



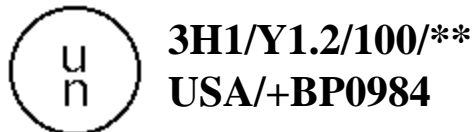
CTL Project Number	3501
Date Testing Completed:	10/27/09
Date of Report:	10/27/09

**DEPARTMENT OF TRANSPORTATION
PERFORMANCE ORIENTED PACKAGE TESTING
CERTIFICATION**

Performed by:
Container Technologies Laboratory, Inc.
9567 Alden Street
Lenexa, KS 66215
913-888-2000

Testing Performed for:
NoSpill LLC
9808 Pflumm Road
Lenexa, KS 66215
913-888-9200

Design Qualification Testing of a
UN 3H1 Single Packaging



** Is to be replaced by the year of manufacture

Bryan J Bunn, ME
Certification Officer

CONTAINER TECHNOLOGIES LABORATORY, Inc.

PACKAGE ENGINEERING · RESEARCH · CONSULTATION · TESTING

9567 Alden · Lenexa, KS 66215 · 913-888-2000 · Fax 913-888-2993

UN / DOT IMDG PACKAGING PERFORMANCE CERTIFICATION

CTL Project #: **3501**
Certificate # **+BP0984**

Requesting Party:

Tom Cray, President
NoSpill LLC
9808 Pflumm Road
Lenexa, KS 66215

Phone: 913-888-9200
Fax: 913-492-8408

Package Tested

A 5-gallon HDPE plastic jerrican (red "gas can" style) with top and rear handles and child resistant two-piece screw cap.

NOTE: The use of other packaging methods or components may render this report invalid.

Packaging identification code: 3H1
Packaging nomenclature: Single
Tested to performance standard (PG): Y (Group II)

<u>TEST</u>	<u>SPECIFICATION</u>	<u>TEST LEVEL</u>	<u>TIME</u>	<u>RESULTS</u>
Drop	49CFR 178.603	1.2 m	N/A	Pass
Vibration	49CFR 178.608	4.3 Hz	1 hr	Pass
Stacking Strength	49CFR 178.606	509 lbs	28 days	Pass
Internal Pressure	49CFR 178.605	100 kPa	30 min	Pass
Leakproofness	49CFR 178.604	3 psig	5 min	Pass

I certify that the packaging prepared for transport described herein was tested in accordance to the above testing procedure and successfully passed the tests according to the UN Recommendations on the Transportation of Dangerous Goods and Title 49 of The Code of Federal Regulations Part 178. The packages may bear the marking:



3H1/Y1.2/100/**
USA/+BP0984

**** Year of Manufacture**

Tested by: **Bryan J Bunn, ME**
Certification Officer

Date: **October 27, 2009**

"All manufacturing, engineering, and quality efforts are in vain if the product reaches its destination in a damaged condition."

SECTION 1 - PRODUCT and PACKAGE DESCRIPTION

PRODUCT INFORMATION

Product Information	Group II Liquid
Packing Group	II
Specific Gravity	1.2
Authorized Package MGW (kg)	N/A

Note: Product information must be on packages in accordance to the rules and regulations of the 49CFR manual.

OUTER PACKAGING

Plastic Jerrican

Manufacturer	Semco Plastic Company	St. Louis, MO
Style	Rectangular "gas can" style plastic jerrican with	
Size (in, L x W)	14.075	11.250 (external)
Height	12.583	(overall)
Material	HDPE	
Wall Thickness (in)	0.055	(minimum)
Part Number	5 GALLON CAN	
Drawing Number	5 GALLON CAN	
Handles	Integral top and rear handles, 4-1/4" long by 7/8" thick, rounded inside opening 1.18" wide	
Openings	Integral top mounted, threaded opening, 2.1"	
Liner(s)	None	
Tare Weight (g)	1508	
Volume (L)	20.39	(overflow)

Closure

	Two-piece (round plug and collar) screw cap with ratcheting child resistant side tabs	
Material	Acetal	(Plug)
	HDPE	(Collar)
Size (in, Dia x Ht)	2.097	0.763 (Plug)
Size (in, Dia x Ht)	2.625	0.9375 (Collar)
Part Number	6160	(DOT two-piece cap)
Drawing Number	N/A	
Thread information	Thread designation 63-485	
Application Torque (in-lbs)	45	
Liner(s)	O-ring, size 136 FKM (3/32")	
Tare Weight (g)	19.8	(collar)
	61.8	(plug)
	1.67	(O-ring)

FILL MATERIAL

Material name	Simulated Liquid
Specific gravity (SG)	Water / glycol solution
Additional materials	1.00
	None

SECTION 2 - TEST METHODS and RESULTS

Note: See Appendix A - Photos, Appendix B - Calculations, Appendix C - Equip./Orientations, Appendix D - Assembly Instructions

Drop Test – 49CFR 178.603

The packages are subjected to a free-fall drop test onto a rigid, non-resilient, flat horizontal surface in the orientations listed below. If any drop sequence has more than one orientation option, the orientation most likely to result in failure is chosen.

Testing parameters:

Product Type	Wt (kg)	Fill Level	Conditioning	Drop Ht (m)
Liquid	N/A	98%	0 F (-18 C)	1.2

<u>DROP SEQUENCE</u>	<u>ORIENTATION</u>	<u>RESULT</u>
1	Front edge, body weld	Pass
2	Front edge, body weld	Pass
3	Front edge, body weld	Pass
4	Diagonal on top closure	Pass
5	Diagonal on top closure	Pass
6	Diagonal on top closure	Pass

Results:

Upon final inspection, no visible damage and/or leakage of the products was evident and the outer packaging maintained structural integrity.
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Pass/Fail Criteria -

A package is considered to successfully pass the drop tests if for each sample tested: There is no damage to the outer packaging likely to adversely affect safety during transport, there is no leakage of the filling substance from the inner packaging, and any discharge from a closure is slight and ceases immediately after impact or pressure equalization.

