

UN SOLIDS TEST REPORT

6.5 M2 Pail with M2 Cover with Rieke Plastic Spout

Test Type: Periodic Retest

Additional Package Designs Covered by this report:

5.0, 5.3, 6.0, 6.5 M2 w/M2 Rieke Tint Plug, Rieke Vented Plastic Spout, Rieke Metal Spout, APC and Vented APC, Buna Vent, and LWSC and 5.0, 5.3, 6.0, 6.5M2 w/M2 Plain Lid

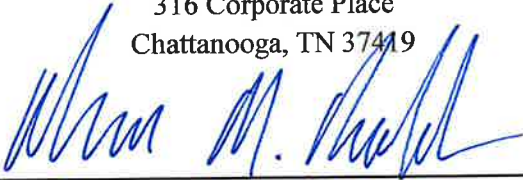
Test Report Number: M265-13


Completion Date: 9/15/2023

Test Facility/Packaging Manufacturer

Test Facility: M&M Industries
316 Corporate Place
Chattanooga, TN 37419

Packaging Manufacturer: M&M Industries
316 Corporate Place
Chattanooga, TN 37419

Completed By: 
Title: Quality Manager

Samples Prepared By: 
QC Tech II

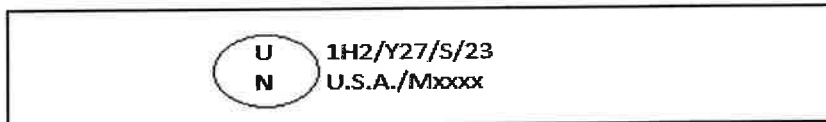
PACKAGE FILL WEIGHT INFORMATION

Overall package tare weight: 1.54 kg
Filling Substance weight: 25.46 kg 56.13 lbs. (Approx.)
Package UN weight - Gross: 27 kg

UN MARKING



Additional UN Marks covered by this report:





CLOSURE METHOD: PER ATTACHED INSTRUCTIONS

NOTES:

It is the responsibility of the end user to determine authorization for use of the packaging under the Hazardous Materials Regulations.

The use of packaging methods or components other than those documented in this report may render this certification invalid.

| COVER | | DRAWING |
|---|--|---------|
| Description | | |
| Cover Size: | 3.5-6.5 | |
| Style: | M2 | |
| Fittings: | Plastic Spout (Rieke FS-16-AP) | |
| Gasket: | M2 & M4 - .245" - .275" Dia x 35.755" - 36.005" L EPDM | |
| Wall Thickness: | 0.090 | |
| Method of Manufacture: Injection Molded | | |
| Material: | High Density Polyethylene | |
| Mold # | 10953 | |
| Tare Weight (kg): | 0.34 | |
| Overall Dimensions | | |
| Height: | 1.37" | |
| Top Diameter: | 11.99" | |
| Bottom Diameter: | 12.38" | |
| Thread Dimensions | | |
| Major Diameter: | N/A | |
| Minor Diameter: | N/A | |
| Markings | M&M Industries, Inc. Chattanooga, TN 37419 Phoenix, AZ 85043 www.ulitmatepail.com | |
| | SPI "2" HDPE Recycling Symbol <u>M2</u> | |

| DRUM | | DRAWINGS |
|---|--|--|
| Description | |  |
| Pail Size: | 6.5 | |
| Style: | M2 | |
| Gasket | NA | |
| Method of Manufacture: Injection Molded | | |
| Material: | High Density Polyethylene | |
| Wall Thickness: | 0.090 | |
| Mold# | 11716 | |
| Tare Weight (kg): | 1.2 | |
| Capacity | | |
| Overflow without cover in place (Water)(kgs): | 27.10 | |
| Overall Dimensions | | |
| Height: | 18.50" | |
| Diameter Below Stacking Lug: | 11.24" | |
| Bottom Diameter: | 10.44" | |
| Diameter at Curl (M2 Only): | 11.90" | |
| Thread Dimensions | | |
| Major Diameter: | N/A | |
| Minor Diameter: | N/A | |
| Markings | <p>M&M Industries, Inc. Chattanooga, TN 37419 Phoenix, AZ 85043 www.ulitmatepail.com</p> <p>SPI "2" HDPE Recycling Symbol</p> <p>6/6.5 U.S. GAL N.R.C. 090 11716</p> <div style="text-align: center;">  <p>1H2/Y27/S/23 U.S.A./M6045</p> </div> | |

