



Product Service

**Mehr Wert.
Mehr Vertrauen.**

09.10.2023

Test Report

No. TR-713297568-00 (Revision 1)

Applicant	Versapak International Ltd.; 4 Veridion Way; Erith; DA18 4AL; (United Kingdom)		
Manufacturer	Versapak Romania SRL		
Type of device	Airline Bags		
Type designation	Thermal Bag; Ice Bag		
Serial number	N/A		
Order No.	71550		
Receipt of DUT	14.04.2023 Ice Bag;01.08.2023 Thermal Bag	Return of DUT	04.05.2023 Ice Bag;At the time of writing this report, the unit under test (Thermal Bag) was still in our laboratory.
Test standards	EN 60068-2-2:2007 Dry Heat		

Accredited test laboratory
Deutsche Akkreditierungsstelle
GmbH (DAkkS):

Reg.Nr.
D-PL-11321-02-02



Registered Office: Munich
Trade Register Munich HRB 85742
UniCredit Bank AG · BIC HYVEDEMMXXX
IBAN DE13 7002 0270 0048 8522 11
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Supervisory Board:
Holger Lindner (Chairman)
Board of Management:
Walter Reithmaier (CEO)
Patrick van Welij



TÜV SÜD Product Service GmbH
Dudenstraße 28
68167 Mannheim
Germany



Conclusion

Test Results		Order No. 71550					
Tests were performed according to: EN 60068-2-2:2007 Dry Heat							
Tests performed	Location	Operating mode			Test result		
		Operating	Non Operating	Transport/Storage	Passed	Not Passed	No Evaluation
Dry heat	Mannheim	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The test results relate only to the individual item which has been tested. Without the written approval of the test laboratory this report may not be reproduced in extracts.

Date	Tested by	Checked by	Test Result
09.10.2023	 SIGN-ID 839059 Haridimos Mountogianakis	 SIGN-ID 842253 Uwe Marlok	

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1 General information

Order information	
Client:	Versapak International Ltd.; 4 Veridion Way; Erith; DA18 4AL; (United Kingdom)
Contact person:	Ms. Jenni Bowden
Order No.:	71550
Receipt of the DUT:	14.04.2023 Ice Bag;01.08.2023 Thermal Bag
Return of the DUT to customer:	04.05.2023 Ice Bag;At the time of writing this report, the unit under test (Thermal Bag) was still in our laboratory.
Date of testing:	21.04.2023 – 10.08.2023
Location:	Mannheim (further information, see Pos. 2)
Responsible for the testing:	Ms. Irina Schneider
Responsible for the test report:	Mr. Haridimos Mountogianakis
Test report approved by:	Mr. Uwe Marlok

Test report information	
Test report No.:	TR-713297568-00 (Revision 1)
Date of Issue:	09.10.2023



2 Information about the test laboratory

Information about the test laboratory located in Mannheim	
Company name:	TÜV SÜD Product Service GmbH
Adress:	Dudenstraße 28 D-68167 Mannheim Germany
Accreditation:	DAkkS registration No.: D-PL-11321-02-02
Contact:	Mr. Uwe Marlok
	Phone: +49 621 395-287 Fax: +49 621 395-604

3 Information about the Device under Test (DUT)

Information about the DUT	
Type designation:	Thermal Bag; Ice Bag
Type of device:	Airline Bags
System components:	N/A
Number of DUT	3
Serial number:	N/A
Manufacturer:	Versapak Romania SRL
State of the DUT at receipt:	No visible damages

3.1 Pictures of the DUT



Figure 1 – Test sample “Thermal Bag”



Figure 2 – Test sample “Ice Bag”



Figure 3 – ICECATCH (thermal insulated) 1100 g



Figure 4 – Freeze Boards 750 g



Figure 5 – ICECATCH (frozen) 1100 g

4 Operation mode and configuration of the DUT

Operation mode(s)
Passiv

5 Test sequence

Tests performed	Nr.	Date	Remarks
<i>Temperature / Climatic tests</i>		21.04.2023 – 10.08.2023	
Dry heat Test 3	1	21.04.2023 – 25.04.2023	
Dry heat Test 4	2	24.04.2023 – 26.04.2023	
Dry heat Test 1	3	07.08.2023 – 08.08.2023	
Dry heat Test 2	4	09.08.2023 – 10.08.2023	

