



L C I E

Report No.:	LMO-ESH-P20070272	Date:	2020-08-24	Type:	Refrigerator-Freezer BCD-258VX, BCD-258V, BCD-258
Test Report - Household refrigeration appliance	Testing institute:		Manufacturer:		
	LCIE CHINA Company Limited Building 4, No. 518, Xin Zhuan Road, Caohejing Songjiang High-Tech Park, Shanghai, P.R.C (201612)		Ningbo Lamo Electric Appliance Co.,Ltd.		
(Requirements from EN 62552-1:2020 EN 62552-2:2020 EN 62552-3:2020 and (EU) 2019/2019)	Tested by:	Sun Di	Approved by:	Bluce Ma	
	Signature:	Sun Di	Signature:	Bluce Ma	

Supplier name:	Ningbo Lamo Electric Appliance Co.,Ltd.
Model identifier:	BCD-258VX, BCD-258V, BCD-258
Name and address of factory	Ningbo Lamo Electric Appliance Co.,Ltd. Rongyu Village, Xinpu Town, Cixi, Zhejiang, P.R.China

Low-noise appliance:	No	Efficiency class:	F
Wine storage appliance:	No	Energy efficiency index EEI:	121.7
Other refrigerating appliance:	Yes	Standard annual energy consumption [kWh/a]:	203.63
Design type:	Freestanding	Climate class:	N,ST
Number of external doors:	2	Min. temperature* [°C]:	16
Winter setting:	No	Max. temperature* [°C]:	38
Fast freezer facility:	No	Combi parameter:	1.52
Anti-condensation heater type:	None	Load factor:	1.0
		Door heat loss factor:	1.0

Overall dimensions [mm]:	H	X	W	X	D
	1885		545		550

All appliances	Decl.	Tested
Total volume [L]:	250	250.8

Wine coolers	Decl.	Tested
Bottle capacity [pcs]:	NA	NA
Temp. fluctuation test passed?		NA
Relative humidity test passed?		NA

Compartment	Type	Defrosting type [auto=A, manual=M]	Star rating	Volume [L]:	Recommended temperature setting [°C]	Storage test passed?	
						High temp.	Low temp.
1	4-star	M	4	64.7	≤-18	Yes	Yes
2	3-star	NA	3	NA	≤-18	NA	NA
3	2-star	NA	2	NA	≤-12	NA	NA
4	1-star	NA	1	NA	≤-6	NA	NA
5	0-star/ice-making	NA	NA	NA	≤ 0	NA	NA
6	Chill	NA	NA	NA	-3 - +3	NA	NA
7	Fresh Food	M	NA	186.1	0 - +4	Yes	Yes
8	Wine storage	NA	NA	NA	+5 - +20	NA	NA
9	Cellar	NA	NA	NA	+2 - +14	NA	NA

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10	Pantry	NA	NA	NA	+14 - +20	NA	NA
11	2-star section	NA	NA	NA	≤-12	NA	NA
12	Variable temperature compartment	NA	NA	NA	-	Yes/No	Yes/No

Energy consumption 16°C ambient temperature	Tested
Incremental defrost energy consumption ΔE_{df} [Wh]:	NA
Defrost and recovery interval Δt_{df} [Wh]:	NA
Energy consumption E_{16} [kWh/d]:	0.435

Energy consumption 32°C ambient temperature	Tested
Incremental defrost energy consumption ΔE_{df} [Wh]:	NA
Defrost and recovery interval Δt_{df} [Wh]:	NA
Energy consumption E_{32} [kWh/d]:	0.922

Energy consumption 25°C ambient temperature (low noise appliances)	Tested
Incremental defrost energy consumption ΔE_{df} [Wh]:	NA
Defrost and recovery interval Δt_{df} [Wh]:	NA
Energy consumption E_{25} [kWh/d]:	NA

Auxiliary energy consumption [kWh/a]	NA
Tested <input type="checkbox"/>	Calculated <input type="checkbox"/>

Annual energy consumption AE [kWh/a]	Tested	Passed?
	247.84	Yes

Other performance characteristics	Tested	Passed?
Temperature rise time [h]:	15.85	Yes
Freezing capacity [kg/24h]:	3.50	Yes
Noise emission [dB(A)]:	39.53	Yes
Noise emission class:	C	Yes
Ice-making capacity [kg/24h]:	NA	NA

Circumvention	Case
Circumvention measures suspected?	No
Tests carried out to evaluate possible circumvention devices?	No

* Minimum/Maximum ambient temperature [°C] for which the refrigerating appliance is suitable.




❖ For the details of the testing / test sample, please refer to the following pages.



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COPY OF RATING PLATE:

 Refrigerator-Freezer  		
BCD-258VX		
Rated Voltage:		AC220-240V
Rated Frequency:		50Hz
Rated Current:		1.0A
Lamp Power:		1W
Protection Class:		I
Climate Class:		N,ST
Total Volume:		250L
Fresh Food Compartment Volume:		186L
Four-star Compartment Volume:		64L
Energy Consumption of E16:		0.442kWh/24h
Energy Consumption of E32:		0.942kWh/24h
Annual Energy Consumption:		253kWh/a
Freezing Capacity:		3.0Kg/24h
Temperature Rise:		14Hour
Refrigerant and Mass:		R600a/64g
Blowing gas:		C ₅ H ₁₀
Product date:		
No:		

Ningbo Lamo Electric Appliance Co.,Ltd
Rongyu Village Xinpu Town,Cixi,Zhejiang P.R.China

Other models rating plates are same as above except model name.

NOTE 1: The appliances for household and indoor use only. No defrosting function included.
The test report includes three models, BCD-258VX, BCD-258V, BCD-258. The differences between them are door appearance, surface colors. Details see pictures of the appliances.

NOTE 2: According to the applicant's request, storage test, energy consumption, temperature rise time, freezing capacity test and volume test were suitable for BCD-258, and the tests were carried out on it. Airborne acoustical noise emissions was also measured (Annex 4: Sound power level test).



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LABEL:



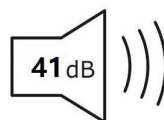
253 kWh/annum



64 L



186 L



41 dB

AB**C**D

2019/2016

Other models' labels are same as above except model name.



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PICTURE OF THE SAMPLE TESTED
BCD-258





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BCD-258VX



Others same as BCD-258

BCD-258V



Others same as BCD-258



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Product Information Sheet

Supplier's name or trade mark:		Ningbo Lamo Electric Appliance Co.,Ltd.			
Supplier's address (b):		Rongyu Village, Xinpū Town, Cixi, Zhejiang, P.R.China			
Model identifier:		BCD-258VX, BCD-258V, BCD-258			
Type of refrigerating appliance:					
Low-noise appliance:		No	Design type:		freestanding
Wine storage appliance:		No	Other refrigerating appliance:		Yes
General product parameters:					
Parameter		Value	Parameter		Value
Overall dimensions (mm)	Height	1885	Total volume (dm ³ or l)	250	
	Width	545			
	Depth	550			
EEI		125	Energy efficiency class		F
Airborne acoustical noise emissions (dB(A) re 1 pW)		41	Airborne acoustical noise emission class		C
Annual energy consumption (kWh/a)		253	Climate class		N, ST
Minimum ambient temperature (°C), for which the refrigerating appliance is suitable		16	Maximum ambient temperature (°C), for which the refrigerating appliance is suitable		38
Winter setting		No			
Compartment Parameters:					
Compartment type		Compartment parameters and values			
		Compartment Volume (dm ³ or l)	Recommended temperature setting for optimised food storage (°C) These settings shall not contradict the storage conditions set out in Annex IV, Table 3	Freezing capacity (kg/24 h)	Defrosting type (auto-defrost = A, manual defrost = M)
Pantry	No	—	—	—	—
Wine storage	No	—	—	—	—
Cellar	No	—	—	—	—
Fresh food	Yes	186	4.0	—	M
Chill	No	—	—	—	—

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0-Star or ice-making	No	—	—	—	—
1-star	No	—	—	—	—
2-star	No	—	—	—	—
3-star	No	—	—	—	—
4-star	Yes	64	-18.0	3.0	M
2-star section	No	—	—	—	—
Variable temperature compartment	compartment types	—	—	—	—
For 4-star compartments					
Fast freeze facility			No		
Light source parameters/ Report No.:			NA		
Type of light source			Led		
Energy efficiency class			NA		
Note: -					
Additional information: —					
Weblink to the manufacturer's website, where the information in point 4 Annex II of Commission Regulation (EU) 2019/2019 is found:					



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Additional information to be included in the technical documentation

