

UNITED NATIONS PERFORMANCE CERTIFICATION

4GV PERIODIC RETEST

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag PACKAGE ID: "Code 2 Medium, 4GV"

TEST REPORT: 17-16145



4GV / X34 / S / * ZA / +AA4940

 * Insert Year the packaging is Manufactured (last two digits)

TESTING PERFORMED FOR:



Hazpak Trainaid cc Unit 2, Mzimkhulu Drive, Tradezone, Dubetradeport, King Shaka International Airport PO Box 354, Umbogintwini, 4120

Attention: Mr. Bryan Fallis

TESTING PERFORMED BY:

TEN-E Packaging Services, SA (Pty) Ltd 138 Edison Crescent, Hennopspark, Centurion PO Box 11544 Wierdapark South, South Africa, 0057 Phone: (012) 653 8897 Fax: (012) 653 8308

8 November 2017

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REPORT & SAMPLE INFORMATION

DATE LAST SAMPLES RECEIVED: 30 October 2017

TEST COMPLETED ON:

6 November 2017

SAMPLES:

- The samples tested arrived in good condition at TEN-E Packaging Services, SA (Pty) Ltd.
- The following results are based solely on the product samples provided by the manufacturer.

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN PERMISSION OF TEN-E PACKAGING SERVICES, SA (PTY) LTD.



OBJECTIVE

To certify the **Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag** to the Periodic Retest performance requirements outlined in Chapter 6 of the UN Recommendations on the Transport of Dangerous Goods; 19^{th} Revised Edition.

PACKAGING CODE	PACKING	GROSS	INTERNAL
DESIGNATION	GROUP	MASS	PRESSURE
4GV Fibreboard Boxes	I High Danger Hazardous Materials	Not Exceeding 34 kg	95 kPa

This package is also certified for shipment under the International Regulatory Codes referenced in Appendix I. However, it is the responsibility of the shipper (end user) to determined package authorization for use under these Dangerous Goods Regulations. Appendix I also references Industry Standard used in conducting this certification.



OBJECTIVE

Note: This packaging was tested to the criteria outlined in paragraph 6.1.5.1.7 of the UN Recommendations on the Transport of Dangerous Goods; 19th Revised Edition.

õArticles or inner packaging s of any type for solids or liquids may be assembled and transported without testing in an outer packaging under the following conditions:ö

- a) The outer packaging shall have been successfully tested in accordance with 6.1.5.3 with fragile
 (e.g. glass) inner packaging containing liquids using the packing group I drop height;
- b) The total combined gross mass of inner packaging shall not exceed one half the gross mass of inner packaging s used for the drop test in (a) above;
- c) The thickness of cushioning material between inner packaging and between inner packaging and the outside of the packaging shall not be reduced below the corresponding thickness in the originally tested packaging; and if a single inner packaging was used in the original test, the thickness of cushioning between inner packaging shall not be less than thickness of cushioning between the outside of the packaging and the inner packaging in the original test. If either fewer or smaller inner packaging are used (as compared to the inner packaging used in the drop test), sufficient additional cushioning material shall be used to take up void spaces;
- d) The outer packaging shall have passed successfully the stacking test in 6.1.5.6 while empty. The total mass of identical packages shall be based on the combined mass of inner packaging s used for the drop test in (a) above;
- e) Inner packaging & containing liquids shall be completely surrounded with a sufficient quantity of absorbent material to absorb the entire liquid contents of the inner packaging &;
- f) If the outer packaging is intended to contain inner packaging for liquid and is not leak proof, or is intended to contain inner packaging for solids and is not sift proof, a means of containing and liquid or solid contents in the event of leakage shall be provided in the form of a leak proof liner, plastics bag or other equally efficient means of containment. For packaging containing liquids, the absorbent material required in (e) above shall be placed inside the means of containing the liquid contents;
- g) For air transport, packaging shall comply with 4.1.1.4.1;
- h) Packagingøs shall be marked in accordance with 6.1.3 as having been tested to packing group I performance for combination packagingøs. The marked gross mass in kilograms shall be the sum of the mass of the outer packaging plus one half of the mass of the inner packaging(s) as used for the drop test referred to in (a) above. Such a packaging mark shall also contain a letter õVö as described in 6.1.2.4.ö



