# *Voluntary Standard* For Repulping and Recycling Coated or Treated Corrugated Fiberboard and its Equivalents in the Old Corrugated Containers (OCC) Recycling Stream

Revised March 31, 2025

American Forest & Paper Association

FIBRE BOX ASSOCIATION®

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Note: Pages 15, 16, and 17 are the Application and Materials forms. They are a part of this document but are also posted separately for ease in filling out these pages.

# INTRODUCTION

Disposing of treated corrugated that cannot be recycled can be a financial and logistical burden on the supply chain for these packages. While coated or treated corrugated containers are the most practical and cost-effective way to ship produce, meats, seafood and other items, certain treatments to improve performance in the presence of water or water vapor may make recycling difficult. **It is desirable from both increased recyclable fiber availability and environmental standpoints to encourage the development of coated or treated corrugated that may be recycled into other paper products using common mill technology.**

The 2025 Voluntary Standard for Repulping and Recycling Coated or Treated Corrugated Fiberboard and its Equivalents in the Old Corrugated Containers (OCC) Recycling Stream (Voluntary Standard) was developed by the American Forest & Paper Association (AF&PA) and Fibre Box Association (FBA) to ensure that fiber coming into members' mills has an acceptable fiber yield and that the quality of the fiber does not cause issues in papermaking. It establishes a screening method to determine the repulpability (Part 1) and recyclability (Part 2) of OCC and its Equivalents (OCC-e).

The Voluntary Standard updates the joint AF&PA-FBA Voluntary Standard for Repulping and Recycling Corrugated Fiberboard Treated to Improve its Performance in the Presence of Water and Water Vapor, published in 2013.

The corrugated products industry recognizes the solution to this problem should be industry-wide, primarily because the recycling mills cannot effectively identify all treatments specific to particular companies. Different treatment systems may have different impacts on recycling processes; mill operators have even considered some to be highly detrimental.

To address and evaluate the technical as well as the educational aspects of this update, a joint committee was formed consisting of AF&PA and FBA members who represented manufacturers of containerboard, corrugated containers, and others who utilize recovered corrugated container fiber. Their work was to identify elements of the 2013 Voluntary Standard and update them to align the resource with current mill technology and manufacturing practices. The objective remains to provide a methodology that industry members can use, if desired, to evaluate the repulpability and recyclability of coated or treated corrugated board and its equivalents in an effort to establish a minimum threshold for material that is intended, and labeled, to be recyclable into new containerboard and other paper products.

After numerous meetings, tests, and legal reviews, the committee developed this Voluntary Standard for repulpability and recyclability. The Standard contains a test method and test report. Box manufacturers can register treatments and coated board and OCC-e combinations with the Fibre Box Association if they do the following:

- Have a lab approved by the FBA certify that coating or treatment or OCC-e material has passed the test protocol.
- Forward the completed Test Report, lab certification, and required samples to the FBA.
- Provide a copy of the Company and Material Information Forms (pages 15-17 of this document) to the FBA signed by an officer of their company.
- Once the "Treatment" Registration letter is received by the applicant, follow the marking guidelines as called for in the protocol.

### For additional information, call:

Fibre Box Association (FBA):
500 Park Boulevard, Suite 985
Itasca, IL 60143
847-364-9600
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www.fibrebox.org

# PURPOSE

**1.** The application of this Voluntary Protocol is for: linerboard (including Kraft Paper), corrugating medium, combined board, and corrugated products made from these materials, collectively known as "corrugated fiberboard"; and, "OCC equivalents" defined as, paper-based packaging that isn't corrugated but is collected in the OCC stream and successfully recycled with OCC (e.g. Kraft paper bags without poly lining). The purpose is to encourage the development of coatings and treatments to corrugated fiberboard that will provide water resistance or some other desirable characteristics that are repulpable, recyclable, and will replace existing non-recyclable coatings/treatments or other packaging formats that also provide water resistance or some other desirable characteristic, but do not allow the corrugated fiberboard or OCC-e to be repulpable or recyclable. The goal is to return to the OCC stream corrugated fiberboard and OCC-e material that formerly were not accepted into that stream.

**2.** This standard establishes a repeatable method for simulating a commonly used subset of repulping and recycling processes. It is intended to evaluate the impact of repulping and recycling coated/treated corrugated fiberboard and OCC-e material on containerboard mill operations and final products.