Vibration Test – 49CFR 178.608

Three packages, prepared as for shipment and conditioned to ambient laboratory conditions, are placed on a vibration table that has a peak to peak displacement of one inch. Testing is performed for one hour at a frequency that causes the package to be raised from the vibrating platform so that a 1.6 mm (1/16 in) gage may be passed between the platform and samples.

Test Equipment: Servo/Hydraulic Rotary
 Conditioning: Ambient 73 F / 50% RH

<u>SAMPLES</u>	<u>TEST LEVEL</u>	<u>TIME</u>	<u>RESULT</u>
3	4.3 Hz	1 hr	Pass

Results:

Final inspection revealed no rupture and/or leakage from the primary containers or failure of the outer packagings.

Pass/Fail Criteria -

A package is considered to successfully pass the vibration tests if for each sample tested: No test sample may leak, rupture or show any deterioration which could adversely affect safety or container strength, during transport.

Stacking Test – 49CFR 178.606

Three samples are filled and sealed, as for shipment, and subjected to a force applied to the top surface of the container as described below.

Testing Parameters:	<u>Method</u>	<u>Duration</u>	<u>Conditioning</u>
	Static	28 days	104 F (40 C)

<u>SAMPLES</u>	<u>REQUIRED LOAD</u>	<u>MIN. APPLIED LOAD</u>	<u>RESULT</u>
3	509.0 lbs	516.7 lbs	Pass

Results:

Following the completion of testing, the samples were allowed to cool to ambient laboratory conditions, and two filled packagings (of the same type) were supported for over one hour.

Pass/Fail Criteria -

A package is considered to successfully pass the stack tests if for each sample tested: No test sample may show any deterioration or distortion which could adversely affect safety or container strength during transport causing instability in stacks of packages.

Internal Pressure Test – 49CFR 178.605

Three (3) primary packagings of each style are filled with water and subjected to an internal (hydraulic) pressure, with closure(s) in place, for a length of time dependent upon the type of material of construction.

<u>SAMPLE</u>	<u>MATERIAL</u>	<u>TEST PRESSURE</u>	<u>TIME</u>	<u>RESULT</u>
1	Plastic	100 kPa (gauge)	30 min	Pass
2	Plastic	100 kPa (gauge)	30 min	Pass
3	Plastic	100 kPa (gauge)	30 min	Pass

Results:

There was no leakage of water from the test sample for the duration of the test.

Pass/Fail Criteria -

A package is considered to successfully pass the hydrostatic tests if for each sample tested: There is no leakage of liquid from the container.

Leakproofness Test - 49CFR 178.604

Three (3) primary packagings of each style are internally pressurized using compressed air and subjected to the pressure differentials for the lengths of time listed below. A soapy solution (as per Appendix B to Part 178, paragraph (3)) is used to cover all seams and around the closure(s) of the sample to check for leakage of air.

<u>SAMPLE</u>	<u>MATERIAL</u>	<u>TEST PRESSURE</u>	<u>TIME</u>	<u>RESULT</u>
1	Plastic	3 psig	5 min	Pass
2	Plastic	3 psig	5 min	Pass
3	Plastic	3 psig	5 min	Pass

Results:

There was no leakage of air from the test sample or bubbles observed near the seams / closure(s) for the duration of the test.

Pass/Fail Criteria -

A package is considered to successfully pass the leakproofness tests if for each sample tested: There is no leakage of air from the packaging.

CONCLUSIONS

The packages tested satisfied the requirements and may bear the following marking for the specified package:

3H1 Plastic Jerricans



3H1/Y1.2/100/
USA/+BP0984**

**** Year of Manufacture**

where:	3H1	is the packaging identification code
	Y	is the performance standard at testing
	25.7	is the specific gravity of certification
	100	is the test pressure (in kPa) of the hydrostatic pressure test that the packaging design type has successfully passed
	**	is the year packaging is manufactured
	USA	is the state authorizing the mark
	+BP0984	is the certification lab ID and test number

NOTE: Periodic re-testing per 49CFR Section 178.601 (e).

The packaging manufacturer shall achieve successful test results for the periodic re-testing at intervals established by the manufacturer of sufficient frequency to ensure that each packaging produced by manufacturer is capable of passing the design qualification test. Changes in retest frequency are subject to the approval of the Associate Administrator for Hazardous Materials Safety.

Re-testing must be conducted at 12 month intervals from the date of this report.

APPENDIX A - Photos



Package Assembly and Orientation



Package Assembly and Orientation



Package Assembly and Orientation

Package Assembly and Orientation

APPENDIX C – Test Equipment

Equipment	Manufacturer	Model No.	Ser No.
150# Electronic Scale	Pelouze	4010	79683
Drop Tester	Lansmont	PDT-56E	N/A
Hydraulic Vib. Tester	Lansmont	1800-5	VB-180-51
Temperature Controller	Chromalox	2104	N/A

APPENDIX D - Assembly Instructions

- Step 1 Fill the container with a compatible group II or III liquid; do not exceed the Safe Fill line marked on the container.
- Step 2 Insert the plug (with O-ring in place) into the top spout of the plastic jerrycan.
- Step 3 Properly seat the collar over the plug, and torque the collar engaging the child-resistant ratcheting mechanism to the levels stated in this report.