DROP TEST CALCULATIONS

| | | |
|---|-------|-----------|
| Maximum Fill Capacity with cover in place(water): | 25.34 | kg |
| 95% Of Maximum fill Capacity (water): | 24.07 | kg |
| Overall Package Tare Weight: | 1.54 | kg |
| Actual Filling substance weight: | 25.46 | kg |
| Package Test Weight: | 27 | kg |
| | | 56.13 lb. |
| | | 59.52 lb. |

1 lb.= 0.4535924kg 1 kg = 2.204622 lb.

Packing Group

Allowed (Chemical): Y(PG II&III)

Package Test Level: Y(PG II&III)

Gross Mass (UN Mark on pail) 27 kg

| DROP TEST | | | | |
|----------------------------------|---|---------------------|---------------------------------|-----|
| Sample Size: | 6 Samples/3 per orientation | | | |
| Test Contents: | Sand Mesh 2-635 | | | |
| Additional Test Contents: | Vermiculite | 19 Bags | Approx. Weight of Add. Contents | 3.8 |
| Conditioning: | -18 C (0 F) sample temperature at time of test, min. 24 hr. conditioning. | | | |
| Drop Height: | Inches: 48 | Meters: 1.2 (PG II) | 1 m=3.280840 ft. | |
| Test Equipment: | Mechanical Drop Tester and thermometer in filled sample (inside freezer) | | | |
| Test Standard: | Title 49 CFR; Section 178.603 | | | |
| Target: | A rigid, non-resilient, flat and horizontal surface. | | | |

Criteria for passing the test for solids:

Any discharge from a closure is slight and ceases immediately after impact with no further leakage; and no rupture is permitted in packaging's for materials in Class 1 which would permit spillage of loose explosive substances or articles from the outer packaging.

| DROP TEST SET-UP AND RESULTS | | |
|------------------------------|--------|---------|
| Drop Orientation | Sample | Results |
| Diagonal Top Chime | 1 | Pass |
| Diagonal Top Chime | 2 | Pass |
| Diagonal Top Chime | 3 | Pass |
| Flat on Side | 1 | Pass |
| Flat on Side | 2 | Pass |
| Flat on Side | 3 | Pass |

STACKING & STACKING STABILITY TEST CALCULATIONS/RESULTS

| Stack Test Minimum Load Calculation | | | | | | |
|--|---|-------------------|---|---------------|---|----------------------------|
| Number of packages in a 3m High Stack (118/ Nesting Height (NH)-1) | | | | | | |
| <u>(118</u> | / | <u>NH)</u> | = | <u>#</u> | - | <u>-1</u> |
| <u>118</u> | / | <u>18.26</u> | = | <u>6.47</u> | - | <u>1</u> |
| | | | | | | <u>#3m HS</u> |
| | | | | | | <u>5.47</u> |
| Stack Test Load Calculation (Individual Package) | | | | | | |
| | | <u>Gross Mass</u> | X | <u>#3m HS</u> | = | <u>Load</u> |
| | | <u>27</u> | X | <u>5.47</u> | = | <u>147.69</u> kg |
| | | | | | | <u>Approx. 325.60 lbs.</u> |
| Actual Weight Placed on Pails: <u>397.8</u> lbs <u>180.44</u> kgs | | | | | | |

TEST INFORMATION

| | |
|---------------------------|---|
| Stack Test | |
| Test contents: | Sand mesh size 2-635 |
| Additional test contents: | Vermiculite 19 bags Approx. Weight of Add. Contents 3.8 |
| Conditioning: | Standard room temperature/RH |
| Equipment: | Dead load weight/Guided load fixture |
| Test Duration: | 24 hours |
| Test Standard: | Title 49 CFR; Section 178.606 |

