

# **COLD CHAIN DATABASE**

<http://www.frisbee-project.eu/coldchaindb.html>

## **USER INSTRUCTIONS**

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## 1. Introduction

### FRISBEE PROJECT

The **Frisbee Project** is a European Union funded 4-year Project (<http://www.frisbee-project.eu>). The objective of the FRISBEE (Food Refrigeration Innovations for Safety, consumers' Benefit, Environmental impact and Energy optimisation along the cold chain in Europe) project is to provide new tools, concepts and solutions for improving refrigeration technologies along the European food cold chain. At all stages the needs of consumer and European industry will be considered. The project will develop new innovative mathematical modelling tools that combine food quality and safety together with energy, environmental and economic aspects to predict and control food quality and safety in the cold chain.

### COD CHAIN DATABASE

**Cold Chain Database** has been developed by a systematic data collection for the purpose of identification and evaluation of the weak links in the cold chain for different types of chilled and frozen products. Data collection was achieved in the FRISBEE project framework within the Cold Chain Data Collection Platform (<http://www.frisbee-project.eu/coldchaindb.html>). The Cold Chain Database (hosted in the link <http://www.frisbee-project.eu/coldchaindb.html>) was constructed in order to develop a user friendly on line platform where collected data from all cold chain stages (Data collected in the Cold Chain Data Collection Platform) can be retrievable and available to be used from candidate users (consortium members, beneficiary members, industry and research institutes). One is able to retrieve time-Temperature profiles of specific products along the cold chain using search criteria such as Stage/step of the cold chain, Food storage temperature range, Characterization of food, Food product etc.

## 2. Cold Chain Database User Instructions

### 2.1 Introduction

Cold Chain Database was constructed in order to develop a user friendly on line platform where collected data from all cold chain stages can be retrievable and available to be used from candidate users (consortium members, beneficiary members, industry and research institutes).

### 2.2 Levels of access to the Cold Chain Database

There are three levels of access to the Cold Chain Database depending on the number of cold chain data records the user can have access to (Table 1).