6 Uncertainty of measurement

Uncertainty of measurement environmental simulation			
Test	k_p	Extended uncertainty of measurement	Remarks
Force measurements with Almemo K25 force testing device	2	± 0.52 %	1
Voltage measurements < 7000 V	2	± 1.08 %	1
Current measurements	2	± 1.2 %	1
Power measurements up to 1800 W (45 – 66 Hz)	2	± 1.67 %	1
Time measurements	2	± 0.58 s	1
Insulation resistance measurements	2	± 3.72 %	1
Electro-dynamic vibration system (Shaker)	2	± 9.09 %	2
Tempature measurements	2	± 2.00 K	2
Temperature in temperature- / climatic test chamber	2	± 1.98 K	2
Relative humidity in temperature test chamber	2	± 2.81 % r.h.	2

remark 1:

The after GUMS (1995) described extended measurement uncertainty is based on the standard measurement uncertainty multiplied by the extension factor of $k_p = 2$ for a confidence level of $p = 95,45 \%$.

remark 2:

The after UKAS LAB 34 (Edition 1, 2002-08) described extended measurement uncertainty is based on the standard measurement uncertainty multiplied by the extension factor of $k_p = 2$ for a confidence level of $p = 95,45 \%$.

7 Rule of decision

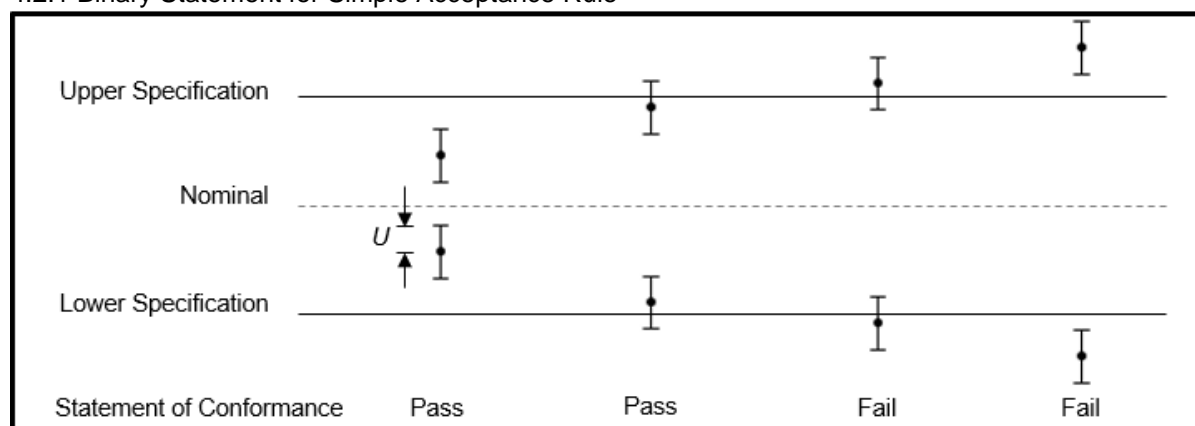
The decision rule and statements of conformity in the laboratory are based on ILAC-G8:09/2019 in clause 4.2.1 Binary Statement for Simple Acceptance Rule.

This normative regulation means that the measured value is also the value to be assessed in relation to the limit value.

ILAC-G8:09/2019

Guidelines on Decision Rules and Statements of Conformity

4.2.1 Binary Statement for Simple Acceptance Rule



U = 95% expanded measurement uncertainty

8 Referenced regulations

Publication	Title
EN 60068-2-2:2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat (IEC 60068-2-2:2007); German version EN 60068-2-2:2007

9 Temperature- and climatic tests

9.1 Test equipment

Type	Designation	Inv.-no.	Manufacturer
Temperature-/climatic test chamber (K9)	PL-3J	17522	Espec Corp
Temperature-/climatic test chamber (K12)	HPP1060	45464	Memmert
Temperature-/climatic test chamber (K10)	PL-3J	17523	Espec Corp
Temperature test chamber (T1)	VT4011	50054	Vötsch
Graphtec	GL240	46879	Graphtec

