



Document created / updated Date: 08.12.2022 Revision Level: 01 Name: MSC	Document released Date: 30.11.2022 Name: MSC	Test Report Renature Thermo Size M	
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Test Item: Renature Thermo Size M

Renature Thermo Size M Test Run:
221121_Afnor 24b x2 Test,

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1. Version Control

The table below documents version history of the qualification report. Reasons for changes are noted.

Version	08.12.2022/ Sign	Reason / Annotation
1.0	i.A. M. Schendzielorz	First version

2. Test run set-up and Equipment

2.1. Material list:

- Renature Thermo Size M Box with product load
- Outside dimensions: 405x310x230mm, usable volume: 355x260x180mm
- 6x TCPplus® Gelpacks 450g
- 1 x A-Panel / 1 x B-Panel
- Climatic Chamber
- Data Logger

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Table 1 Test run

Test Run	Test item	Pre-conditioning	Test Profile
1	Renature Thermo Size M Box	All Gelpacks frozen at -20°C	AFNOR 24-b x2

Figure 1 Pictures Renature Thermo Size M Box



Figure 2 Picture Renature Size M Box with product load



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2.2. TCPplus® Gelpacks 450g

For the qualification we use 6x TCPplus® Gelpacks 450g

Figure 3 Picture TCPplus® Gelpacks 450g



2.3. Test Chamber

The Climatic Chamber is the property of Storopack. The Climatic Chamber is regularly checked. Qualification tests are run at Storopack, Metzingen. Test Chamber Type WT 7/25-50
Built in: 25.07.2008

- External Dimension: 1800 x 1800 x 3100 mm
- Internal Dimension: 1560 x 1560 x 2760 mm
- Temperature Range: -25° - +50°C
- Test Profile Simulation Software: SIMPATI
- Last calibration: 01.02.2022

Figure 3 Pictures Climatic Chamber



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3. Test Procedure

Test profile: AFNOR St-24-b x2 profile with product load.
 The test ends after 48 h.

The data loggers are adjusted to the following parameters:

- Measuring interval: 5 minutes
- none measuring delay
- Measuring accuracy: $\pm 0,5K$

3.1. Acceptance Criteria

Criterion 1: Documented will be the duration during which the box was able to keep the temperature between the 0-8 °C range;

Criterion 2: All temperature loggers provide data (no gaps);

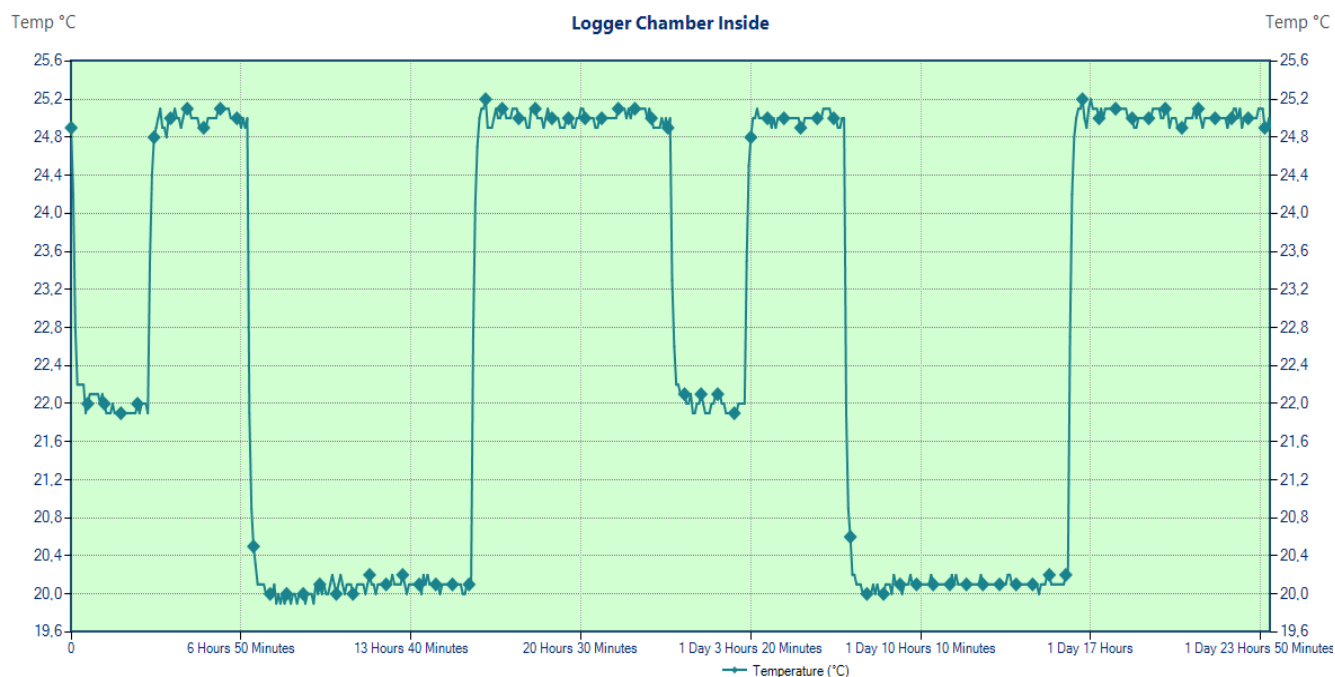
Criterion 3: Climatic chamber run test profiles as given (AFNOR St-24-b x2 Temperature Profile);

