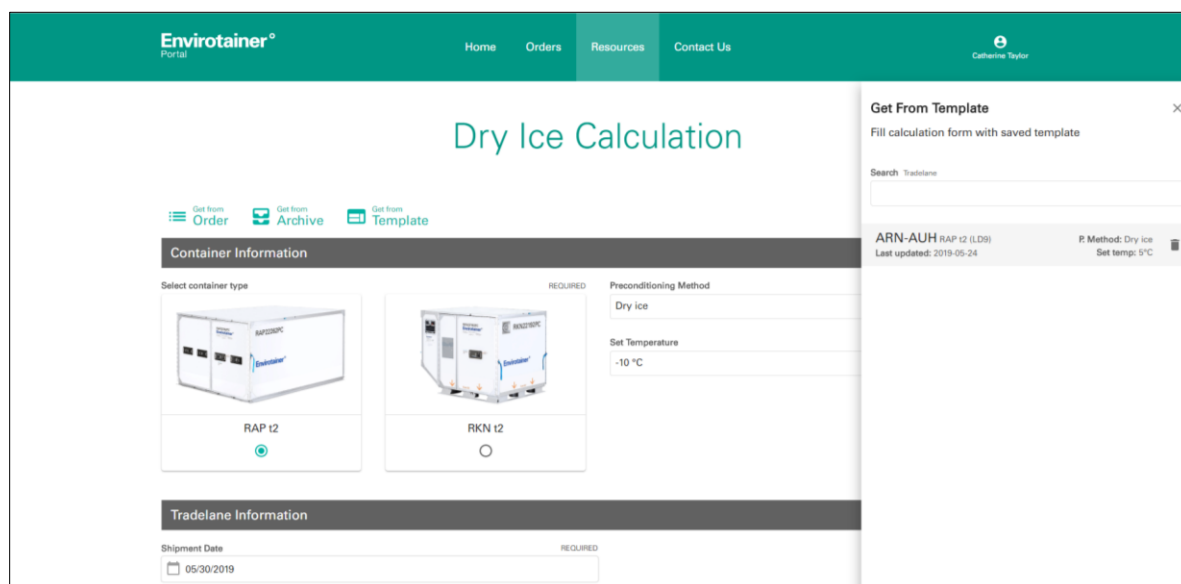


Searching your archive pop up

This displays a menu of previous calculations using information such as Tradelane, Name, Order ID or Air Waybill. Scroll through the list to find the needed calculation and click on the name to view that calculation and the information that was entered. The calculation can be downloaded as a PDF file by clicking on the arrow next to the calculation, or deleted from the archive by clicking on the trashcan icon.

Getting a Calculation from Template

To retrieve your template, click on the ‘Get from Template’ button.



Searching your templates pop up

This option allows you to search for a template. Scroll through the list to find the needed template and click on the name to view that calculation and the information that was entered. Make any adjustments (e.g. shipment date), and the dry ice amount will be calculated. Delete the template by clicking the trashcan icon.