Criteria for passing the Stack Test

No test sample may leak or show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, or cause instability in stacks of packages.

| STACK TEST RESULTS | | | | |
|--------------------|------------|----------|----------|---------|
| SAMPLE # | START TIME | DURATION | END TIME | RESULTS |
| 1 | 7PM | 24 hours | 7PM | Pass |
| 2 | 7PM | 24 hours | 7PM | Pass |
| 3 | 7PM | 24 hours | 7PM | Pass |

| STACK STABILITY RESULTS | |
|-------------------------|---|
| RESULTS | CRITERIA FOR PASSING THE TEST |
| | <ul style="list-style-type: none"> ·In guided load tests, stacking stability must be assessed after test completion. ·Two filled packaging's of the same type must be placed on the test sample ·The stacked packages must maintain their position for 1 hour. |
| Pass | For stack stability, M&M places the filled samples one on top of the other. The bottom sample is rotated to the top until all three samples have been subjected to stacking stability for one hour each |

Additional Drops (If REQUIRED for Variation 5)

Criteria for passing the test for solids

Any discharge from a closure is slight and ceases immediately after impact with no further leakage; and no rupture is permitted in packaging's for materials in Class 1 which would permit spillage of loose explosive substances or articles from the outer packaging.

Description:

| Sample | Drop Orientation | Results |
|--------|--------------------|---------|
| 1 | Diagonal Top Chime | |
| 2 | Diagonal Top Chime | |
| 3 | Diagonal Top Chime | |

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| Sample | Drop Orientation | Results |
|--------|--------------------|---------|
| 1 | Diagonal Top Chime | |
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**MANUFACTURER'S NOTIFICATION FOR M & M INDUSTRIES, INC.
UN/DOT PACKAGING FOR HAZARDOUS
SOLIDS/LIQUIDS**

At M&M Industries, we understand your goal to safely transport your valuable products along roads and highways. You want to provide your customers with value while keeping their trust. While we are legally bound to provide you with the following information, M&M Industries also wants you to know we value your endeavor and want to help you reach your goal, every day.

Under the **U.S. Department of Transportation's Title 49CFR** it is the **Shipper's Responsibility** to determine that the packaging or container is an authorized packaging, including all part 173 requirements. The selected packaging must be properly assembled for transportation in accordance with the manufacturer's notification. **Please do all the testing and research necessary to ensure that you have selected the proper M & M Industries container for use with your product.**

To meet UN/DOT Standards, this package must be properly closed for shipment. At the time of transfer, the packaging does not meet the UN standard because it is disassembled. Only when assembled as specified in the closure instructions below, and using the components described herein, is this packaging certified to meet the UN standard. Failure to follow the closure instructions or substituting package components with components other than those identified in the following paragraph will render the UN/DOT Certification invalid.

A copy of the manufacturer's notification, including closure instructions, must be made available for inspection by a representative of the Department of Transportation upon request for at least 90 days once the package is offered to the initial carrier for transportation in commerce. However, M&M Industries recommends that you retain these documents for a minimum of 365 days after the package is offered for shipment. The current record retention requirements are subject to change and are found in 49CFR 173.22(a)(4), <http://www.ecfr.gov>

M&M Industries takes superb pride in our Quality Assurance program and systems. However, even with our very best efforts, fittings on covers / pails can become damaged or shift during transportation or storage after leaving our facility. M&M Industries recommends that fillers/offers take all steps deemed necessary to check the fittings on each pail / cover, to meet your quality standards. An example of this is a screw cap on a

M2/M2 and M4/M4 pails

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cover that may vibrate or back off during transportation. The offeror of a hazardous material may be open to liability if they do not take the necessary precautions. Should you have any questions, please contact customer service at **(800) 331-5305**.