General product specifications:						
Parameter	Value			Parameter	Value	
Annual energy consumption (kWh/a)	253			Auxiliary energy (kWh/a)	—	
Standard annual energy consumption (kWh/a)	203.08			EEI (%)	125	
Temperature rise time (h)	14			Combi parameter	1.52	
Door heat loss factor	1.0			Load factor	1.0	
Anti-condensation heater type	none					
Additional product specifications for refrigerating appliances, except for low noise refrigerating appliances:						
Parameter	Value			Parameter	Value	
Daily energy consumption at 16 °C (kWh/24h)	0.442			Daily energy consumption at 32 °C (kWh/24h)	0.942	
Incremental defrost and recovery energy consumption at 16 °C (Wh)	—			Incremental defrost and recovery energy consumption at 32 °C (Wh)	—	
Defrost interval at 16 °C (h)	—			Defrost interval at 32 °C (h)	—	
Additional product specifications for low noise refrigerating appliances:						
Parameter	Value			Parameter	Value	
Daily energy consumption at 25 °C (kWh/24h)	—			Defrost interval at 25 °C (h)	—	
Compartment specifications:						
Compartment type	Compartment parameters and values					
	Target temperature (°C)	Thermodynamic parameter (r_c)	N_c	M_c	Defrost factor (A_c)	Built-in factor (B_c)
Pantry	—	—	—	—	—	—
Wine storage	—	—	—	—	—	—
Cellar	—	—	—	—	—	—
Fresh food	4	1.00	75	0.12	1.00	1.00
Chill	—	—	—	—	—	—
0-Star or ice-making	—	—	—	—	—	—
1-star	—	—	—	—	—	—
2-star	—	—	—	—	—	—
3-star	—	—	—	—	—	—
4-star	-18	2.10	138	0.15	1.00	1.00



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2-star section	—	—	—	—	—	—
Variable temperature compartment	—	—	—	—	—	—
Additional information:						
The references of the harmonised standards or other reliable accurate and reproducible methods applied:					EN 62552-1:2020 EN 62552-2:2020 EN 62552-3:2020	
A list of all equivalent models, including model identifiers:						

EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	CLASSIFICATION		P
	Refrigerating appliance classified into four climate classes or into a range of classes		P
	SN - Extended temperate (+10 to +32)°C		NA
	N - Temperate (+16 to +32)°C		P
	ST - Subtropical (+16 to +38)°C		P
	T - Tropical (+16 to +43)°C		NA

5	MARKING		P
5.1	The information is marked in a permanent and legible manner		P
5.2	Identification of frozen compartments		NA
5.3	Load limit lines		NA

6	TECHNICAL AND COMMERCIAL PRODUCT INFORMATION		P
6.1	In technical and commercial product information all declared performance data (together with the relevant measurement units) are according to the standard.		P
6.2	Determination of linear dimensions		P

7	INSTRUCTIONS		P
	Refrigerating appliance is provided with instructions for its installation, use and user maintenance and safe disposal, in the language of the country where it is for sale		P

Annex A	TEST ROOM AND INSTRUMENTATION		P
A.2	Instruments, accuracy and precision of measurements		P
A.3	General test conditions		P
A.3.1	A number of parameters is kept constant as well as kept close to a target value during the test., e.g. ambient temperature or supply voltage as required in A.3.2.2 and A.3.3.		P
A.3.2	Ambient temperatures		P
A.3.2.1	Ambient temperatures are measured using copper or brass masses (see A.2.6 and A.4.5).		P
A.3.2.2	The time averaged value is within $\pm 0,5$ K of the test ambient temperatures.....		P

EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict
A.3.2.3	For products rated for multiple climate classes, tests are performed at the extreme ambient temperatures only of all the relevant rated classes.	+16 °C and +38 °C	P
	For low noise refrigerating appliance energy consumption test shall be done at 25 °C		NA
A.3.3	Electricity supply		P
A.3.4	Refrigerating appliances other than those for electric power supply are tested under supply conditions corresponding to the information marked on the appliance.		NA
A.3.5	Refrigerating appliances that are equipped for operation on energy sources other than or in addition to mains power are tested at each of the supply conditions indicated on the appliance.		NA
A.3.6	Humidity max 75 %.	50%	P
	For tests at 10 °C ambient temperature this relative humidity limit does not apply.		NA
	For energy tests at an ambient temperature of 16 °C, the test result is invalid if the measured ambient relative humidity exceeds 75 % during the test and condensation is visible as droplets or running water		NA
A.4	Test room configuration		P

Annex B	PREPARATION OF AN APPLIANCE FOR TESTING AND GENERAL MEASUREMENT PROCEDURES		P
B.2.2	For verification testing, prior to commencement of its first average power consumption measurement, the appliance have been run in for at least 12 h compressor run time.		P
	Non-compressor based appliances are operated for at least 12 h prior to energy consumption measurements.		NA
B.2.3	Installation of the appliance in the test room		P
B.2.4	An appliance combined with an appliance other than a refrigerating appliance is subjected to the tests and measurement while they are combined, but with the other appliance operating at the lowest possible user selectable energy consuming conditions, including "off" or not functioning.		NA
B.2.5	Setting up		P
B.2.5.1	Except as specified, all internal fittings including drawers, bins and containers supplied with the appliance is put in position.		P
	Any specific variations in any test procedure in IEC 62552-2 or IEC 62552-3 may override B.2.5.1 a), b), c) or d).		P

EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict
B.2.5.2	Where the compartment is a variable temperature compartment type (that spans the operating range of several compartment types), it shall be classified:		NA
	a) For the storage test: Each variable temperature compartment shall be capable of maintaining specified internal temperatures for each claimed compartment type		NA
	b) For the cooling capacity test: If the variable temperature compartment can be used as a fresh food compartment, it shall be operated as fresh food compartment type where this test is performed.		NA
	c) For the freezing capacity and temperature rise time test: if the variable temperature compartment can be used as a 3-star or 4-star compartment, it shall be operated as a 3-star or 4-star compartment type where this test is performed.		NA
	d) For the energy consumption, water vapour condensation and ice-making capacity test, as applicable.		NA
	The variable temperature compartment shall operate as the compartment type which has the highest energy consumption for the energy test.		NA
	In the energy consumption test, where a refrigerating appliance has variable temperature compartments that can operate as more than one compartment type, additional compartment classifications may be tested, if required, in addition to the primary classification specified above.		NA
B.2.5.3	User-adjustable features are treated as indicated in the standard.		NA
B.2.6	Automatic ice makers		NA
	For all tests the storage bin remains in place.		NA
	For all tests, whether or not there is ice in the storage bin, the ice delivery mechanism remains functional.		NA
B.2.7	On commencement of testing compartments is empty, free of surface frost and free of moisture.		P
	Means of access (doors, drawers and lids etc.) is kept closed.		P

Annex C	TEST PACKAGES		P
	Test packages are regularly checked and doesn't have visible holes or cracks on the wrapper.		P

Annex D	DETERMINATION OF COMPARTMENT AVERAGE AIR TEMPERATURES		P
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EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The positions specified for a temperature sensor is the geometric centre of the sensor (metal mass) except where minimum clearances are specified (in which case clearance is to the outer surface of the metal mass).		P
	Average air temperatures of compartment measured with suitable devices (e.g. thermocouples on metal mass) and as indicated in the standard.		P
	A sketch to illustrate the locations of sensors for measuring air temperatures in all compartments is recorded in the test report.	See Annex 2	P

Annex G	WINE STORAGE APPLIANCES		NA
G.3	Requirements		NA
G.3.1	The appliance has a continuous storage temperature, either pre-set or set manually according to the instructions, in the range from $T_{wma} = +5\text{ }^{\circ}\text{C}$ to $+20\text{ }^{\circ}\text{C}$.		NA
	Each compartment provides $T_{wma} \leq +12\text{ }^{\circ}\text{C}$.		NA
G.3.2	Storage temperature(s) varies over time by less than 0,5 K at each declared ambient temperature specified by the climate class for household refrigerating appliances.		NA
G.3.3	The appliance is constructed to reduce the transmission of vibration to the compartment, whether from the refrigerator compressor or from any external source.		NA
G.4	General test conditions		NA
G.4.1	Clause A.3 of Part 1 of this standard applies unless otherwise specified for wine storage appliances.		NA
G.4.2	For tests at ambient temperatures close to or below the average storage temperature for the specified compartment, instructions on possible warmest temperature setting when applicable is considered.		NA
G.4.3	Shelves, baskets and container are in position as defined in the instructions.		NA
G.5	Determination of volumes		NA
G.5.2	For the evaluation of the rated capacity of bottles 0,75 litre bottles or equivalent substitution with dimension as specified in Figure G.1 are used.		NA
	To check the deformation of shelves etc. under normal usage condition, bottles are to contain water to provide a total weight of each bottle of $1\,200\text{ g} \pm 50\text{ g}$		—

EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict
	A sketch of the bottle loading plan showing the location of bottles for evaluation of the bottle capacity for wine storage compartments.		—
G.6	Measurement of storage temperature		
	Location of M-packages.....:		—
	Measurements at various ambient temperature		
	Each wine storage compartment is measured at $T_{wma} \leq 12\text{ }^{\circ}\text{C}$.	(see appended table)	NA
G.7	Determining temperature fluctuation		NA
G.7.1	Determining of the temperature fluctuation is performed at the temperature $T_{wma} = 12\text{ }^{\circ}\text{C}$ or the nearest colder temperature at an ambient temperature of $25\text{ }^{\circ}\text{C}$ and at the lowest and highest ambient temperature for the climate class claimed.		NA
	The average of all temperature amplitudes at each measurement point TMP_{wi} during the whole test period stays within 0,5 K.	(see appended table)	NA
G.7.2	Determining relative humidity inside of wine storage compartments		NA
	Determining of the relative humidity RH_{wim} in wine storage compartment is performed at temperature $t_{wma} = 12\text{ }^{\circ}\text{C}$ or the nearest colder temperature at ambient temperature of $25\text{ }^{\circ}\text{C}$ and an ambient humidity $50\% \leq RH \leq 75\%$		NA
	Test is performed in condition as specified in G.6		NA
	The integrated time average of the relative humidity RH_{wim} shall be expressed as percentage rounded to the nearest integer.	(see appended table)	NA
G.8	Final test report		NA
	Any final test report for wine storage appliances is include the test results of the following:		NA
	a) energy consumption	(see appended table)	—
	b) temperature fluctuation	(see appended table)	—
	c) bottle capacity of the compartments	(see appended table)	—
	d) a sketch of the bottle loading plan showing the location of bottles for evaluation of the bottle capacity		—
G.9	Marking and instructions		NA
G.9.1	Technical and commercial product information		NA
	The following information is marked on technical and product information of wine storage appliances: "This appliance is intended to be used exclusively for the storage of wine".		NA
G.9.2	Instructions		NA

EN 62552-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The following information marked on Instructions provided with wine storage appliances: "This appliance is intended to be used exclusively for the storage of wine".		NA
	For compartments providing a temperature setting close to or higher than the declared lowest climate class temperature, instructions provided on the warmest possible temperature setting at low ambient temperatures.		NA

Annex ZA	TEST REPORT LAYOUT	P
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Annex ZB	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	P
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Annex ZZA	RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ECODESIGN REQUIREMENTS OF COMMISSION REGULATION (EU) 2019/2019 AIMED TO BE COVERED	P
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Annex ZZB	RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ENERGY LABELLING REQUIREMENTS OF COMMISSION DELEGATED REGULATION (EU) 2019/2016 AIMED TO BE COVERED	P
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EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL TEST CONDITIONS		P
	Unless otherwise noted, test room set-up and instrumentation shall be as Annex A of EN 62552-1		P
	Unless otherwise noted, installation and set-up of shelves, drawers, bins, flaps and controls etc. shall be as Annex B of EN 62552-1		P

6	STORAGE TEST		P
6.2	Preparation of refrigerating appliance		P
	The test room ambient shall be as Annex A.3.2.3 of EN 62552-1		P
	Installation of refrigerating appliance in the test room as Annex B of EN 62552-1		P
	Anti-condensation heaters, if any, are set as specified		NA
	Thermal storage devices, if any, shall be placed as specified		NA
	The unloaded refrigerating appliance is set up and operated until it has reached equilibrium at or close to the temperatures specified in Table 2.		P
	Any automatic icemaker is configured so that no new ice is made during the test, but otherwise remain operational.		NA
6.3	Air temperature sensor location and test and M-package loading		P
6.3.1	Unfrozen compartments (except chill compartment and wine storage compartment)		P
	For determining the storage temperatures of compartments, air temperature sensors are located in accordance with D.2.2 of EN 62552-1:2020.		P
6.3.2	Chill compartments		NA
6.3.2.1	General		NA
	For any chill compartment, the storage load is in accordance with 6.3.2.2.		NA
	The temperatures and conditions specified in Table 2 are applied.		NA
	All test packages and M-packages shall be positioned so that their largest surface is horizontal and shall be at least 25 mm away from all walls and ceilings and from the other packages of test load.		NA
	The test packages and M-packages shall be positioned as far as possible in the corners of the compartment and at two vertical levels.		NA
	Loading of packages shall be in the specified order		NA

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Loading shall start using M-packages, up to the amount specified in Table 3		NA
	If a package cannot be placed according to the required order, its position shall be skipped and the number of packages shall be reduced. The number of M-packages shall not be reduced.		NA
	If the dimensions are too small to allow the horizontal positioning of the M-packages, it is permissible to position them vertically.		NA
	If the dimensions are too small to accommodate an M-package (for example in door shelves), a special support shall be used to position the M-package next to the shelf and as close as possible to the door liner		NA
6.3.2.2	Chill compartment storage load		NA
	Number of packages loaded in chill compartment..... :		NA
6.3.3	Frozen compartments/sections		P
6.3.3.1	General		P
	Temperatures are measured in M-packages, which are distributed throughout the load of test packages as specified in the test package placement (6.3.3.3). They are placed as specified in 6.3.3.4.		P
6.3.3.2	Packages		P
	All packages (test packages and M-packages) are as specified in Annex C of EN 62552-1:2020.		P
6.3.3.3	Package placement		P
6.3.3.4	Measurement package placement		P
6.4	Test procedure		NA
	The ambient temperature (°C).....:	(see appended table)	P
	The setting(s) of any user-adjustable temperature control device(s) and any other user-adjustable control(s), damper(s) etc.....:	(see appended table)	P
	Storage temperatures (°C)..... :	(see appended table)	P
6.5	Storage temperature		P
	The refrigerating appliance maintains simultaneously, the required storage temperatures in the different compartments (and the permitted temperature deviations during the defrost and recovery period) as given in Table 2.		P
8	FREEZING CAPACITY TEST		P
8.2	Method overview		P

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Apart from space for the light load, ballast packages are loaded into the frozen compartment(s) as for the storage test (Clause 6). The refrigerating appliance is operated until temperatures are stable and in compliance with Table 2.		P
	Then a load of packages at +25 °C is added. The time to freeze this load to –18 °C is measured. When this can be achieved in no more than 24 h and other maximum temperature-excursion conditions are met, a four-star compartment rating may be claimed.	Per ErP Regulation (EU) 2019/2019, the freezing time shall be no more than 18.5 h.	P
8.3	Set-up procedure		P
8.3.1	The ambient temperature (°C).....:	25 °C	P
8.3.2.1	Preparation of the refrigerating appliance		P
	The refrigerating appliance shall be installed according to Annex B of EN 62552-1:2019.		P
	If the configuration of the refrigerating appliance can be changed by the user the configuration with the greatest volume at the lowest temperatures shall be used for this test.		NA
	Anti-condensation heater(s) are set as specified		NA
	Thermal storage devices, if any, shall be placed as specified		NA
	The unloaded refrigerating appliance should be set up and operated until it has reached equilibrium at, or close to, the temperatures specified in Table 2.		P
8.3.2.2	Chill compartment temperature is not measured, but loaded with test packages as for the storage temperature measurement.		NA
	For compartments normally operating above 0 °C, temperature measurement points shall be as per Annex D of EN 62552-1:2019 but with M-packages used instead of cylinders.		NA
8.3.3	Loading of refrigerating appliance		P
8.3.3.1	In the –18 °C compartment(s), ballast load may be removed to accommodate the light load with the following constraints:		P
	a) The minimum amount of stacks shall be removed		P
	b) The height of a light load stack shall be 2 packages with the following exceptions:		P
	- if the light load is to be composed of an odd number of packages, then one light load stack of 1 package is allowed;	3 packages	P
	- if the ballast load to be removed only exists out of stacks of 1 package, these shall be replaced with light load stacks of 1 package;		NA