TEST SAMPLE DESCRIPTION / QUALITY CONTROL AUDIT RESULTS

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag

OUTE	R PACKAGING	(SHIPPER)

Style:	RSC DWB 4 Code 2 4GV + 4 x 2.5 litre glass bottle	4GV Corrugated fibreboard box FEFCO 0204
Material Basis Mass or		
Grammage		
• Outer Facing:	225 g/m ² Nominal	254 g/m² Virgin
• Fluting:	160 g/m ² Nominal	173 g/m²
• Center Liner (DWB):	225 g/m ² Nominal	278 g/m ² Recycled
• Fluting:	160 g/m ² Nominal	175 g/m²
• Inner Facing	225 g/m ² Nominal	251 g/m² Virgin
Combined grammage:	Not supplied	1189 g/m²
Flute Contour:	B/C Flute	B/C-Flute
Tare Mass:	Not supplied	1,570 kg
Board Caliper:	Not supplied	6,74 mm
Box/Shipper Dimensions:	(I.D.) 410 x 410 x 367 mm	(O.D.) 425 x 425 x 390 mm
Manufacturer's Joint:	Stapled	38 mm 8 x Staples
Sealing Mechanism:		
• Top:	48 mm Reinforced Tape	48 mm Reinforced Clear tape on edges
		and 3 strips on center
• Bottom:	48 mm Reinforced Tape	48 mm Reinforced Clear tape on edges and 3 strips on center
Supplier / Markings:	Right Corrugated/UN Markings	Code 2



Note: The bottles were completely covered with vermiculite for testing.



TEST SAMPLE DESCRIPTION / QUALITY CONTROL AUDIT RESULTS

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag

CLIENT SPECIFICATION INFORMATION		QC AUDIT RESULTS		
INNER PACKGING – GLASS BOTTLE				
Description:	iption: 2,5 Litre Glass bottle, 04144902 2,5 Litre glass bottle			
Material/Grade/Pigment:	Glass/Amber	Glass/Brown		
Tare Mass:	1380 g	1,405 kg		
Capacity				
• Overflow	2500 ml	2,753 kg		
(Brimful):				
• 98% of Overflow:	% of Overflow: Not supplied 2,697 kg			
Overall Dimensions:				
• Height:	256 mm	255 mm		
• Diameter:	155 mm	154 mm		
Supplier/Markings:	Consol Glass	None		
	CLOSURE			
Description:	Description: Screw cap Screw cap			
Material/Grade/Pigment:	Plastics/Black	Plastics/Black		
Tare Mass: Not supplied		13 g		
Overall Dimensions:				
• Height:	Not supplied	31,76 mm		
• Diamatory Not supplied 54.96 mm		54.96 mm		

• Height:	Not supplied	31,76 mm
• Diameter:	Not supplied	54,96 mm
Finish Dimensions:		
• T:	Not supplied	37,63 mm
• E:	Not supplied	40,48 mm
Closure Tape:	N/A	N/A
Markings:	Not supplied	None
Liner:		
• Material:	N/A	N/A
• Tare Mass:	N/A	N/A
Thickness:	N/A	N/A
Supplier/Markings:	Consol Glass	None





TEST SAMPLE DESCRIPTION / QUALITY CONTROL AUDIT RESULTS

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag

CLIENT SPECIFICATION INFORMATION		QC AUDIT RESULTS		
	INTERMEDIATE PACKAGING – PLASTICS BAG			
Description:		Plastics bag	Plastics liner bag	
Quantity or	number:	2	1	
Material:		LDPE	Plastics/Natural	
Tare Mass:		Not supplied 0,200 kg		
Overall Dim	ensions:			
 Leng 	th:	800 mm	1540 mm	
Widt	th:	500 mm	955 mm	
Nominal thic	kness:	125 micron	60 micron	
Supplier/Ma	rkings:	Not supplied	None	