THESE CLOSING INSTRUCTIONS REMAIN IN EFFECT UNTIL FURTHER NOTICE.

CLOSING INSTRUCTIONS FOR: M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) Containers

Identification of Packaging:

This packaging type is identified by:

| Pail Size (gallons) | Mold Number | M2 Lids (B engraved on lid, tear tab) | M2 Lid diameter (ref only, measured at bottom of lid) | M4 Lids (A engraved on lid) | M4 Lid diameter (Ref only, measured at bottom of lid) |
|---------------------|---|--|---|-----------------------------|---|
| 6.5 | 11716 | 10905, 10953, 11183, 11184, 11827, 12680,14458,40M1CA | 12.47" | N/A | N/A |
| 6.0 | 48M2PA | 10905, 10953, 11183, 11184, 12680,14458, 40M1CA | 12.47" | N/A | N/A |
| 5.5 | 11851, 10910 | 10905, 10953, 11183, 11184, 11827, 12680,14458, 40M1CA | 12.47" | N/A | N/A |
| 5.3 | 12341, 44M2PA | 10905, 10953, 11183, 11184, 11827, 12680,14458, 40M1CA | 12.47" | 40M4CA 40M4CB 40M4CC | 12.40" |
| 5.0 | 10948, 11181, 11182, 12342, 12341, 12963, 15378, 15380, 10910, 11851,40M2PA- REGENESIS | 10905, 10953, 11183, 11184, 11827, 12680,14458,40M1CA | 12.47" | 40M4CA 40M4CB 40M4CC | 12.40" |
| 5.0 Straight Side | 40SWPA | 10905, 10953, 11827, 12680, 14458 | 12.47" | N/A | N/A |
| 3.5 | 11100, 12354, 28M2PA | 10950, 10953, 11183, 11184, 11827, 12680,14458,40M1CA | 12.47" | 40M4CA 40M4CB 40M4CC | 12.40" |

*Note: Only the 3.5, 5.0, and 5.3 M4 Pails with M4 Lids are rated for Hazardous Liquids.

M2/M2 and M4/M4 pails

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| Lid Description | Gasket Material | Available fittings |
|---|-----------------|--|
| M2 (B engraving) Tear tab lid | EPDM Black | Rieke Metal Spout FS-10-10-231 Rieke Vented Metal Spout FS-10-10-231-TFE Rieke Plastic Vented Spout FS-16AP-TFE Rieke Plastic Spout FS-16AP 70 mm Light Weight Screw Cap Vent Cap with Vent Spout (M2 Only) PV-20-52 and FS-16AP-TFE Rieke Tint Plug (M2 Only) TFS-2P APC-2 Plastic Vented Spout APC-2 Plastic Spout |
| M4 (A engraving) Liquids Non-tear tab lid | EPDM Black | Rieke Metal Spout FS-10-10-231 Rieke Vented Metal Spout FS-10-10-231-TFE Rieke Plastic Screw Cap FS-80 APC-2 Plastic Vented Spout APC-2 Plastic Spout Rieke Plastic Spout FS-16AP Rieke Plastic Vented Spout FS-16AP-TFE |

UN Markings for M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) Containers:

An appropriate UN marking must be maintained for each M&M Industries container design. The UN markings for M&M Industries M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) containers are listed below.

M2/M2 and M4/M4 pails

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| Pail Size (gallons) | UN Mark | Lid | Certified for |
|---------------------|---------------------------------------|-------------------------|--------------------|
| 6.5 | 1H2/Y27/S | M2 | Solids only |
| 6.0 | 1H2/Y27/S | M2 | Solids only |
| 5.5 | 1H2/Y25/S | M2 | Solids only |
| 5.3 | 1H2/Y27/S | M2 | Solids only |
| 5.0 | 1H2/Y27/S | M2 | Solids only |
| 5.0 Straight Side | 1H2/Y27/S | M2 | Solids only |
| 5.0 | 1H2/Y27/S | M2-REGENESIS | Solids only |
| 5.5 | 1H2/Y25/S | M2 | Solids only |
| 5.3 | 1H2/Y40/S 1H2/X40/S 1H2/Y1.2/30 | M4 | Solids and Liquids |
| 5.0 | 1H2/Y40/S 1H2/Y1.5/30 1H2/X40/S | M4 | Solids and liquids |
| 5.0 | 1H2/Y40/S 1H2/X40/S | M4-REGENESIS | Solids only |
| 3.5 | 1H2/Y21/S | M2 | Solids only |
| 3.5 | 1H2/Y1.5/30 | M4 | Liquids only |