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- if the ballast load stack to be removed contains 6 or more packages, then it shall be replaced with a light load stack of half the number of packages in the ballast load stack (rounded down).		NA
	c) The minimum ballast load is 1 M-package		NA
	d) Light load packages shall be placed flat		P
	e) Light load positioning shall take into account the instructions regarding the location to be used for freezing. If no instructions are given, the packages shall be placed such that they are likely to be frozen as rapidly as possible.		P
	f) Light load packages shall be separated by at least 15 mm from ballast load packages. The use of spacers between adjacent stacks of packages is permitted, but other spacing methods are not.		P
	If the instructions indicate that there is a separate section for freezing food, this section shall be used for the light load.		NA
8.3.3.1.2	The M-packages in the ballast load shall be located as for the storage test except for any locations that are disrupted by the need to leave space for the light load. In that case, the M-packages shall be placed in the nearest equivalent position.		P
	If there are stacks of ballast load packages beside the light load an M-package shall also replace the top test package in at least one of those stacks on each side of the light load.		P
	If there is ballast load above the light load an M-package shall replace a test package in the centre of the layer immediately above the light load.		P
	If there is ballast load below the light load an M-package may replace a test package in the centre of the layer immediately below the light load.		P
8.3.3.2	If a refrigerating appliance has a separate three-star compartment with its own external access door or lid, and the instructions recommend that, before freezing, frozen food already in storage be placed in that compartment while leaving space in the freezer compartment to receive the load for freezing (i.e. the three-star compartment is to be regarded as an extension of the freezer compartment), a freezing time claim based upon this method of use is permissible, provided that:		NA
	a) when tested according to this method of use, the claimed freezing time is confirmed and the temperature requirements for the other compartments (see 8.5 a) to g)), if applicable, are fulfilled during the freezing capacity test, and		NA

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
	b) the light load used in the freezer compartment is at least equivalent to 3,5 kg/100 l of the combined volumes of the freezer compartment and three-star compartment.		NA
8.4	Test procedure		P
8.4.1	After stable operating conditions have been attained, internal temperature(s) shall be in accordance with Table 2 except that the starting temperature of any compartment(s) with no lower temperature limit(s) specified in that table shall be no more than 2 K below the target temperature.		P
	In the case of a refrigerating appliance where the compartment temperatures cannot be adjusted independently, if such a setting is not possible, the non-complying compartments below the bottom limit shall be set to be as warm as possible.		NA
	The temperature indication succession from left to right in Table 2 also indicates the order of precedence in the case of several temperature possibilities.		P
8.4.2	If the refrigerating appliance is provided with means for a pre-freezing (fast-freezing or quick-freezing) operation, after stable operating conditions as 8.4.1 have been attained, the refrigerating appliance shall be set in operation in the pre-freezing condition according to the instructions. The procedure specified in 8.4.3 shall then be carried out.		NA
	If there are no special instructions for pre-freezing, the procedure according to 8.4.3 shall be carried out after the refrigerating appliance has reached stable operating conditions in accordance with the temperature requirements of 8.4.1.	No pre-freezing	P
8.4.3	After the conditions specified in 8.4.2 have been attained, the light load shall be introduced.		P
	For models with defrost control cycles, the light load should be added when stability has been regained and temperature criteria met after a defrost and recovery period. This test should not overlap a defrost and recovery period.		NA
	When stability has been achieved prior to the introduction of the light load, apart from as in 8.4.2, changes of setting of manually adjustable controls are no longer permitted.		P
	The light load shall be 3,5 kg/100 l of the total volume of all compartments operating at -18 °C (three and four stars). The calculated load shall be rounded up to the nearest 0,5 kg, except that in no case shall it be less than 2,0 kg.		P
	The light load packages shall be placed flat and positioned taking into account the instructions and the requirements of the loading storage plan.		P

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If no instructions are given, the packages shall be placed such that they are likely to be frozen as rapidly as possible.		NA
	Light load packages shall be separated by at least 15 mm from ballast load packages.		P
	M-packages shall be uniformly distributed throughout the light load with at least one as close as practicable to its geometric centre.		P
	The number of M-packages.....:	3 M-packages	P
8.4.4	Time necessary for reaching of the instantaneous temperatures of all the M-packages in the light load $\leq -18^{\circ}\text{C}$ (h).....:	(see appended table)	P
Z8.5	Determination of the freezing time and freezing capacity and four-star rating		P
	Freezing time ends when the arithmetic mean of the instantaneous temperatures of all the M-packages in the light load reaches $\leq -18^{\circ}\text{C}$ and the following met:		P
	a) unless a defrost and recovery period overlaps the test, the maximum temperature of the ballast load M-packages $\leq -15^{\circ}\text{C}$, and	(see appended table)	P
	the maximum temperature of the ballast load M-packages $\leq -18^{\circ}\text{C}$ at the end of the test	(see appended table)	P
	b) If a defrost and recovery period overlaps the test, the maximum temperature of the ballast load M-packages $\leq -12^{\circ}\text{C}$ during the defrost and recovery period, and	(see appended table)	NA
	the maximum temperature of the ballast load M-packages $\leq -18^{\circ}\text{C}$ at the end of the test	(see appended table)	NA
	c) The maximum temperature of the warmest M-package in any separate three-star compartment not used for ballast $\leq -18^{\circ}\text{C}$ (plus the allowed excursions during any defrost and recovery period as specified in Table 2):	(see appended table)	NA
	d) The maximum temperature of the ballast load M-package in any two-star section or compartment $\leq -12^{\circ}\text{C}$ (plus the allowed excursions during a defrost and recovery period as specified in Table 2);	(see appended table)	NA
	e) The maximum temperature of the ballast load M-packages $\leq -6^{\circ}\text{C}$ (one-star compartment):	(see appended table)	NA
	f) The instantaneous compartment average temperature T_a of the fresh food compartment during the test does not exceed $+7^{\circ}\text{C}$, with T_1 , T_2 , T_3 each remaining between -1°C and $+10^{\circ}\text{C}$;	(see appended table)	P
	g) The cellar compartment temperatures T_{c1} , T_{c2} , T_{c3} does not drop below 0°C :	(see appended table)	NA
	In order to meet the four stars rating the freezing capacity shall be at least 4,5 kg per 24 h per 100 l of the total volume of all compartments operating at -18°C with a minimum of 2 kg per 24 h.		P

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
Z8.6	Data to be recorded		P

Z10	AIRBORNE ACOUSTICAL NOISE		P
	Where an airborne acoustical noise measurement is required, it shall be measured according to EN 60704-2-14.		P
	NOTE Z1 A possible procedure for the statistical determination of declared noise values is described in EN 60704-3.	Only record the most unfavorable test result.	NA

Annex B	WINE STORAGE APPLIANCES AND COMPARTMENTS; STORAGE TEST		NA
B.3	Measurement of compartment temperature		NA
	For determining the storage temperature of these compartments, M-packages are located in accordance with Clause G.6 of EN 62552-1:2020.		NA
B.4	Preparation of refrigerating appliance		NA
	Installed in the test room in accordance with Annex B of EN 62552-1:2020.		NA
B.5	Measurements		NA
B.5.1	General		NA
	For the appropriate ambient temperature, temperature control device(s) and other controls, if any, is adjusted, as necessary, to a position which is likely to give storage temperatures after stable operating conditions have been attained.		NA
B.5.2	Conditions for demonstration of compliance		NA
	Except during any freezing or cooling capacity test, the average of all temperature amplitudes at each measurement point in each wine storage compartment T_{wi} during the whole test period stays within $\pm 0,5$ K	(see appended table)	NA
	During any freezing or cooling capacity test the average of all temperature amplitudes at each measurement point in each wine storage compartment T_{wi} during the whole test period stays within $\pm 1,5$ K	(see appended table)	NA
	The integrated time averages of the temperatures T_{wim} stays between $+5$ °C and $+20$ °C. The arithmetic average T_{wma} of T_{w1m} , T_{w2m} , T_{w3m} are equal to or below $+12$ °C	(see appended table)	NA
B.6	Data to be recorded		NA

Annex C	TEMPERATURE RISE TEST		P
C.2	Procedure		P

EN 62552-2			
Clause	Requirement + Test	Result - Remark	Verdict
C.2.1	Ambient temperature		P
	The ambient temperature (°C).....: 25°C		P
C.2.2	Preparation of refrigerating appliance		P
	The refrigerating appliance is installed according to Annex B of EN 62552-1:2020.		P
	The refrigerating appliance is prepared, stabilized and loaded with test packages and M-packages (as for the storage test).		P
C.2.3	Operation of the refrigerating appliance		P
	Temperature-control devices setting: (see appended table)		P
C.3	Test period and measurements		P
C.5	Data to be recorded		P