The test setup applies for all test runs.

3.2. Temperature Profile

The temperature profile applicable runs as:

Figure 4 Profile AFNOR St-24-b x2 =Summer Profile



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3.3. Denomination Data Loggers

The following data loggers are used for the test run.

LogTag Trix-8

Denomination Data Logger	Logger ID
Climatic Chamber	1002060059
bottom	1002060065
top	1002060063

4. Test Execution

4.1. Preparatory Steps

- The box and panels are conditioned at room temperature (19 – 23°C).
- The product load is conditioned at 5°C for 24h min. and put directly into the box with panels.
- The data loggers are allocated.
- The cooling elements are conditioned at -20°C for 48h and put directly into the box with product load and data loggers.
- The box was closed immediately, and the climate chamber was started with above profile.

Figure 5 Picture finished Renature Thermo Size M Box



Qualification runs are with Product.

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Table 2 Start and End Test Runs Renature Thermo Size M

221121_AFNOR St-24-b x2 with product load		
	Renature Thermo Size M 6x TCPplus® Gelpacks 450g	
Start	Date: 21.11.2022	Time: 15:30
End	Date: 23.11.2022	Time: 15:45

On termination of the test runs, the test item is put of the chamber, the loggers are stopped. The data loggers are connected to the entity reading the electronic data.

4.2. Results

During the test no deviation occurred.

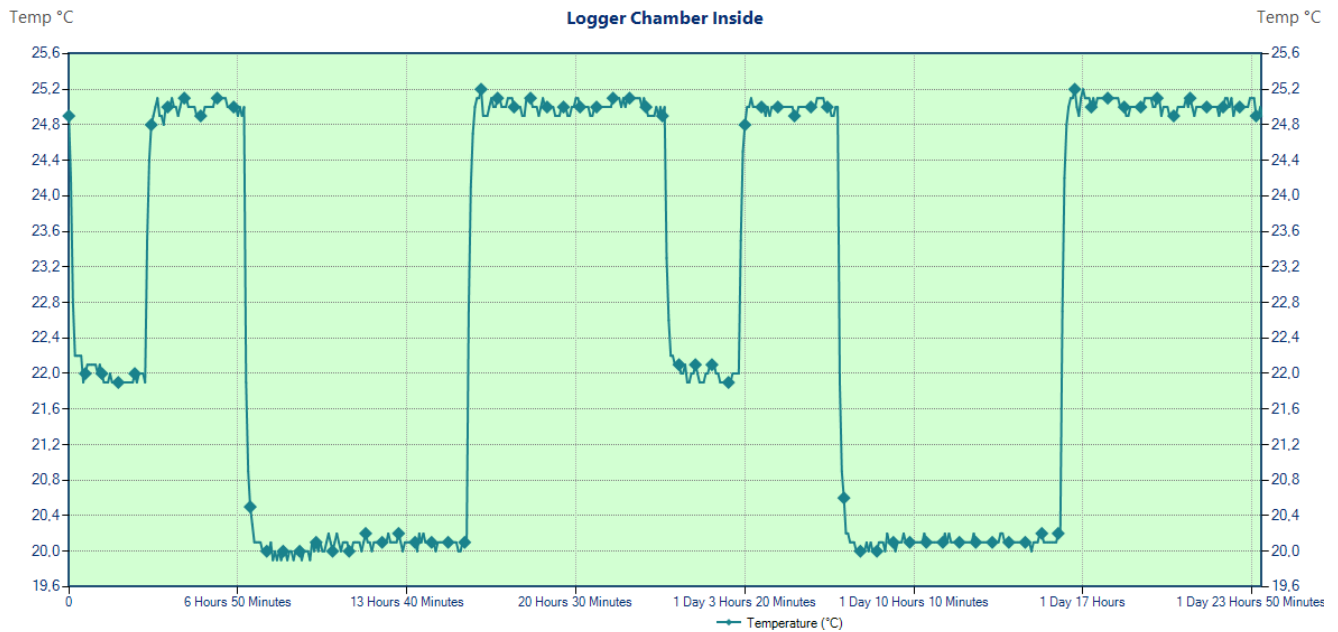
Criterion 1: Documented will be the duration during which the box was able to keep the temperature within the requested range; criterium is met