In accordance with the U.S. Department of Transportation's Title 49CFR, Section 178.2, manufacturers of U.N. Standard/DOT Specification packages are required to notify in writing each person to whom that packaging is transferred of all requirements in this part not met at the time of transfer, and with information specifying the type(s) and dimensions of the closures, including gaskets and any other components needed to ensure that the packaging is capable of successfully passing the applicable performance tests. This information must include any procedures to be followed, including closing instructions for inner packaging and receptacles, to effectively assemble and close the packaging for the purpose of preventing leakage in transportation.

Specifically, the following items pertain to the M2/M2 (tear tab lid) and M4/M4 (non-tear tab lid) containers:

1. M2/M2 (tear tab) and M4/M4 (non-tear tab lid) containers are certified to the UN/DOT performance-oriented packaging standards and are marked with the appropriate UN markings on the container.
2. The M-Style pail must always be used with the correct M2 or M4 lid to meet the UN/DOT performance-oriented packaging standards.

M2/M2 and M4/M4 pails

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3. ONLY the 3.5-gallon, 5-gallon, and 5.3-gallon M4 pails with M4 lids are UN certified for liquid hazardous materials, and only for ground or vessel transportation.
4. M2/M2 (tear tab) and M4/M4 (non-tear tab lid) containers are **NOT** UN certified for air transportation of liquids.

A. CLOSING INSTRUCTIONS FOR THE M2/M2 and M4/M4 PAIL AND LIDS:

1. **Pneumatic press with 6" cylinder – 3.5-6.5-gallon sizes ONLY (Figure A),**
 - a. Adjust the downward stroke of top plate so that it goes beyond pail rim by 1/16-1/8".
 - b. Center the pail and lid under the press.
 - c. Apply a minimum of 80 psi from a regulated air supply to the lid listening for a defining snap.
 - d. If the cylinder is less than 6", higher air pressure may be required to adequately seal the lid.
 - e. **Inspect the lid after application to confirm it is properly seated.**

Figure A: Pneumatic Press



***To mitigate air entrapment and doming of the lid during production filling, M&M recommends the use of a "Burper Plug" measuring 3" Diameter by 1 ¼" Height attached to the bottom of the capper platen, centrally positioned. (Figure A1)**

Figure A1: Burper Plug

M2/M2 and M4/M4 pails

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2. **Rubber mallet (minimum 16 oz.) – all sizes 3.5 gallon through 6.5 gallon (5.3-gallon M4 for liquids excluded)**
 - a. Center the lid on the pail.
 - b. Hammer the cover into place by striking the cover in the center of the cover's outer ring (Figure B).
 - c. Strike cover until it snaps onto the rim of the pail. For the best results, strike cover starting at 12 o'clock position, then 6:00, then 3:00 and 9:00. Continue to hammer the cover into place 360 degrees, until the cover is evenly seated all the way around the pail.
 - d. **Inspect lid after application to confirm it is properly seated.**

Figure B



M2/M2 and M4/M4 pails

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Properly seated M2 lid:



Improperly seated M2 lid:



Properly seated M4 lid:



Improperly seated M4 lid:



3. When using the cover with the screw cap fitting, the recommended application torque for the 80mm cap is 12-foot pounds. Use a calibrated torque wrench to apply the closure to the fitting.