Annex ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	P
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Annex ZZA	RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ECODESIGN REQUIREMENTS OF COMMISSION REGULATION (EU) 2019/2019 AIMED TO BE COVERED	P
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Annex ZZB	RELATIONSHIP BETWEEN THIS EUROPEAN STANDARD AND THE ENERGY LABELLING REQUIREMENTS OF COMMISSION DELEGATED REGULATION (EU) 2019/2016 AIMED TO BE COVERED	P
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EN 62552-3			
Clause	Requirement + Test	Result - Remark	Verdict

5	TARGET TEMPERATURES FOR ENERGY DETERMINATION		P
5.2	Temperature control settings for energy consumption test		P
	When tested for energy consumption, the refrigerating appliance has at least one temperature control setting (or combination of temperature control settings) at which the average temperatures of each compartment is concurrently at or below the energy consumption target temperatures specified in Table 1.		P
	Where an appliance has no user-adjustable temperature controls, energy consumption is determined from the results of one measurement test run of the appliance as supplied.		NA
5.Z1	Controllability of temperatures in a compartment		NA
	A chill compartment temperature control test has been included in Annex ZA.		NA

6	DETERMINATION OF ENERGY CONSUMPTION		P
6.3	Number of test runs		P
	The energy consumption is determined at ambient temperatures of 16 °C and 32 °C either:		P
	a) directly from the results of a single test run;		P
	b) by interpolation between the results of two or more test runs.		P
6.4	Steady state power consumption	See Annex B	P
6.5	Defrost and recovery energy and temperature change		NA
	Ambient temperatures of both 16 °C and 32 °C.		NA
	The additional energy associated with defrost and recovery is reported in Watt-hour (Wh).		NA
	The temperature change associated with defrost and recovery is reported in degree Kelvin-hour (Kh).		NA
6.6	Defrost interval		NA
	The defrost interval is expressed in hours, rounded to the nearest 0,1 h.		NA
6.7	Specified auxiliaries		NA
	The impact of specified auxiliaries is expressed in watt or watt-hour for a range of ambient conditions.		NA
6.8	Calculation of energy consumption		P
6.8.2	Daily energy consumption		P
	The ambient temperature (°C).....:	(see appended table)	P

EN 62552-3			
Clause	Requirement + Test	Result - Remark	Verdict
	The energy of refrigerating appliances without a defrost control cycle (Wh/d).....:	(see appended table)	P
	The steady state power for the selected temperature control setting (W).....:	(see appended table)	P
	The measured steady state temperature for each compartment is recorded with this value (°C).....:	(see appended table)	P
	The energy of refrigerating appliances with one defrost system (Wh).....:		NA
	The steady state power for the selected temperature control setting (W).....:		NA
	The representative incremental energy for defrost and recovery in accordance with Annex C (see C.5) (Wh).....:		NA
	The estimated defrost interval in accordance with Annex D (h).....:		NA
	The average temperature for each compartment (°C).....:	(see appended table)	NA
	The average steady state temperature in the compartment for the temperature control setting in accordance with Annex B (°C).....:	(see appended table)	NA
	The representative accumulated temperature difference over time for defrost and recovery for the relevant compartment in accordance with Annex C (see Clause C.5) (Kh).....:		NA
	The estimated defrost interval in accordance with Annex D (h).....:		NA
	The average temperature for each compartment (°C).....:	(see appended table)	NA
	The average steady state temperature in the compartment for the temperature control setting in accordance with Annex B (°C).....:	(see appended table)	NA
	The representative accumulated temperature difference over time for defrost and recovery for the relevant compartment in accordance with Annex C (see Clause C.5) (Kh).....:		NA
	The estimated defrost interval in accordance with Annex D (h).....:		NA
6.8.3	Interpolation	(see appended table)	P
6.8.4	Specified auxiliaries		NA
6.8.5	Total energy consumption		P
	Integrated energy value over a year.....:	(see appended table)	NA
	The total annual energy consumption of a refrigerating appliance E_{total} (except for low noise refrigerating appliances) (Wh/annum).....:	(see appended table)	NA

EN 62552-3			
Clause	Requirement + Test	Result - Remark	Verdict
	For low noise refrigerating appliances, the energy consumption shall be determined at an ambient temperature of 25 °C instead of at 16 °C and 32 °C		NA

8	UNCERTAINTY OF MEASUREMENT		P
	For all energy measurements, the uncertainty of measurement of the measured value is determined and stated with the measured result.		P

Annex A	SET UP FOR ENERGY TESTING		P
A.1	General		P
	The refrigerating appliance is installed in a test room and with instrumentation.	See Annex A of Test Report for EN 62552-1	P
	The refrigerating appliance is prepared and set up.	See Annex B of Test Report for EN 62552-1	P
	The refrigerating appliance has installed air temperature sensors for determination of air temperature in the compartment.	See Annex D of Test Report for EN 62552-1	P

Annex B	DETERMINATION OF STEADY STATE POWER AND TEMPERATURE		P
B.2	Setup for testing and data collection		P
	The refrigerating appliance under test is installed and operated in accordance with Annex A.	See Annex A	P
B.3	Case SS1: no defrost control cycle or where stability is established for a period between defrosts		P
B.3.2	Case SS1 acceptance criteria	(see appended table)	P
	Where temperature control cycles are present, the two comparable test periods that start one and two temperature control cycles earlier than the period selected also meet all of the above criteria.		P
	Where temperature control cycles are not present (or where fixed time slices are used), the two comparable test periods that start one hour and two hours earlier than the period selected also meet all of the above criteria.		NA
B.3.3	Case SS1 calculation of values	(see appended table)	P
B.4	Case SS2: steady state determined between defrosts		NA
B.4.2	Case SS2 acceptance criteria	(see appended table)	NA
	The initial defrost and recovery period which is included in period SS2 qualifies as a valid defrost and recovery period.	See Annex C	NA
	The incremental defrost and recovery energy in for the initial defrost and recovery period.	See Annex C	NA

EN 62552-3			
Clause	Requirement + Test	Result - Remark	Verdict
B.4.3	Case SS2 calculation of values	(see appended table)	—
B.5	Correction of steady state power		P

Annex C	DEFROST AND RECOVERY ENERGY AND TEMPERATURE CHANGE		NA
C.2	Setup for testing and data collection		NA
	The refrigerating appliance under test is installed and operated in accordance with Annex A.	See Annex A	NA
C.3	Case DF1: where steady state operation can normally be established before and after defrosts		NA
C.3.2	Case DF1 acceptance criteria	(see appended table)	NA
	An alternative approach (DF2) is outlined in Annex K, but this is only used if compliance with Clause C.3 cannot normally be achieved.		NA
C.3.3	Case DF1 calculation of values	(see appended table)	NA
C.4	Number of valid defrost and recovery periods		NA
	For Case DF1 and Case DF2 the minimum number of valid defrost and recovery periods required for each ambient test temperature in order to calculate a representative value for defrost and recovery energy and temperature change.		NA
C.5	Calculation of representative defrost energy and temperature		NA

Annex D	DEFROST INTERVAL		NA
D.2	Elapsed time defrost controllers		NA
	If the elapsed time controller is accessible, measure and calculate the elapsed time as specified.	(see appended table)	NA
	If the elapsed time controller is not accessible, measure and calculate the elapsed time as specified.	(see appended table)	NA
D.3	Compressor run time defrost controllers		NA
	If the elapsed time controller is accessible, measure and calculate the elapsed time as specified.	(see appended table)	NA
	If the elapsed time controller is not accessible, measure and calculate the elapsed time as specified.	(see appended table)	NA
D.4	Variable defrost controllers		NA
D.4.1	General		NA
	The intent is to estimate a representative defrost interval during normal use based on a range of parameters declared by the supplier.		NA
D.4.2	Variable defrost controllers – declared defrost intervals		NA
	The defrost interval for an ambient temperature of 32 °C.....:	(see appended table)	NA