9.2 Executed Testing

9.2.1 Dry heat – Thermal Bag Test 1

EN 60068-2-2 Dry heat			
Ambient conditions	18 °C – 28 °C 40 % r.h. – 60 % r.h. 950 hPa – 1015 hPa		
Operation mode	no operation		
Test period	07.08.2023 – 08.08.2023	Test result	Notes
No. of Test sample(s)	1 x Thermal Bag	No evaluation	Temperature limit exceeded after: 8 h 28 min
Test Temperature	24 °C		
Dwell time	12 h		
Slew rate	1 K/min		
Preconditioned ICECATCH (Test 1)	2 x ICECATCH (thermal insulated) - 18 °C for min. 24 h		
Preconditioned Load	20 Plastic bottles 0,5 l, filled with water 2 °C for min. 24 h		
Placement test 1	1 x ICECATCH 1100 g down each side of bag (non-print insulated side in contact with contents)		
Temperature limit of samples	+ 2 °C to + 8 °C		

Test setup



Figure 6 – Preconditioned plastic bottles in the climatic chamber



Figure 7 – Placement of the plastic bottles and the ICECATCHs in the test sample "Thermal Bag"



Figure 8 – Test sample "Thermal Bag" in the Temperature test chamber before the test

Test protocol

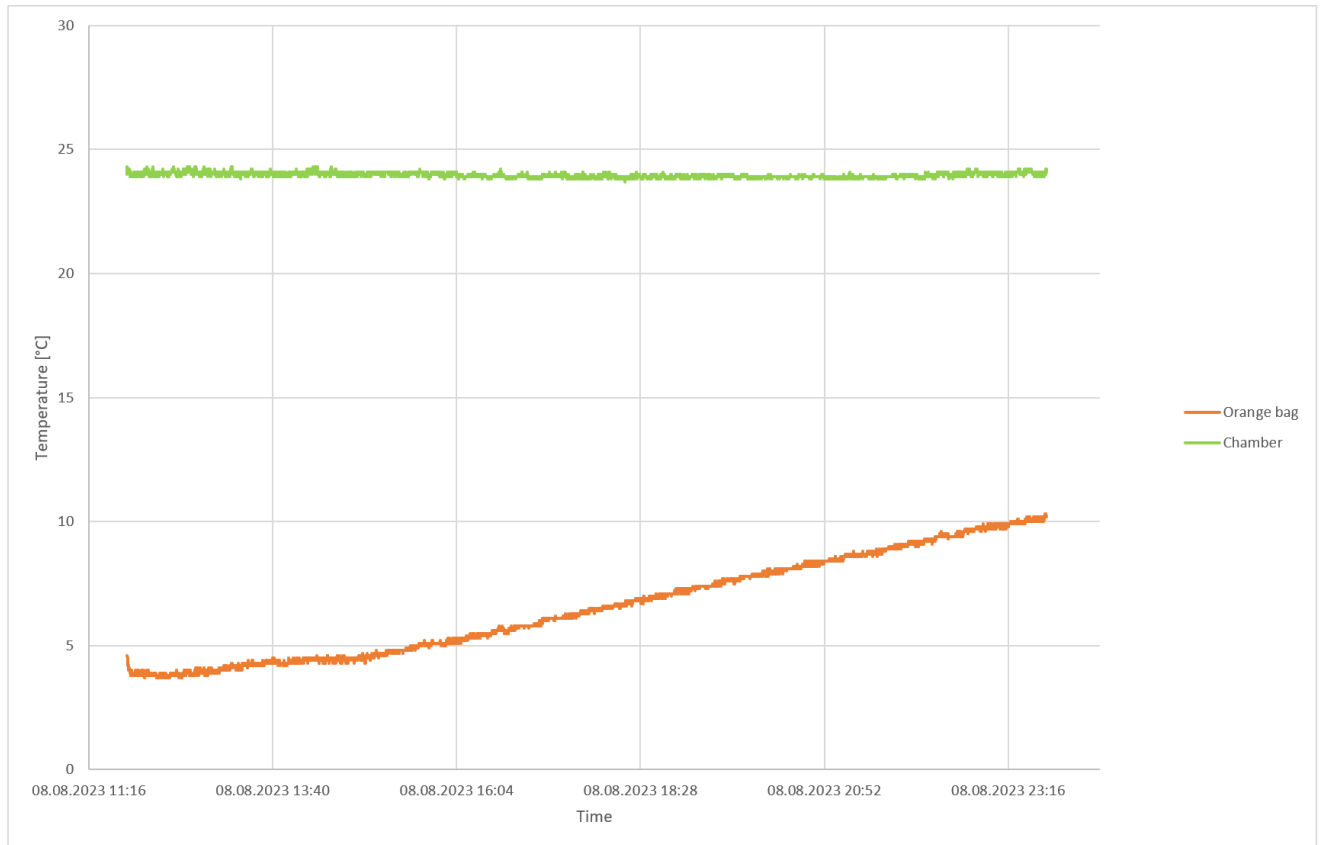


Figure 9 - Measurement chart of the temperature storage test 1

9.2.2 Dry heat – Thermal Bag Test 2

EN 60068-2-2 Dry heat			
Ambient conditions	18 °C – 28 °C 40 % r.h. – 60 % r.h. 950 hPa – 1015 hPa		
Operation mode	no operation		
Test period	09.08.2023 – 10.08.2023	Test result	Notes
No. of Test sample(s)	1 x Thermal Bag	No evaluation	Temperature limit exceeded after: 7 h 4 min
Test Temperature	24 °C		
Dwell time	12 h		
Slew rate	1 K/min		
Preconditioned Freeze Boards (Test 2)	2 x Freeze boards - 18 °C for min. 24 h		
Preconditioned Load	20 Plastic bottles 0,5 l, filled with water 2 °C for min. 24 h		
Placement test 2	1 x Freeze board 750 g down each side of bag		
Temperature limit of samples	+ 2 °C to + 8 °C		

Test setup



Figure 10 – Preconditioned plastic bottles in the climatic chamber



Figure 11 – Placement of the plastic bottles and the Freeze Boards in the test sample "Thermal Bag"



Figure 12 – Test sample “Thermal Bag” in the Temperature test chamber before the test