**Table 1.** Description of the three levels of access to the Cold Chain Database.

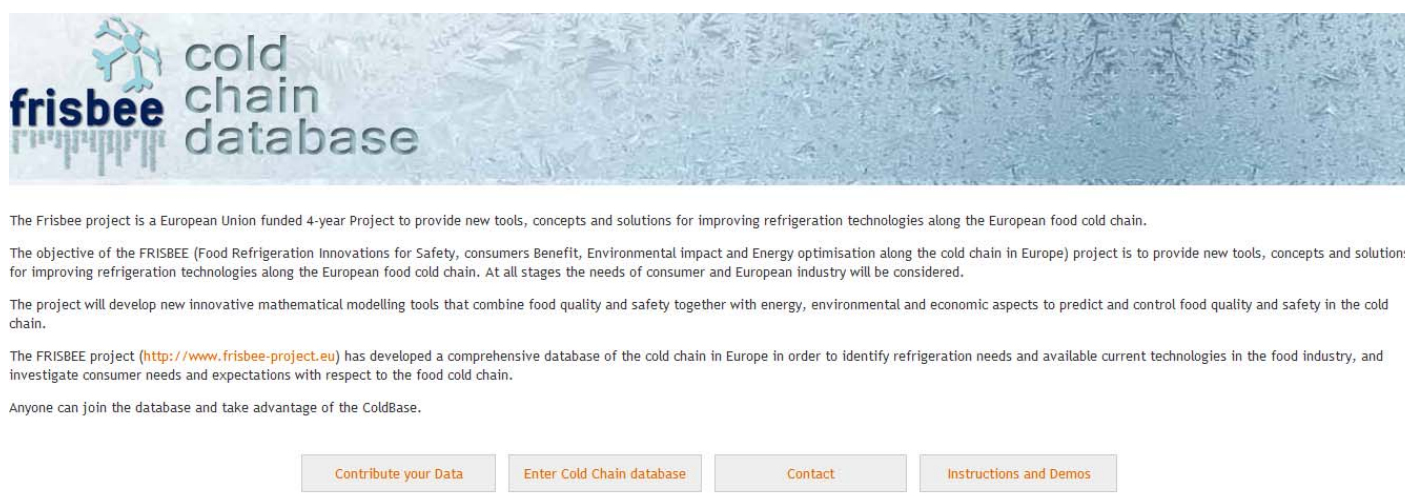
Access Level	Description	Cold chain data records	User Profile
1	Access to the Cold Chain Database Demo version.	92 representative files of cold chain data (Distribution Warehouse for chilled processed, ready to eat milk products)	New Users or already signed Users of the Cold Chain Data Collection platform that haven't contributed any records so far.
2	Access to the Cold Chain Database Demo version & user's contributed data.	92 representative files of cold chain data (Distribution Warehouse for chilled processed, ready to eat milk products) All data that the user has already contributed to the Cold Chain Data Collection platform.	Users-Contributors of the Cold Chain Data Collection platform <a href="http://www.frisbee-project.eu/coldchaindb.html">http://www.frisbee-project.eu/coldchaindb.html</a>
3	Full access to the Cold Chain Database.	All files of cold chain data that have been collected. So far the Database comprises 4940 records. The Database will be continuously updated.	<ul style="list-style-type: none"> <li>▪ <b>Consortium Members</b> free access to see + licence for use + no transfer allowed + condition of mention of the co-owners</li> <li>▪ <b>Academic research use</b> free access for research activity – activity exclusive of commercial or industrial use + no transfer allowed + condition of share of any derivation and mention of the co-owners</li> <li>▪ <b>Commercial or industrial use</b> Licence for use (conditions to be settled between the co-owners)</li> </ul>

## 2.3 Cold Chain Database



### 2.3.1 Enter the Cold Chain Database

In order to enter the Cold Chain Database web based platform the user should visit the following URL: <http://www.frisbee-project.eu/coldchaindb.html>



**Figure 1.** Introductory screen of the Cold Chain Database.

Click on the **Enter Cold Chain Database** button. This will lead you to the Login Window.

### 2.3.2 Login to the Cold Chain Database

- **Cold Chain Data Collection Users**

Use your Login details (username and password) that you have created for the Cold Chain Data Collection (<http://www.frisbee-project.eu/coldchaindb.html>). If you do not remember your account details contact at [frisbee@chemeng.ntua.gr](mailto:frisbee@chemeng.ntua.gr) for receiving your username and password.

- **New Users**

If you do not already have an account you can create a new one by pressing on the “**Create a new account**” field.



**Frisbee - WP2 Cold Chain Database**

**Please Enter Username and Password and press "Login"**

Username :

Password :

If you do not have a username you can [create a new account](#), or contact us at [frisbee@chemeng.ntua.gr](mailto:frisbee@chemeng.ntua.gr) to receive your account details

**Figure 2.** FRISBEE Cold Chain Database login window.

### 2.3.3 How to use the Cold Chain Database-Access Level 1 (Demo version)

In the Demo version of Cold Chain Database the user has access to 92 data records. The left pane of search criteria is actually inactive. The search criteria are already predetermined and are the following (see also Figure 3):

**Stage/Step of cold chain:** Distribution warehouse

**Food storage temperature range:** Chilled

**Characterization of food:** Processed ready to eat

**Type of food:** Milk and milk product

The user can also see the number of records matching those predetermined criteria and the corresponding descriptive statistics (mean, minimum and maximum temperature).

The screenshot shows the 'frisbee cold chain database' interface. On the left, search criteria are listed with checkboxes. The 'Selected Results' section on the right displays the following statistics:

- Number of Records : 92
- Mean temperature value (°C) \* : 3.91
- Minimum temperature value (°C) \* : -0.5
- Maximum temperature value (°C) \* : 8

A 'Continue' button is located at the bottom right of the results section. A 'Clear Form Data' button is also visible at the bottom left of the search criteria section.