Stack

Pressure Differential

23°C and 50% RH

Ambient

SAMPLE PREPARATION

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag

SAMPLE PREPARATION AND PACKAGE MASS INFORMATION				
OVERALL OUTER PACKA	GE TARE MASS:		• 15 kg	
AUTHORIZED PACKAGE	GROSS MASS:		• 34 kg	
INNER PACKAGING TEST	MASS:		• 38 kg	
INNER PACKAGING GRO	SS MASS ALLOWE	D	• 19 kg	
Refer to page 4, paragraph 6.1	.5.1.7 (b)			
OVERFLOW CAPACITY:			• 2,753 kg	
FILL CAPACITY: (98% of Maximum Capacity))		• 2,697 kg	
PACKAGE TEST MASS:			• 53 kg	
INNER PACKAGING CLOSING/SEALING METHOD:		THOD:	• Screw on cap, Hand	tight
TEST	SAMPLE ID:	FILL	ING SUBSTANCE:	CONDITIONING:
Drop	1,2,3,4,5	,	Water/Lead shot	23°C and 50% RH

Empty

Water

6,7,8

1,2,3



TEST PROCEDURES AND RESULTS - DROP TESTS

SAMPLE PREPARATION/CONDITIONING:

• Refer to Sample Preparation Page

DROP HEIGHT:

• 1.8 meters

REGULATORY REFERENCES:

• Refer to Appendix I

DROP TEST EQUIPMENT:

• Hoist Drop Tester

DROP HEIGHT CALCULATION:

• Packing Group I Materials

INDUSTRY STANDARD REFERENCE:

• Refer to Appendix I



*Sample used for Flat on Bottom Drop is also used for the Top Corner Drop

substances or articles from the outer packaging.



TEST PROCEDURES AND RESULTS - STACK TESTS

SAMPLE PREPARATION/CONDITIONING:

• Refer to Sample Preparation Page

STACK TEST DURATION:

• 24 Hours

REGULATORY REFERENCES:

• Refer to Appendix I

STACK TEST EQUIPMENT:

• Pressure Test Apparatus

TEST LOAD APPLIED:

• 355 kg

INDUSTRY STANDARD REFERENCE:

• Refer to Appendix I

	STA
• Height of one package:	

STACK TEST LOAD CALCULATION

• Number of packages in a 3 meter high stack (-1):

• Package gross test mass:

390 mm 6,692 Packages 53 kg

of Packages in 3m High Stack (-1) x Package Gross Mass = Minimum Required Load Per Case 6,692 x 53 kg = 354,676 kg

Each sample tested individually using the unguided method

355 kg Total Minimum Load Required

CIZ 2- STADILITY TEST DESIL T

STACK & STABILITT TEST RESULTS				
24-Hour Stack Test Setup				One-Hour Stack Stability Test Setup
	Sample #	Maximum Deflection After 24 Hours	Results	
SLEEK	6	6 mm	Pass	Not conducted –
17+16145	7	6 mm	Pass	Unguided method
	8	6 mm	Pass	

CRITERIA FOR PASSING THE TEST

No test sample may leak from the inner packaging(s). There can be no deterioration that could adversely affect transport safety or any distortion liable to reduce the packageøs strength or cause instability in stacks of packages. In guided load tests, stacking stability must be assessed after completion of the test; two filled packagings of the same type must be placed on the test sample. The stacked packages must maintain their position for 1 hour.