EN 62552-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Maximum possible defrost interval at an ambient temperature of 32 °C as specified by the manufacturer (h).....:	(see appended table)	NA
	Minimum possible defrost interval at an ambient temperature of 32 °C as specified by the manufacturer (h).....:	(see appended table)	NA
	The limits:		NA
	Δt_{d-min} shall not exceed 12 h at an ambient temperature of 32 °C.		NA
	Δt_{d-max} not exceed 96 h at an ambient temperature of 32 °C.		NA
	Δt_{d-max} greater than Δt_{d-min} at an ambient temperature of 32 °C.		NA
	The value for Δt_{df16} at an ambient temperature of 16 °C is double the value of Δt_{df32} (h).....:	(see appended table)	NA
D.4.3	Variable defrost controllers – no declared defrost intervals (demand defrost)		NA
	The default values are:		NA
	at an ambient temperature of 32 °C (elapsed time) (h).....:	$\Delta t_{d-min} = 6$	NA
	at an ambient temperature of 32 °C (elapsed time) (h).....:	$\Delta t_{d-max} = 96$	NA
	This gives a default value for Δt_{df32} of 24 h and Δt_{df16} of 48 h in Formula (27) for variable defrost controllers that are of the demand defrost type.		NA
D.4.4	Variable defrost controllers – non compliant		NA
	the average of 3 observed defrost intervals at an ambient temperature of 32 °C with not more than one door opening per hour, but not exceeding 10,0 h.....:	(see appended table)	NA
	the average of 3 observed defrost intervals at an ambient temperature of 16 °C with not more than one door opening per hour, but not exceeding 20,0 h.....:	(see appended table)	NA

Annex E	INTERPOLATION OF RESULTS	P
E.3	Case 1: linear interpolation – two test points	P
E.3.2	Requirements	P
	At least one compartment has one test point with a measured temperature that lies above the relevant target temperature while the other test point lies below the relevant target temperature.	P
	The temperature difference between test runs in each compartment used for interpolation not exceed 4 K.	P

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Clause	Requirement + Test	Result - Remark	Verdict
E.3.3	Calculations	(see appended table)	P
E.4	Case 2: triangulation – three (or more) test points		NA
E.4.2	Requirements for two (or more) compartment triangulation		NA
E.4.2.1	General requirements		NA
	The temperature in each compartment used in interpolation lies within the range $T_{tar} \pm 4$ K for all temperature control setting combinations selected.		NA
E.4.2.2	Triangulation for a refrigerating appliance with two compartments	(see appended table)	NA
E.4.2.3	Triangulation for a refrigerating appliance with more than two compartments	(see appended table)	NA
E.4.3	Calculations for two compartment triangulation – manual interpolation		NA
E.4.4	Calculations for two compartment triangulation – matrices		NA
E.4.5	Checking temperature validity where there are more than two compartments for triangulation		NA
E.4.6	Calculations for three compartment triangulation – matrices		NA

Annex F	ENERGY CONSUMPTION OF SPECIFIED AUXILIARIES		NA
F.2	Ambient controlled anti-condensation heaters		NA
F.2.5	Calculation of power consumption		NA
	The data as set out in Table F.1 are normally provided by the product supplier or manufacturer.		NA
	The annual average additional power consumption associated with the ambient controlled anti-condensation heater (W).....:	(see appended table)	NA
	R_i is a regional factor to indicate the probability of the i th temperature and humidity bin in Table F.1.	(see appended table)	NA
	P_{Hi} is the average heater power associated with the i th temperature and humidity bin in Table F.1.	(see appended table)	NA
	The assumed loss factor.....:	1,3	NA
F.2.6	Where anti-condensation heater(s) cannot be disabled but their power consumption can be measured directly		NA
F.2.7	Where anti-condensation heater(s) cannot be disabled and their power consumption cannot be measured directly		NA
F.2.8	Where anti-condensation heater(s) has a user-adjustable setting		NA
	The highest energy value (W).....:	$W_{heatersmax} =$	NA
	The lowest energy value (W).....:	$W_{heatersmin} =$	NA
	The energy consumption at the highest energy value (Wh).....:	$E_{max} =$	NA
	The energy consumption at the lowest energy value (Wh).....:	$E_{min} =$	NA

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Clause	Requirement + Test	Result - Remark	Verdict
	The approach set out in F.2.5, F.2.6 or F.2.7 is used to determine the highest and lowest values for the anti-condensation heaters.		NA
	For refrigerating appliances with anti-condensation heaters that can be switched on and off by the end-user, the anti-condensation heaters shall be switched on and - if adjustable - set at maximum heating and included in the annual energy consumption (AE) as daily energy consumption (E_{daily}) (Point 1-(a) of Annex III of (EU) 2019/2019)		NA

Annex H	DETERMINATION OF VOLUME		P
H.2	Total volume	(see appended table)	P

Annex ZA	CHILL COMPARTMENT TEMPERATURE CONTROL TEST		NA
	Reference test at ambient of 16 or 32 °C.....:	(see appended table)	NA
	Verification test at ambient (°C).....:	(see appended table)	NA
	The reference chill compartment temperature (°C)....:	(see appended table)	NA
	Average temperature of chill compartment during verification test (°C).....:	(see appended table)	NA
	Variation between the reference temperature and the verification temperature (K).....:	(see appended table)	NA

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❖ STORAGE TEST

1. For appliances other than wine storage appliances:

Storage test						P		
Ambient temperature (°C)	Setting of temperature control	Measuring point		Measured value (°C)	Difference of average temp. between period S and period E (K)	Temperature rise above reference temp. during the defrost and recovery period		
38°C	4.2	Fresh food compartment					-	-
		T _{1m}		5.00	-	-		
		T _{2m}		3.28				
		T _{3m}		2.07				
		T _{ma}		3.45				
		Frozen compartment					Max. 0.11 K	Max. temp. rise: - K Duration: - min.
				Max.	Avg.			
		Period S	T ₁ ^{***}	-18.40	-18.74			
			T ₂ ^{***}	-20.60	-21.12			
			T ₃ ^{***}	-18.30	-18.60			
			T ₄ ^{***}	-18.30	-18.50			
			T _{_reference}	-18.30	-			
		Period E	T ₁ ^{***}	-18.30	-18.66			
			T ₂ ^{***}	-20.50	-21.01			
			T ₃ ^{***}	-18.40	-18.60			
			T ₄ ^{***}	-18.30	-18.50			
		Defrost and recovery period	T ₁ ^{***}	-	-			
			T ₂ ^{***}	-	-			
			T ₃ ^{***}	-	-			
			T ₄ ^{***}	-	-			
16°C	4.2	Fresh food compartment					-	-
		T _{1m}		3.11	-	-		
		T _{2m}		2.79				
		T _{3m}		2.37				
		T _{ma}		2.76				
		Frozen compartment					Max. -0.07 K	Max. temp. rise: - K Duration: - min.
				Max.	Avg.			
		Period S	T ₁ ^{***}	-19.90	-21.14			
			T ₂ ^{***}	-21.60	-21.98			
			T ₃ ^{***}	-20.20	-20.47			

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			T ₄ ^{***}	-20.10	-20.42		
			T _{reference}	-19.90	-		
		Period E	T ₁ ^{***}	-20.00	-21.21		
			T ₂ ^{***}	-21.60	-22.03		
			T ₃ ^{***}	-20.20	-20.51		
			T ₄ ^{***}	-20.10	-20.46		
		Defrost and recovery period	T ₁ ^{***}	-	-		
			T ₂ ^{***}	-	-		
			T ₃ ^{***}	-	-		
			T ₄ ^{***}	-	-		

❖ VOLUME

	Fresh compartment	Frozen compartment	Other compartment
Volume of compartment (l)	186.1	64.7	-

❖ ENERGY CONSUMPTION TEST

1. For steady state test period NOT bounded by defrost and recovery periods: Pass

1.1) Annex B - Ambient temperature 16 °C

ΔCOP		0.000		
1.1.1) Measured ambient temperature (°C)		16.00		
Temperature control setting - Test point 1		2.4		
		Block A	Block B	Block C
Duration of block (h)		4.45	4.47	4.47
Middle time difference t _c - t _A (h)		8.930		
Average temperature of block, T (°C)	Fresh compartment	3.54	3.58	3.54
	Frozen compartment	-22.4	-22.35	-22.47
	Other compartment	-	-	-
Average power of block, P (W)		18.13	18.17	18.11
Average power of all the blocks, P _{av} (W)		18.14		
Spread of temp. (K)	Fresh compartment	0.040		
	Frozen compartment	0.120		
	Other compartment	-		
Slope of temp. (K/h)	Fresh compartment	0.0000		
	Frozen compartment	0.0078		
	Other compartment	-		
Spread of power (%)		0.3308		

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Slope of power (%/h)		0.0123		
P _{ssM} (W)		18.14		
T _{ss1} (°C)	Fresh compartment	3.55		
	Frozen compartment	-22.41		
	Other compartment	-		
P _{ss1} (W) - Corrected		18.14		
1.1.2) Measured ambient temperature (°C)		-		
Temperature control setting - Test point 2		-		
		Block A	Block B	Block C
Duration of block (h)		-	-	-
Middle time difference t _c - t _A (h)		-		
Average temperature of block, T (°C)	Fresh compartment	-	-	-
	Frozen compartment	-	-	-
	Other compartment	-	-	-
Average power of block, P (W)		-	-	-
Average power of all the blocks, P _{av} (W)		-		
Spread of temp. (K)	Fresh compartment	-		
	Frozen compartment	-		
	Other compartment	-		
Slope of temp. (K/h)	Fresh compartment	-		
	Frozen compartment	-		
	Other compartment	-		
Spread of power (%)		-		
Slope of power (%/h)		-		
P _{ssM} (W)		-		
T _{ss1} (°C)	Fresh compartment	-		
	Frozen compartment	-		
	Other compartment	-		
P _{ss1} (W) - Corrected		-		