Test protocol

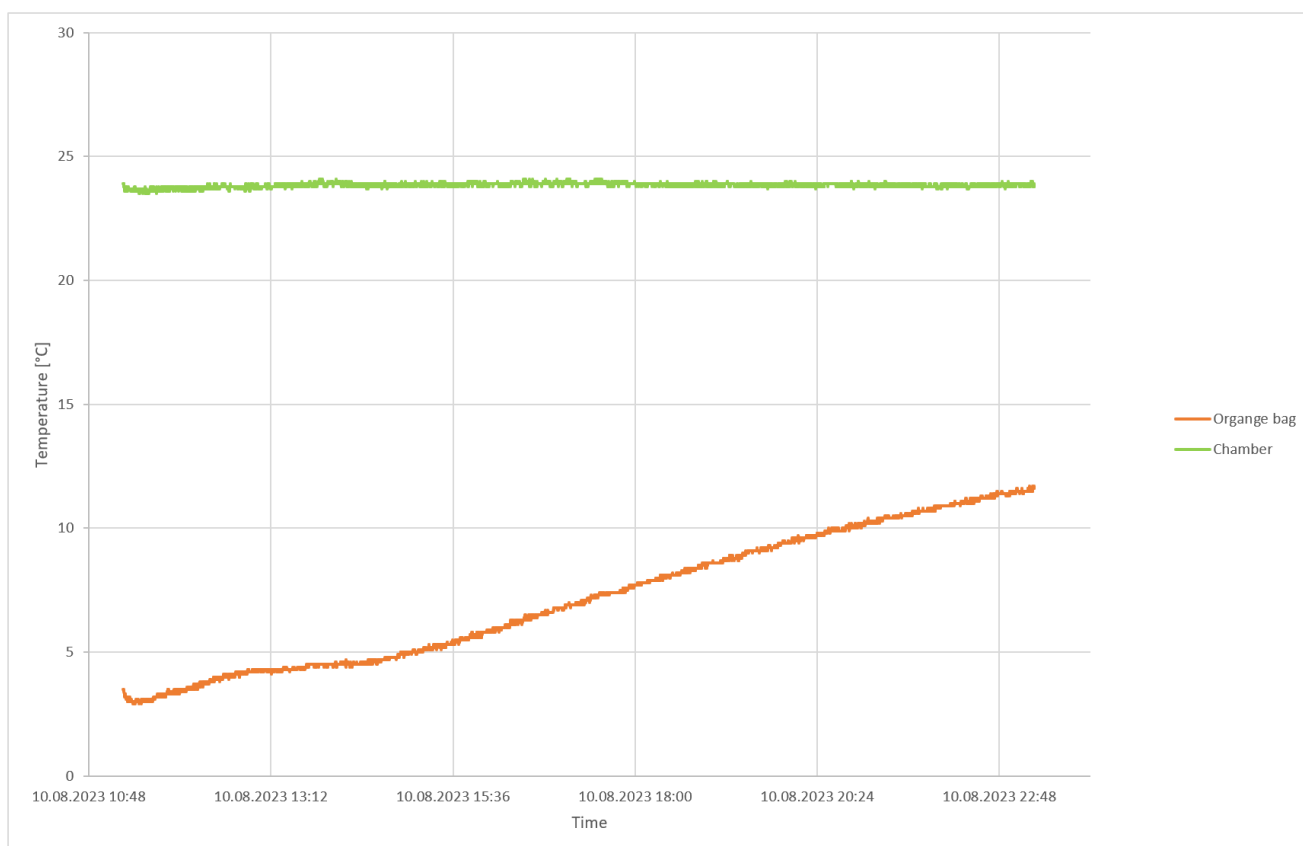


Figure 13 - Measurement chart of the temperature storage test 2

9.2.3 Dry heat – Ice Bag Test 3

EN 60068-2-2 Dry heat			
Ambient conditions	18 °C – 28 °C 40 % r.h. – 60 % r.h. 950 hPa – 1015 hPa		
Operation mode	no operation		
Test period	21.04.2023 – 25.04.2023	Test result	Notes
No. of Test sample(s)	1 x Ice Bag	No evaluation	1462,3 g remaining ice after the test.
Test Temperature	24 °C		
Dwell time	12 h		
Slew rate	1 K/min		
Monitoring	Data logger inside the bag		
Preconditioned ICECATCH	2 x ICECATCH (frozen) - 28 °C for min. 72 h		
Preconditioned Load	2 bags of wet Ice (2 x 1 000g) - 22 °C for min. 24 h		
Placement test 3	1 x ICECATCH 1100 g down each side of bag (non-print insulated side in contact with contents)		
Verification	At the end of the test, the melted water should be removed from the bags and each ice bag weighed for the remaining usable ice.		

Test setup



Figure 14 – Placement of the temperature sensor, ice cube and the ICECATCHs in the test sample "Ice Bag"



Figure 15 – Test sample "Ice Bag" in the Temperature test chamber before the test