Figure 3. Description of the Cold Chain Database Demo page (Access Level 1).

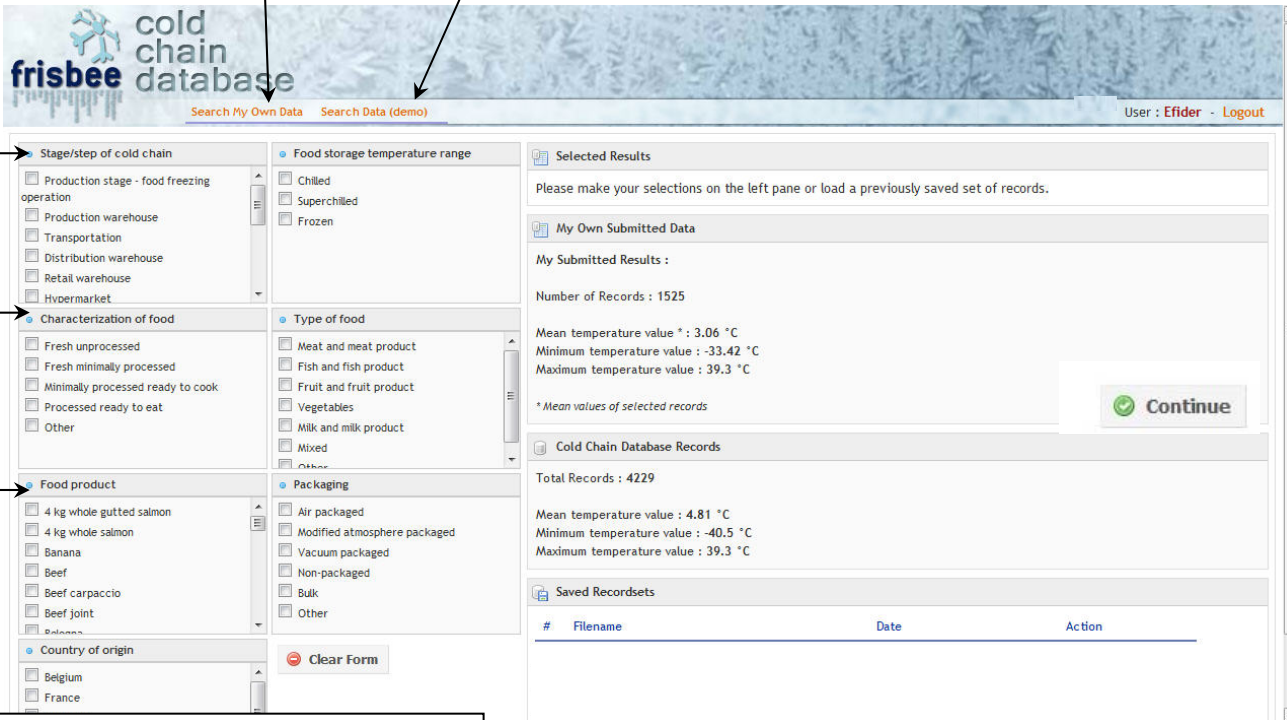
In order to access the data records click on the **Continue** button and follow the instructions in [Pages 11-12](#).

### 2.3.4 How to use the Cold Chain Database-Access Level 2

Users with an Access Level 2 can either work with the Demo version consisting of 92 predetermined data records or work with their own (already) submitted data by clicking on the corresponding fields as illustrated in the following figure as Option 1 and 2, respectively.