1.2) Annex B - Ambient temperature 32 °C

Δ COP		-0.014		
1.2.1) Measured ambient temperature (°C)		32.00		
Temperature control setting - Test point 1		4.9		
		Block A	Block B	Block C
Duration of block (h)		6.03	6.08	6.19
Middle time difference $t_c - t_A$ (h)		12.190		
Average temperature of block, T (°C)	Fresh compartment	1.92	1.93	1.96
	Frozen compartment	-23.78	-23.73	-23.78
	Other compartment	-	-	-
Average power of block, P (W)		43.36	43.34	43.42
Average power of all the blocks, P_{av} (W)		43.37		
Spread of temp. (K)	Fresh compartment	0.040		
	Frozen compartment	0.050		
	Other compartment	-		
Slope of temp. (K/h)	Fresh compartment	0.0033		
	Frozen compartment	0.0000		
	Other compartment	-		
Spread of power (%)		0.1845		
Slope of power (%/h)		0.0113		
P_{ssM} (W)		43.37		
T_{ss1} (°C)	Fresh compartment	1.94		
	Frozen compartment	-23.76		
	Other compartment	-		
P_{ss1} (W) - Corrected		43.37		
1.2.2) Measured ambient temperature (°C)		32.00		
Temperature control setting - Test point 2		3.8		
		Block A	Block B	Block C
Duration of block (h)		4.62	4.82	4.89
Middle time difference $t_c - t_A$ (h)		9.575		
Average temperature of block, T (°C)	Fresh compartment	5.49	5.55	5.57
	Frozen compartment	-19.96	-19.97	-19.94
	Other compartment	-	-	-
Average power of block, P (W)		34.73	34.68	34.78
Average power of all the blocks, P_{av} (W)		34.73		
Spread of temp. (K)	Fresh compartment	0.080		
	Frozen compartment	0.030		
	Other compartment	-		
Slope of temp. (K/h)		0.0084		

EN 62552-1 & EN 62552-2 & EN 62552-3		
	Frozen compartment	0.0021
	Other compartment	-
Spread of power (%)		0.2879
Slope of power (%/h)		0.0150
P _{ssM} (W)		34.73
T _{ss1} (°C)	Fresh compartment	5.54
	Frozen compartment	-19.96
	Other compartment	-
P _{ss1} (W) - Corrected		34.73

2. Annex E - Interpolation of results

Ambient temperature 16 °C			
	Test point 1	Test point 2	-
P _{ss} (W)	18.14	-	-
T _{ss} (°C)	3.55/-22.41	-	-
ΔE _{df} (Wh)	-		
Δt _{df} (h)	-	-	-
E _{daily} (Wh)	435.36	-	-
E _{daily16} (Wh)	435		
Ambient temperature 32 °C			
	Test point 1	Test point 2	-
P _{ss} (W)	43.37	34.73	-
T _{ss} (°C)	1.94/-23.76	5.54/-19.96	-
ΔE _{df} (Wh)	-		
Δt _{df} (h)	-	-	-
E _{daily} (Wh)	1040.88	833.52	-
E _{daily32} (Wh)	922		

Per Annex III of Regulation (EU) 2019/2019:

E _{daily16} (Wh)	435
E _{daily32} (Wh)	922
E _{aux} (kWh/a)	-
Load factor, L	1.0
AE (kWh/a) (= 365 x 0.5 x (E _{daily16} + E _{daily32}) / L + E _{aux})	247.84

	Fresh compartment	Frozen compartment
C	1.52	
D	1.00	

EN 62552-1 & EN 62552-2 & EN 62552-3

A_c	1.00	1.00
B_c	1.00	1.00
V_c	186.1	64.7
N_c	75	138
r_c	1.00	2.10
M_c	0.12	0.15
SAE (kWh/a) (= $C \times D \times \sum A_c \times B_c \times [V_c/V] \times (N_c + V \times r_c \times M_c)$)	203.63	

EEI (%) (= AE x 100 / SAE)	121.7
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❖ CHILL COMPARTMENT TEMPERATURE CONTROL TEST

	Reference test		Verification test		Variation T_{ccma} to T_{ccma_ref} (°C)
	Ambient temperature (°C)	$T_{ccma,ref}$ (°C)	Ambient temperature (°C)	T_{ccma} (°C)	
Measured value (°C)	-	-	-	-	-

EN 62552-1 & EN 62552-2 & EN 62552-3

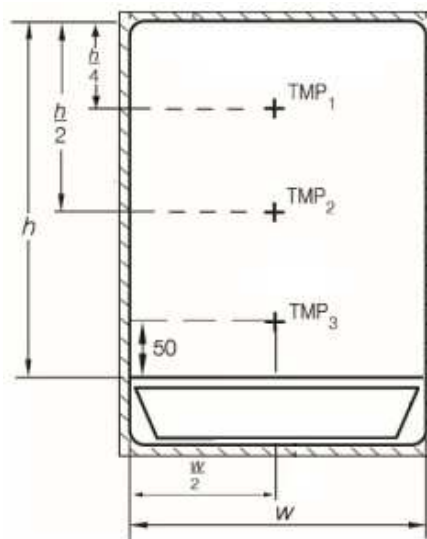
❖ TEMPERATURE TEST

Temperature rise test				P
Ambient temperature (°C)	Setting of temperature control	Measured value (°C)		
		Start	End	Time for the temperature from -18°C to -9°C (min.)
25°C	4.2	-18.0	-9.0	950.7

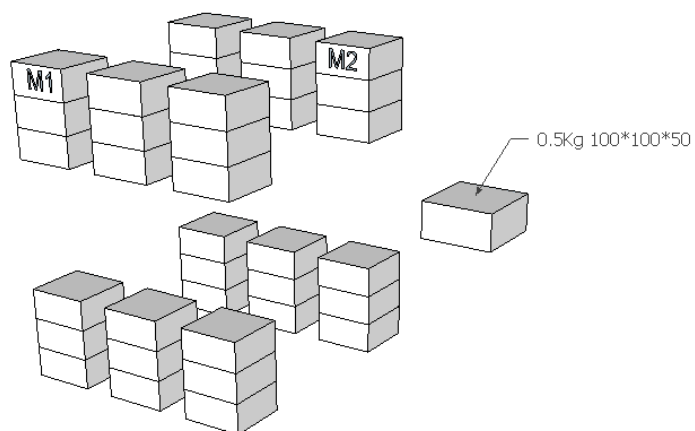
EN 62552-1 & EN 62552-2 & EN 62552-3

Freezing capacity test					P
Ambient temperature (°C)	Setting of temperature control	Temperature No.	Measured value (°C)		
			Max.	Min.	Time when reach -18°C
25°C	5.0	T ₁	3.4	1.7	-
		T ₂	2.4	0.6	-
		T ₃	2.1	0.1	-
		T _a	2.6	0.8	-
		Ballast loads			
		T ₁ ^{***}	-18.9	-19.0 ¹⁾	-
		T ₂ ^{***}	-20.0	-20.6 ¹⁾	-
		T ₃ ^{***}	-18.5	-18.9 ¹⁾	-
		T ₄ ^{***}	-18.9	-19.2 ¹⁾	-
		T ₅ ^{***}	-19.7	-20.0 ¹⁾	-
		T ₆ ^{***}	-18.2	-19.4 ¹⁾	-
		T ₇ ^{***}	-18.7	-19.2 ¹⁾	-
		Light loads			
		T ₈ ^{***}	24.9	-16.7 ¹⁾	17.12h ²⁾
		T ₉ ^{***}	25.0	-20.2 ¹⁾	
		T ₁₀ ^{***}	25.0	-17.2 ¹⁾	
1) These values are the temperatures at the end of test.					
2) This value is the freezing time.					
Ballast load (kg)			19.5		
Light load (kg)			2.5		
Freezing time (h)			17.12		
Specific freezing capacity (kg/12h)			1.75		
Freezing capacity (kg/24h)			3.50		
Volume of four-star compartment/ section (L)			64.7		
Whether the rated freezing capacity meets the requirements of at least 4,5kg/100l in 24h			<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No

Annex 1: Indication of the locations of sensors for measuring temperatures during storage test and temperature rise test.