Test protocol

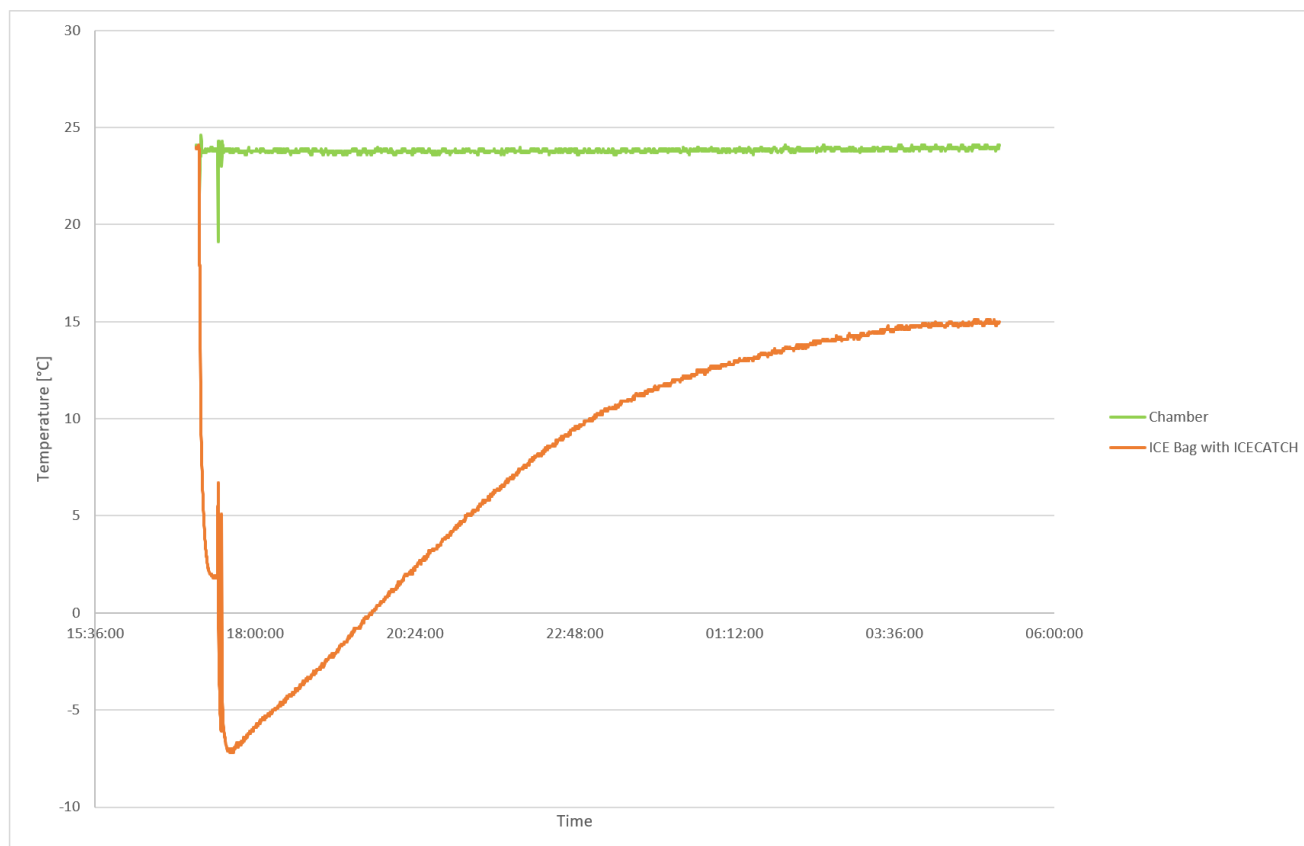


Figure 16 – measurement chart of the temperature storage test 3

The drop of temperature on the green curve and the variation on the orange curve were due to a quick opening of the climatic chamber to adjust a sample.

9.2.4 Dry heat – Ice Bag Test 4

EN 60068-2-2 Dry heat			
Ambient conditions	18 °C – 28 °C 40 % r.h. – 60 % r.h. 950 hPa – 1015 hPa		
Operation mode	no operation		
Test period	24.04.2023 – 26.04.2023	Test result	Notes
No. of Test sample(s)	1 x Ice Bag	No evaluation	1198,3 g remaining ice after the test.
Test Temperature	24 °C		