**OPTION 1**  
Click here in order to work with your own submitted data.

**OPTION 2**  
Click here in order to work with the Demo version.



The screenshot shows the 'frisbee cold chain database' interface. At the top, there are two buttons: 'Search My Own Data' and 'Search Data (demo)'. Below these are several search criteria sections with checkboxes:

- Stage/step of cold chain:** Production stage - food freezing operation, Production warehouse, Transportation, Distribution warehouse, Retail warehouse, Hvermarket.
- Food storage temperature range:** Chilled, Superchilled, Frozen.
- Characterization of food:** Fresh unprocessed, Fresh minimally processed, Minimally processed ready to cook, Processed ready to eat, Other.
- Type of food:** Meat and meat product, Fish and fish product, Fruit and fruit product, Vegetables, Milk and milk product, Mixed, Other.
- Food product:** 4 kg whole gutted salmon, 4 kg whole salmon, Banana, Beef, Beef carpaccio, Beef joint, etc.
- Packaging:** Air packaged, Modified atmosphere packaged, Vacuum packaged, Non-packaged, Bulk, Other.
- Country of origin:** Belgium, France.

On the right side, there are two result sections:

- My Own Submitted Data:** My Submitted Results: Number of Records : 1525. Mean temperature value : 3.06 °C, Minimum temperature value : -33.42 °C, Maximum temperature value : 39.3 °C. A 'Continue' button is present.
- Cold Chain Database Records:** Total Records : 4229. Mean temperature value : 4.81 °C, Minimum temperature value : -40.5 °C, Maximum temperature value : 39.3 °C.

At the bottom left, a box lists the search criteria to be selected:

- Stage/Step of cold chain
- Food storage temperature range
- Characterization of food
- Type of food
- Food product
- Packaging
- Country of origin

**Figure 4.** Description of the Cold Chain Database (Access Level 2).

If you choose to work with the Demo version follow the instructions in section: [2.3.3 How to use the Cold Chain Database-Access Level 1 \(Demo version\)](#).

If you choose to work with your own (already) submitted data you can set your search criteria on the left pane as illustrated in Figure 4.



Finally, in order to access in detail the data records matching your search criteria click on the **Continue** button and follow the instructions in [Pages 11-12](#).

### 2.3.5 How to use the Cold Chain Database-Access Level 3 (Full access)

Users with Access Level 3 have access to all contributed time-temperature profiles and can set their search criteria by selecting from the left pane.