ICAO - PRESSURE DIFFERENTIAL TESTS

SAMPLE PREPARATION/CONDITIONING:

• Refer to Sample Preparation Page

TEST PRESSURE:

• 95 kPa

PRESSURE TEST EQUIPMENT:

- Hydraulic Pressure Tester
- Hydraulic Pressure Gauge

REGULATORY REFERENCES:

• Refer to Appendix I

AREA OF PRESSURIZATION:

• Through closure

CLOSURE APPLICATION TORQUE:

• Hand tight

TEST DURATION:

• 5 minutes

INDUSTRY STANDARD REFERENCE:

• Refer to Appendix I

PRESSURE DIFFERENTIAL TEST SET-UP & RESULTS				
	Sample #	Results	Comments / Observations	
	1	Pass		
6688	2	Pass	All three samples maintained the 95 kPa test pressure for 5 minutes without leakage.	
	3	Pass		

CRITERIA FOR PASSING THE TEST

Packaging for which retention of liquid is a basic function must be able to withstand, without leakage, the prescribed test pressure.



TEST PROCEDURES AND RESULTS - COBB WATER ABSORPTION TESTS

SAMPLE SIZE:

(5) 130 x 130 mm Outside Container Surfaces

WATER APPLIED:

• 100 ml / Sample

TEST EQUIPMENT:

- Cobb Tester
- Sartoruis Scale A200S

REGULATORY REFERENCES:

• Refer to Appendix I

CONDITIONING:

• 23 °C \pm 2 and 50 % R.H. \pm 5

TEST DURATION:

• 30 Minutes / Sample

INDUSTRY STANDARD REFERENCE:

• Refer to Appendix I

COBB WATER ABSORPTION TEST RESULTS			
Sample #	Water Absorbed (g/m ²)	Results	
1	118,7	Pass	
2	112,8	Pass	
3	125,1	Pass	
4	128,6	Pass	
5	121,8	Pass	



CRITERIA FOR PASSING THE TEST

An increase in mass greater than 155 g/m² over the 30 minute duration represents an unacceptable level of water resistance.



UN PACKAGING CERTIFICATION PERIODIC RETEST

PACKAGE DESCRIPTION:

Corrugated fibreboard box (425 x 425 x 390 mm) containing 4 x 2.5 Litre Glass Bottle packed in vermiculite within a plastics liner bag

TEN-E PACKAGING SERVICES, SA (PTY) LTD certifies that the **Hazpak Trainaid cc** packaging referenced above has passed the Performance Oriented Packaging Standards outlined in the UN Recommendations on the Transport of Dangerous Goods. This package is also certified under IMDG, ICAO and IATA Regulations. It is the responsibility of the end user to determine authorization for use under these regulations. The use of other packaging methods or components other than those documented in this report may render this certification invalid.

SUMMARY OF PERFORMANCE TESTS							
	UN	TEST	TEST	TEST	TEST		
UN / TEST	REFERENCE	LEVEL	CONTENTS	DATE	RESULTS		
Drop	6.1.5.3	1.8 m	Water/Lead shot	6 November 2017	PASS		
Stack	6.1.5.6	355 kg ó 24 Hrs.	Empty	4 November 2017	PASS		
Pressure	3.1.1.6.1	95 kPa ó 30 min.	Water	2 November 2017	PASS		
Differential	(ICAO)						
Cobb	6.1.4.12	30 minutes		2 November 2017	PASS		
TEST REPORT NUMBER: 17-16145							
UN MARKING	:		u 4GV / X ZA / +A	u 4GV / X34 / S / * ZA / +AA4940			
PACKAGING	IDENTIFICATIO	N CODE:	4GV - Fiberboard	4GV - Fiberboard Box (paragraph 6.1.5.1.7)			
PERMORMAC	CE STANDARD:		Packaging meets P	Packaging meets Packing Group I, II and III tests			
AUTHORIZED	O GROSS MASS:		34 kg	34 kg			
"S" DESIGNA	TION:		Denotes Inner Pac	Denotes Inner Packagings			
YEAR OF MANUFACTURE:			* Insert Yea	* Insert Year the packaging is Manufactured			
(Apply to packaging	ng manufactured whi	le this certificate is valid	l) (last two d	(last two digits)			
COUNTRY AU	THORIZING AL	LOCATION OF TH	E South Africa (ZA)	South Africa (ZA)			
MARK:							
THIRD PARTY	Y PACKAGE IDE	NTIFICATION:	+AA4940	+AA4940			
PACKAGING	CERTIFICATION	N AGENCY:	TEN-E Packaging	TEN-E Packaging Services, SA (Pty) Ltd			
PERIODIC RE	TEST DATE:		22 November 2018	22 November 2018			