Criterion 2: All temperature loggers provide data (no gaps); criterium is met;

Criterion 3: Climatic chamber run test profiles as given AFNOR St-24-b x 2; criterium is met;

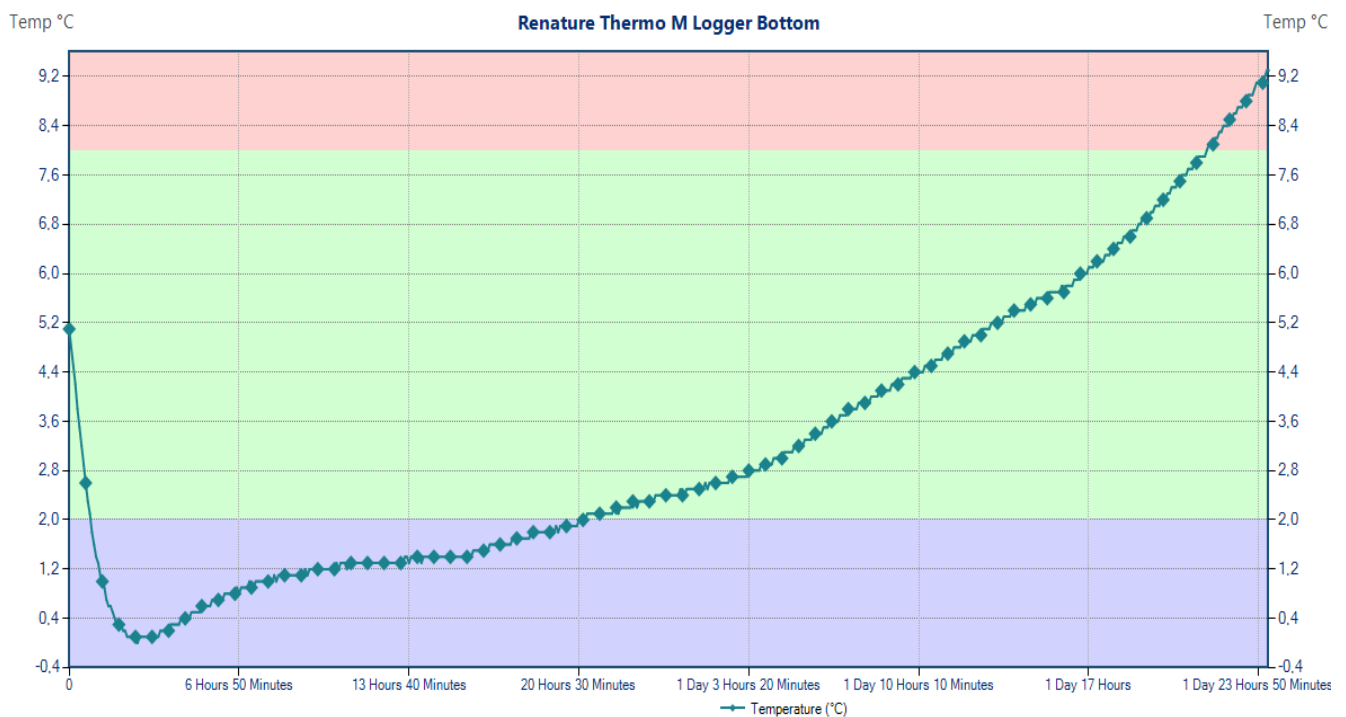
4.3. Renature Thermo Size M Test #: 221121_AFNOR St-24-b x2 with Product