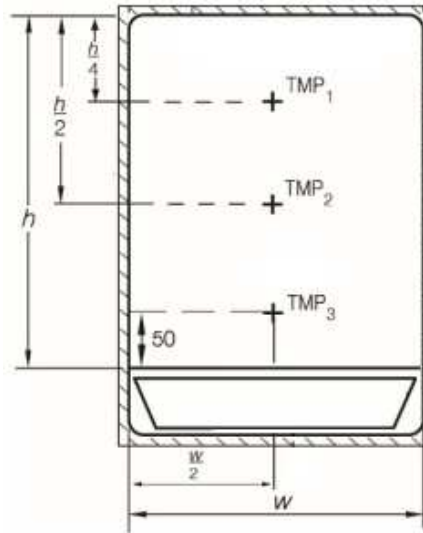


Fresh food compartment

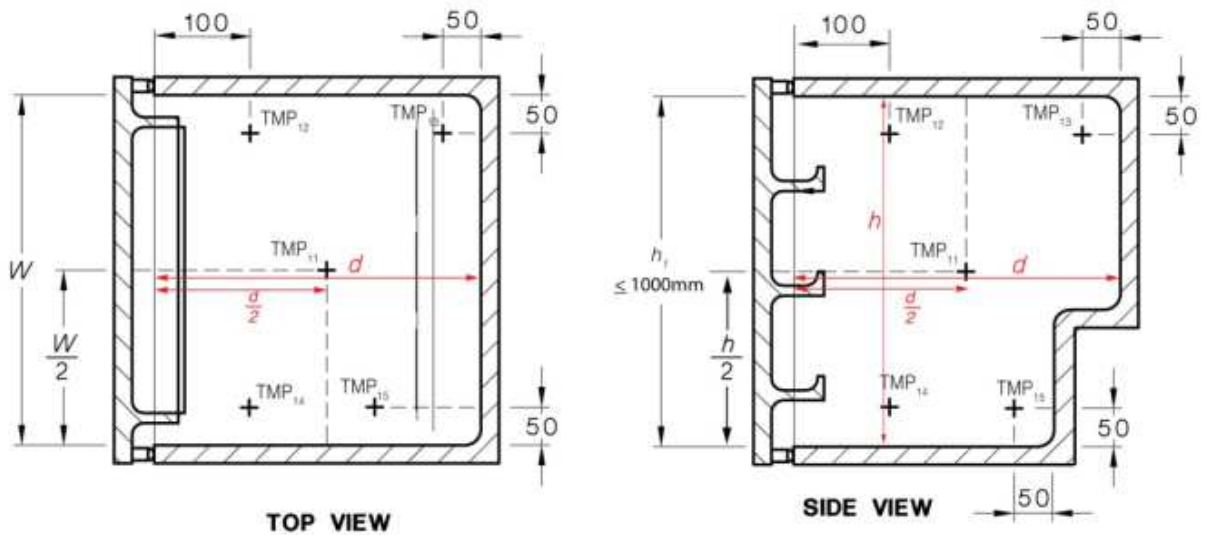


4-star compartment

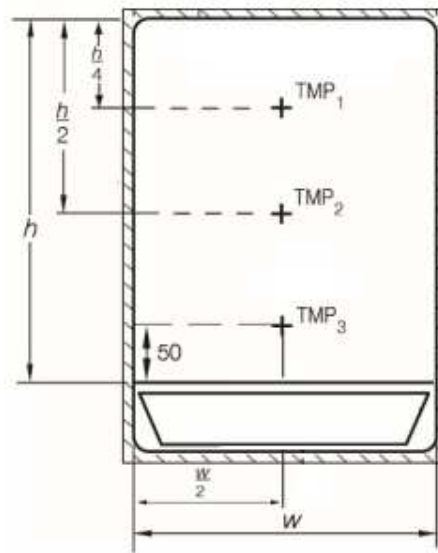
Annex 2: Indication of the locations of sensors for measuring temperatures during energy consumption test.



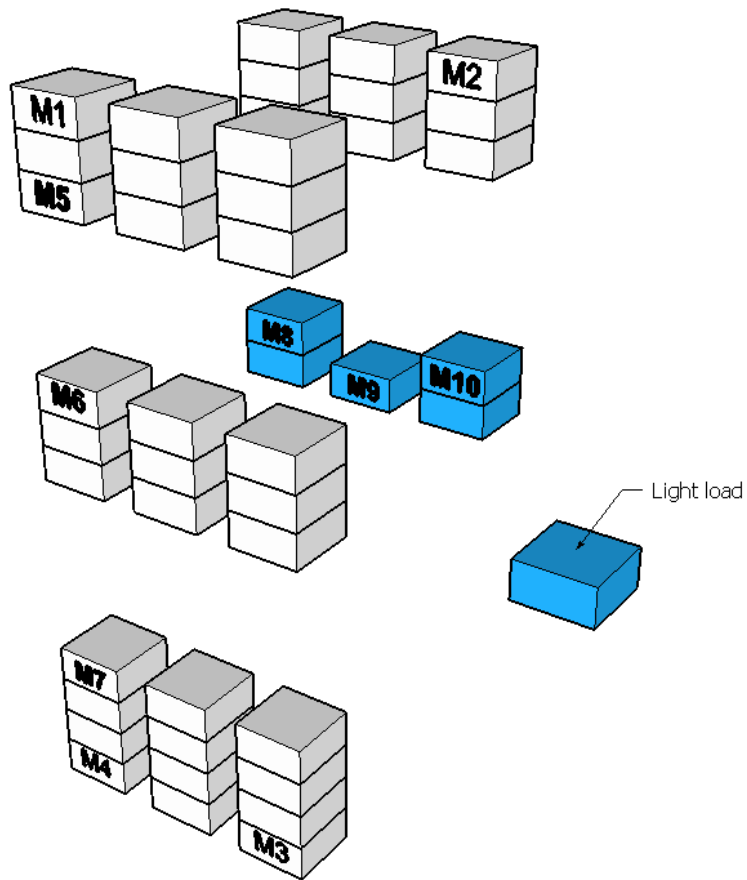
Fresh food compartment



4-star compartment

Annex 3: Indication of the layout of the test packages and “M” packages during freezing capacity test

Fresh food compartment

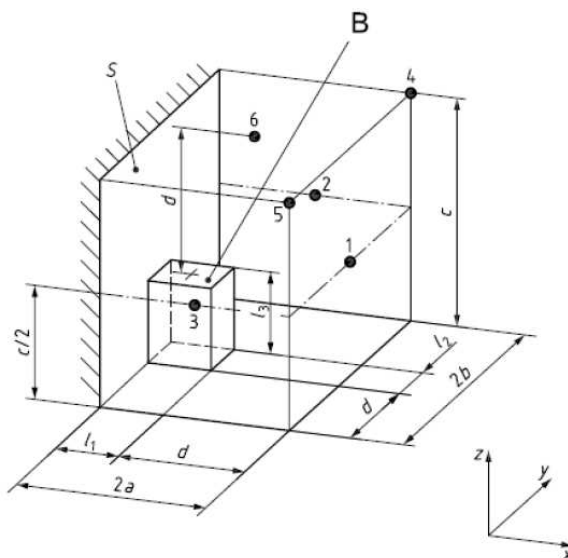


4-star compartment

Annex 4: Sound power level test
(EN60704-1:2010+A11:2012, EN60704-2-14:2013+A11:2015+A1:2019)

Test voltage/frequency:		230V / 50Hz					
Measured surface:		See figure 1					
Address and environments:	Background noise	<18 dB(A)					
	Radius of free field	-					
	Ambient temperature	23 °C					
	Relative humidity	61 %RH					
Microphone Position		1	2	3	4	5	6
Lpi: (circle 1)		26.7	25.8	27.2	26.6	25.7	26.6
Lpi: (circle 2)		26.7	25.6	27.1	26.7	25.7	26.7
Lpi: (circle 3)		26.6	25.7	27.2	26.7	25.8	26.7
LW/ Sound power level		39.53dB(A)					
Airborne acoustical noise emission class (according to Commission Regulation (EU) 2019/2016)		C					
# The test was subcontracted to the below laboratory: Ningbo Joysun Product Testing Service Co., Ltd. No.99 Xinqjian Road Cixi City Zhejiang Province CHINA							

Figure 1 – Measurement surface – parallelepiped – with key microphone positions.



*** End of test report ***