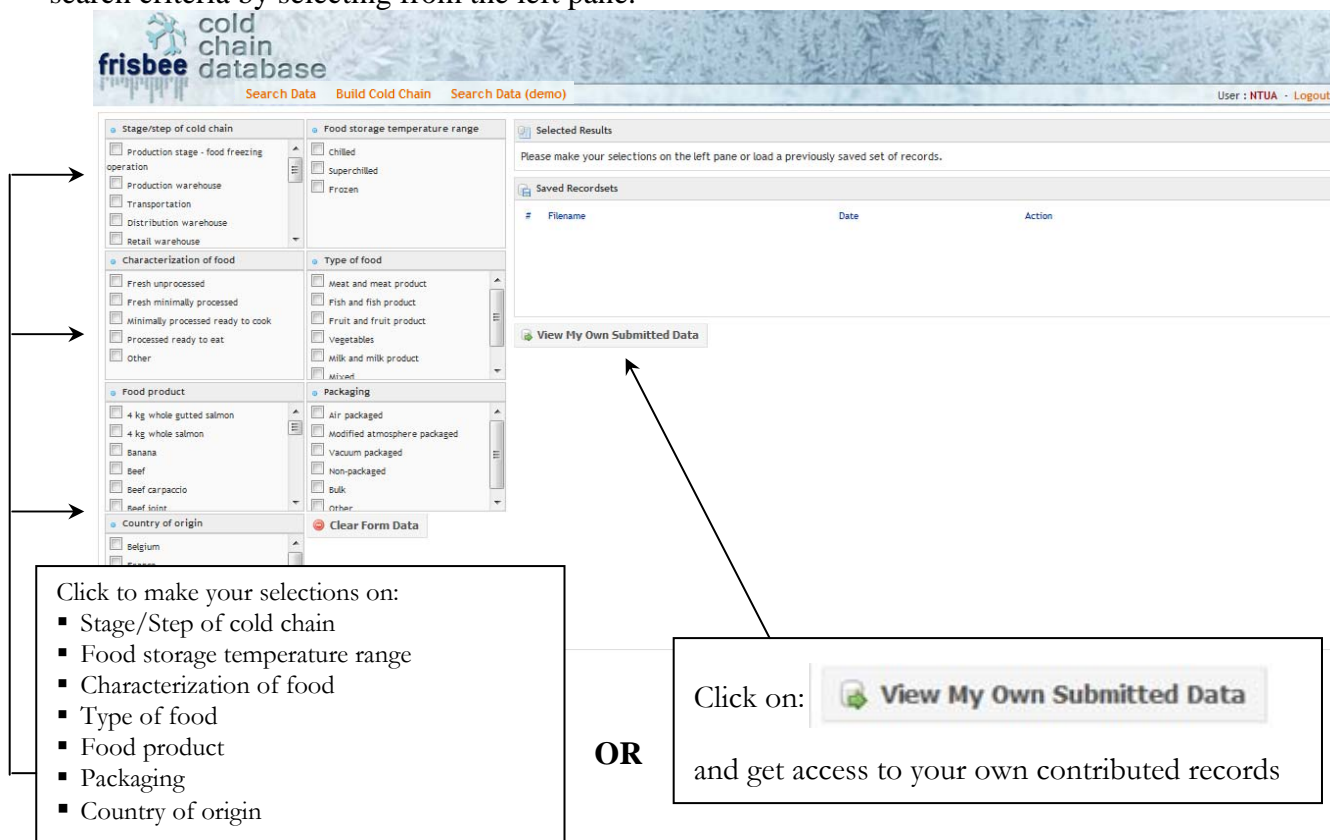


Figure 5. Description of the Cold Chain Database (Access Level 3-Full Access).

As soon as the user sets the search criteria the number of records matching these criteria and the corresponding descriptive temperature statistics (mean, minimum and maximum temperature values) are depicted.

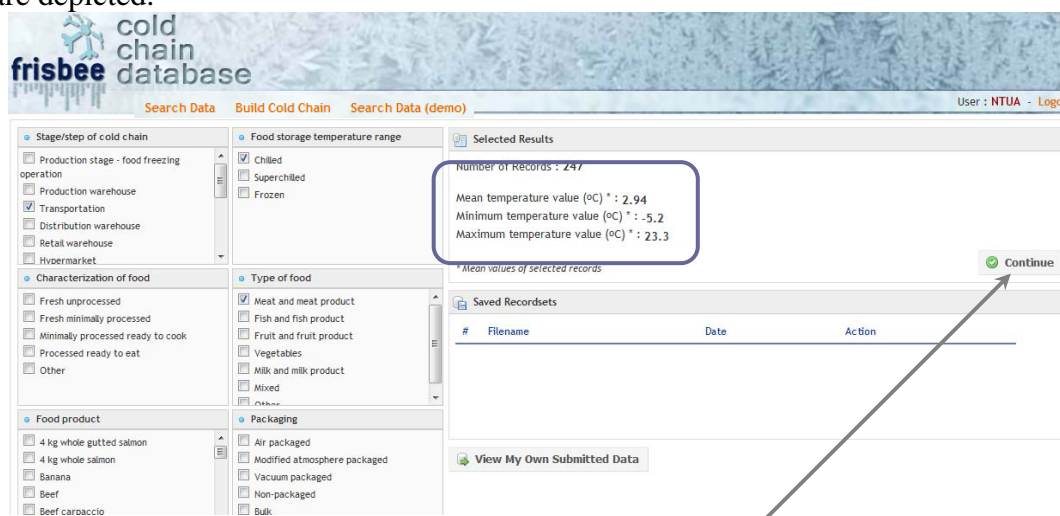


Figure 6. Description of the Cold Chain Database (Access Level 3-Full Access).