Dwell time	12 h		
Slew rate	1 K/min		
Monitoring	Data logger inside the bag		
Preconditioned Freeze Boards	2 x Freeze boards - 18 °C for min 24 h		
Preconditioned Load	2 bags of wet Ice (2 x 1 000g) - 22 °C for min. 24 h		
Placement test 4	1 x Freeze board 750 g down each side of bag		
Verification	At the end of the test, the melted water should be removed from the bags and each ice bag weighed for the remaining usable ice.		

Test setup

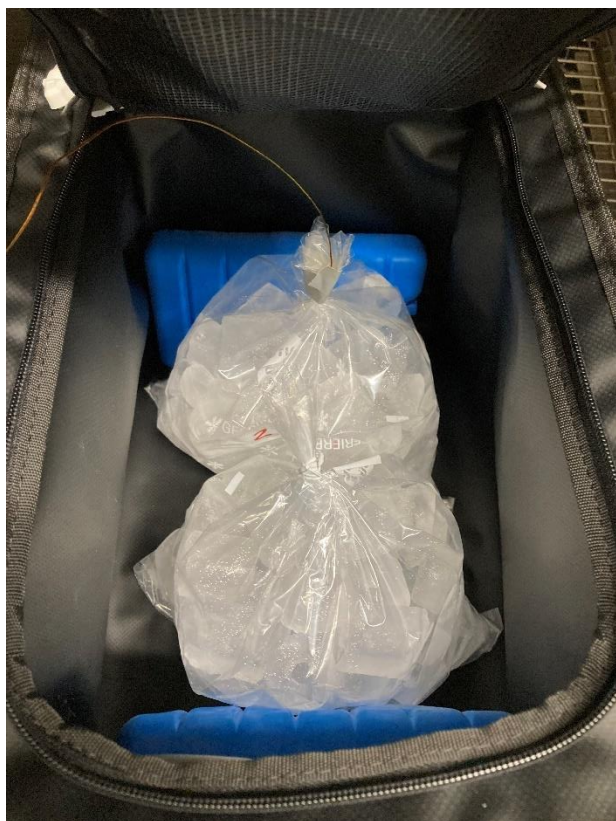


Figure 17 – Placement of the temperature sensor, ice cube and the Freeze Boards in the test sample "Ice Bag"