Figure 6 Logger Inside Climatic Chamber "Test AFNOR St-24-b x2 with Product"



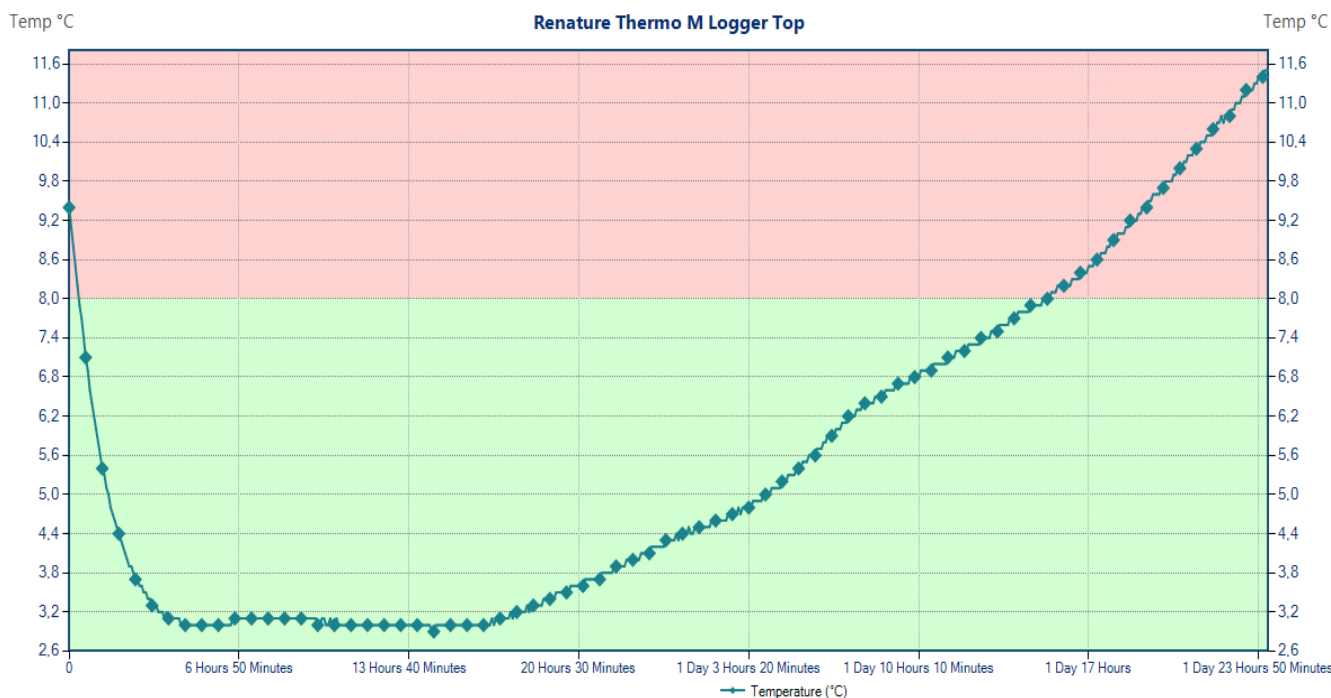
The logger of the Climatic Chamber monitors that the agreed profile has been followed.

Figure 7 Logger Bottom "Test AFNOR St-24-b x2 with Product"



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Figure 8 Logger Top “Test AFNOR St-24-b x2 with Product”



The set temperature of 0°C – 8°C in the box lasted 39h 25 min (Logger Top).

5. Evaluation

The measured sensors meet the requirements. The specified acceptance criteria are met. The climatic chamber operates reliably within the specified range. The test has shown that the Renature Thermo Box Size M works reliably within the specified range. The objectives have therefore been met.

The summary below shows the minimum runtime of the test.

The Renature Thermo Size M with product load, tested with the AFNOR St-24-b x 2 profile, maintained the temperature for 39h 25 min.