80 mm Screw Cap Lid:



80 mm Screw Cap Tightened with torque wrench:



4. If Rieke pour spout is supplied separately, refer to spout installation instructions below.

B. APPLICATION INSTRUCTIONS FOR RIEKE or APC SPOUT (if not pre-applied):

1. Use a Rieke/APC spout installer only.
2. Place lid into installer in the upright position (if applicable).
3. Place Rieke/APC plastic spout in spout hole of lid in upright position.
 - a. For automated crimper: Place right and left index fingers on each side of the spout installer to activate.
 - b. For Hand crimper: Apply per Rieke/APC crimping tool instructions.

M2/M2 and M4/M4 pails

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Revision History:

Original issue - August 19, 2013

Revision 1 – January 12, 2015 – separated pneumatic press for 5-5.5-gallon sizes only.

Revision 2 – December 1, 2015 – added cylinder size to pneumatic press, stroke adjustment and mallet size.

Revision 3-June 3, 2020-Added New Mold Numbers, removed reference to 2.0 M2 Pails, removed reference to previous M4 Lid, added new Mold, corrected various wording and grammar.

Revision 4-9/3/2020-Added Burper Plug Information

Revision 5-6/3/2021-Added New Molds, UN Information for 5.3 M4 Pail and Lid

Revision 9-6/2022-Added New Molds

Revision 10-1//2023-Added New Molds

Revision 11-8/2023-Added New Mold

See instructions on the next page to confirm proper application of spout.



This gauge is to be used to check FLEXSPOUT® Closure installations made by the following model tools: FS, Hand Operated Tool; IAFS Airmatic Tools. This gauge is to be used when gaging both steel and plastic pails.

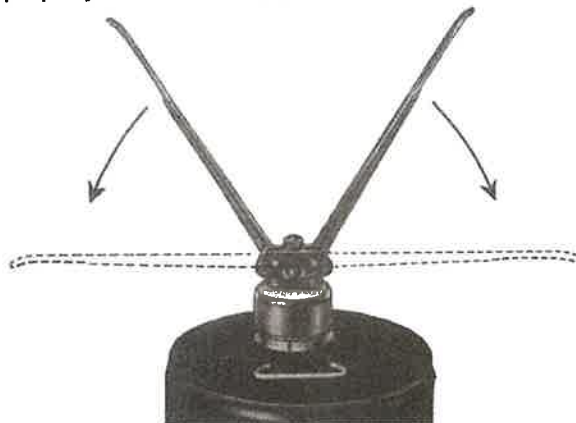
How to Use the Flex spout Closure Slip Gauge

Place gauge in position shown. Inner lands on gauge should rest on top of Flex Ring. In this position the gauge should clear freely the side wall of the installed FLEXSPOUT Closure when drawn across.



SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped on by hand tool, one of the following is the reason:

1. The operator failed to properly bottom the handles:



2. The tool is not functioning properly and should be returned to Rieke for adjustment.

SHOULD THE GAUGE FAIL TO CLEAR the sides of the FLEXSPOUT Closure after it has been crimped by either type of mechanically operated tool, the tool or power unit is not functioning properly and should be returned to Rieke for repair and adjustment.

TIPS ON THE USE AND CARE OF YOUR FLEXSPOUT CLOSURE TOOLS

- Be sure your operator is instructed to bottom the tool each time he affixes a FLEXSPOUT Closure to a container. This merely requires him to move handles downward as far as they will go.
- Rest the tool evenly on the container head, over the FLEXSPOUT Closure before starting the downward movement of the handles. This prevents "cocking" of the tool which results in an inferior seal.
- Keep your tools well-oiled and keep the closing collets or jaws free of dirt and paint.
- Do not attempt to adjust or dismantle your tools. They are precision adjusted at the factory for maximum sealing efficiency and received by you ready to use. Should your slip gauge reveal inefficient performance of any tool, return the tool to Rieke, transportation charges prepaid, for adjustment or repair.

- Do not remove mis crimped FLEXSPOUTS with the crimping tool. This will cause damage to the crimping tool by "popping out" or chipping the jaws. The M-066 removal tool should be used.



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