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY THAT THE PACKAGING TESTED IS MERCHANTABLE OR FIT FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. In no event shall TEN-E Packaging Services, SA (Pty) Ltd liability exceed the total amount paid by **Hazpak Trainaid cc** for services rendered. In the event of future changes to the above referenced test standard, it is the responsibility of **Hazpak Trainaid cc** to determine whether additional testing or updating of past testing is necessary to verify that the packaging we have tested remains in compliance with those standards.

APPLICANT: Mr. Bryan Fallis Hazpak Trainaid cc Unit 2, Mzimkhulu Drive, Tradezone, Dubetradeport, King Shaka International Airport PO Box 354, Umbogintwini, 4120

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Reg no. 1997/003087/07 Directors: R.J. TenEyck. I.E. Erlank

Issie Erlank SANAS Approved Signatory Managing Director TEN-E Packaging Services, SA (Pty) Ltd 138 Edison Crescent, Hennopspark, Centurion PO Box 11544 Wierdapark South, South Africa, 0057





APPENDIX I: REGULATORY AND INDUSTRY STANDARD REFERENCES

REGULATORY REFERENCES							
TEST	UN@ 19 th Edition	IMDG③ 2016 Edition	ICAO④ 17-18 Edition	IATA© 58 th Edition	SANS 10229-15 2010 Edition		
Drop:	6.1.5.3 & 6.1.5.1.7(a)	6.1.5.3 & 6.1.5.1.7.1	6; 4.3 & 6; 4.1.7(a)	6.3.3 & 6.3.1.2.1	12.3.1		
Stacking:	6.1.5.6 & 6.1.5.1.7(d)	6.1.5.6 & 6.1.5.1.7.4	6; 4.6 & 6; 4.1.7(d)	6.3.6 & 6.3.1.2.4	12.3.5		
Pressure:	4.1.1.4.1	4.1.1.4.1	4; 1.1.6	5.0.2.9			
Vibration:			4; 1.1.1	5.0.2.7			
Cobb:	6.1.4.12.1	6.1.4.12.1	6; 3.1.11.1	6.2.12.2			

① The United Nations Recommendations on the Transport of Dangerous Goods ô Model Regulations (UN ó Orange Book)

⁽²⁾ International Maritime Dangerous Goods Code (IMDG)

③ Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO)

(4) International Air Transport Association (IATA) Dangerous Goods Regulations

© South African Bureau of Standards Code of Practice ó SANS 10229-1:2010

INDUSTRY STANDARD REFERENCES					
Drop:	ASTM© D5276:	Standard Test Method for Drop Test of Loaded Containers by Free Fall			
	ISO@ 2248:	Packaging ó Complete, Filled Transport Packages ó Vertical Impact Test By Dropping			
Stacking:	ASTM© D4577:	Standard Test Method for Compression Resistance of a Container Under Constant Load			
	ISO⑦ 2234:	Packaging ó Complete, Filled Transport Packages ó Stacking Tests using Static Load			
Vibration:	ASTM© D999:	Standard Test Method for Vibration Testing of Shipping Containers			
	ISO@ 2247:	Packaging ó Complete, Filled transport Packages ó Vibration Test at Fixed Low Frequency			
Cobb:	ISO© 535:	Paper and Board - Determination of Water Absorption - Cobb Method			
Test	ISO© 16104:	Packaging ó Transport packaging for dangerous goods ó Test Method			
Methods:					

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