Figure 18 – Test sample "Ice Bag" in the Temperature test chamber before the test

Test protocol

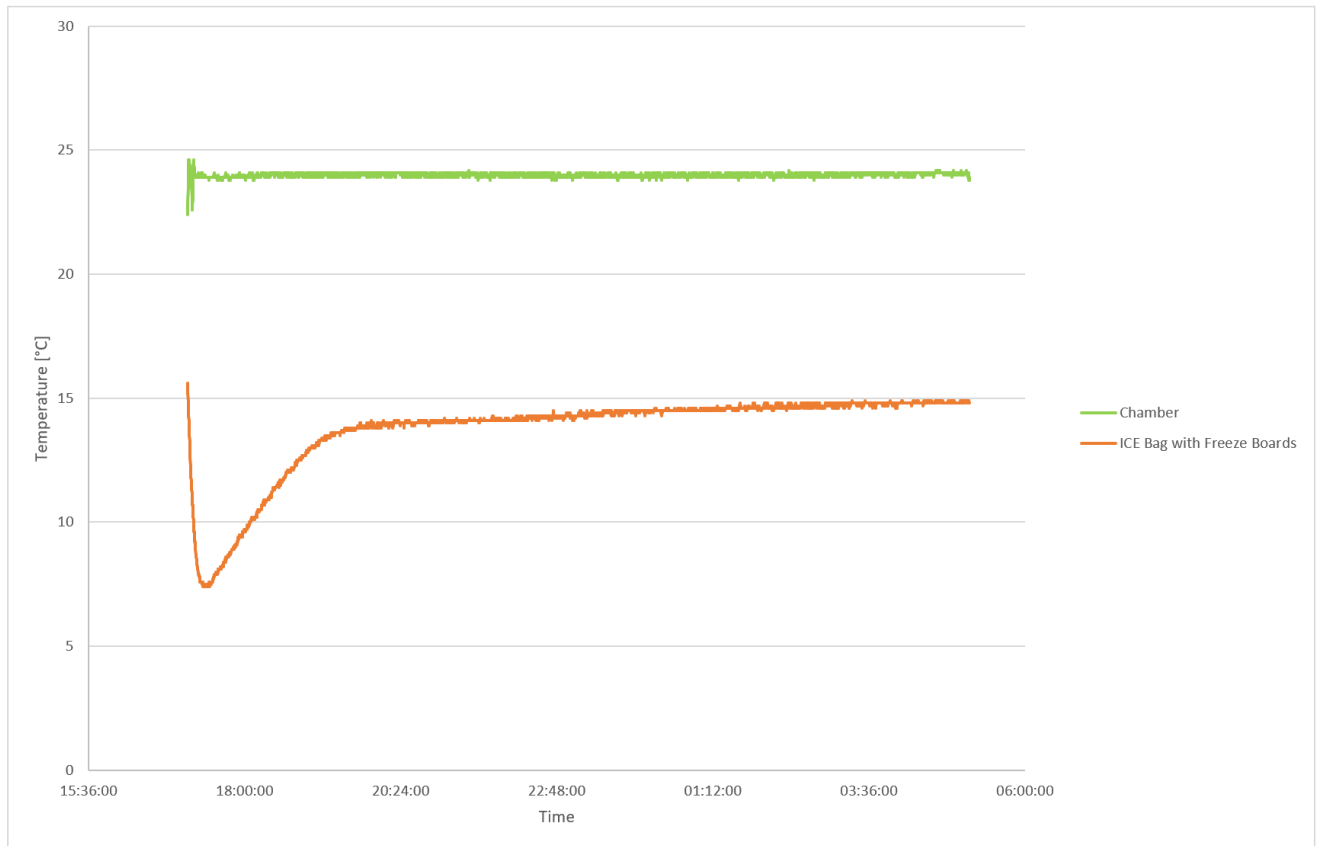


Figure 19 – measurement chart of the temperature storage test 4



10 Revision history

Revision history			
<i>Version</i>	<i>Date</i>	<i>Author</i>	<i>Modifications</i>
0	15.05.2023	Roberto Singer	First Edition
1	09.10.2023	Haridimos Moutogianakis	Second Edition: According to the customer's request, the order of the images was adjusted. In chapter "9.2 Executed Testing" Test Tempereure was written instead of Temperature. Test 1 and 2 were repeated.