In order to access the data records in detail click on the **Continue** button.

On the left pane the user can see the list of records matching the selected search criteria. In order to see the data of a specific record click on the **record name** (e.g. 6410 mins, 1.1 to 10.2 °C).



The screenshot displays the 'frisbee cold chain database' interface. At the top, there are navigation links: 'Search Data', 'Build Cold Chain', and 'Search Data (demo)'. Below the header, it indicates 'Number of Records : 247'. A message on the right says '<- Please select cold chain characteristics from the box on the left.' The main area contains a list of records, each with a checkbox and a record name. The record '6410 mins, 1.1 to 10.2 °C' is highlighted, and a tooltip 'Report: 202' is visible over it. At the bottom, there are radio buttons for 'Select All' and 'Select None'.

Record Name
<input type="checkbox"/> 16690 mins, 1.4 to 16.8 °C
<input type="checkbox"/> 6760 mins, 1.1 to 12.8 °C
<input type="checkbox"/> 6600 mins, 1.1 to 23.3 °C
<input type="checkbox"/> 6980 mins, 1.1 to 21.4 °C
<input checked="" type="checkbox"/> 6410 mins, 1.1 to 10.2 °C
<input type="checkbox"/> 10560 mins, 1.4 to 13.9 °C
<input type="checkbox"/> 6980 mins, 1.1 to 12.2 °C
<input type="checkbox"/> 17900 mins, 0.5 to 11 °C
<input type="checkbox"/> 17970 mins, 1.1 to 13 °C
<input type="checkbox"/> 17980 mins, 1.4 to 11.6 °C
<input type="checkbox"/> 17960 mins, 0.8 to 12.5 °C
<input type="checkbox"/> 17980 mins, -0.4 to 12.2 °C
<input type="checkbox"/> 17980 mins, -1 to 10.8 °C
<input type="checkbox"/> 15380 mins, 1.7 to 8.5 °C
<input type="checkbox"/> 15440 mins, 1.4 to 8.5 °C
<input type="checkbox"/> 15470 mins, 1.7 to 9.3 °C
<input type="checkbox"/> 15440 mins, 1.4 to 8.8 °C
<input type="checkbox"/> 15430 mins, 1.4 to 9.3 °C
<input type="checkbox"/> 15410 mins, 1.4 to 8.8 °C
<input type="checkbox"/> 15450 mins, 1.4 to 8.5 °C
<input type="checkbox"/> 15460 mins, 1.4 to 9.9 °C
<input type="checkbox"/> 15140 mins, 1.7 to 8.8 °C

**Figure 7.** List of records corresponding to user 's search criteria.

As soon as the user clicks on a specific record name he/she gets access to all data (raw data and metadata) concerning the selected data record (See the following figure).

**Click here and download the raw data (time and temperature)**

**Record name**  
(Corresponds to the filename given when the record was uploaded on the Cold Chain Data Collection)

**Click here and download the metadata file**

**The user can click and drag anywhere on the graph area in order to zoom in**

**Here you can enter a user defined total storage time (in minutes) in order to reload the chart in the preferred time scale**

**Temperature distribution graph**

**Descriptive statistics**

**Click here and view the metadata details**

**Click here to download the metadata file**

This option can be used in order to save a **recordset** (a group of records with the same search criteria). You can select all the records matching the criteria or you can select only specific records by placing a tick in the box in front of each record name. By saving a record set the user can retrieve any used record sets the next time he/she logs in at the Cold Chain Database.

This field is used to calculate the effective temperature value of the specific time-temperature record. The effective temperature can be calculated either based on predetermined activation energy values or by entering a user defined value.