**3.** This standard establishes a method for identifying coated/treated corrugated and OCC-e that can be repulped and recycled in this selected subset of processes. It establishes minimum levels of performance for the Handsheets made from test material, repulped and recycled in accordance with a detailed test protocol given in Appendices A & B. This standard is not intended to preclude the development or use of any technological advances in mill or coating/treatment processes. It is intended to encourage the development, use and repulping and recycling of corrugated and OCC-e products for use in high-moisture environments and other fiber-based packaging applications.

# SCOPE

**1.** This standard applies repulping and recycling process technology found either in effect or readily achievable in mills currently involved in recycling.

**2.** This standard establishes a **screening method** to determine the repulpability and recyclability of coated/treated corrugated and OCC-e products.

**3.** The test method in this standard has two parts:

- **Part 1** determines the **repulpability** of test material by determining Percent Fiber Yield and Percent Rejects when only the test material is processed in accordance with this standard (Appendix A).
- **Part 2** determines the **recyclability** of the test material by evaluating its effect on mill operations and finished products when it is added to untreated corrugated in the amounts specified (Appendix B).

**4.** This voluntary standard does not relieve the user from compliance with all applicable local, state and federal laws and regulations, and contractual agreements.

5. This voluntary standard is not intended to address the functionality or marketability of the coated/treated corrugated or OCC-e material or of mill products that use the coated/treated corrugated or OCC-e as a fiber source.

6. This voluntary standard does not address all of the factors that should be considered in the development of a repulpable and recyclable coating/treatment. The companies that develop coatings, treatments, and treated corrugated and test them in accordance with this standard, are responsible for ensuring that, in addition to being repulpable and recyclable, the products will be safe and suitable for their intended applications — e.g., packaging in contact with food — and will not create other non-desirable environmental effects at the point of use or disposal.

7. This voluntary standard is not meant to be mandatory or a standard for the paper and paper-based packaging industry.

8. Corrugated containers and OCC-equivalents that contain any amount of medical, hazardous, poisonous, radioactive or toxic waste and/or other harmful substances or liquids are disqualified from certifying repulpability and/or recyclability through this test.

9. The revised 2025 Voluntary Standard becomes effective on March 31, 2025 and will be used for all new coating/treatment applications after that date. Coatings/Treatments that were approved and registered with the Fibre Box Association under the original and revised (2013) standards will be grandfathered.

# DEFINITIONS of KEY TERMS

**Percent Fiber Yield** is the amount of oven dry fiber that remains after the processing action, expressed as a percentage of the oven dry mass charge to the blender of the material to be tested.

**Handsheets** are sheets made from a suspension of fibers in water in an operation, whereby each sheet is formed separately by draining the pulp suspension on a stationary sheet mold.

**OCC or OCC-equivalent** is old corrugated containers with liners of test liner or kraft; paper-based packaging that isn't corrugated but is collected in the OCC stream and successfully recycled with OCC (e.g. kraft paper bags without poly lining).

**Percent Rejects** is the amount of reject material that remains after processing action, expressed as a percentage of the oven dry accepted fiber + reject material in the material being tested.

**Recyclable** means used paper, including in-plant and post-consumer recovered paper and paperboard, which is capable of being processed into new paper or paperboard using the process defined in this standard.

**Recyclability test sample** consists of a minimum of 20% (by weight) of the coated/treated corrugated or OCC-e to be tested and the remainder of the untreated corrugated.

**Repulpable** means the test material that can undergo the operation of re-wetting and fiberizing for subsequent sheet formation, using the process defined in this standard.

**Coated or Treated corrugated** is the combined board or boxes or OCC-e material that have been coated or subjected to a specific treatment for the purpose of improving its performance. The level of coating/treatment used in the test must be equal to or greater than the level of coating/treatment to be used in the field.

**Untreated corrugated/control** is the same combined board or boxes or OCC-e material that have not been subjected to any treatment to improve performance.

# TEST METHOD

**Preliminary Analysis:** Before beginning the test protocol, determine the moisture content of the treated corrugated sample.

### PART 1: Repulpability

A 100% charge of coated/treated corrugated or OCC-e material is repulped in a Modified Waring Blender and a Standard Disintegrator in water at a pH of 7 (±0.5 pH) that is maintained at 125°F (±5°) following the procedure outlined in Appendix A. The pulped material is separated in a screen with 0.010" (± 0.001") slots to determine fiber recovery as a percentage of the amount of fiber charged. Detailed procedures for repulpability are given in Appendix A.

### PART 2: Recyclability

A mixture is pulped in a pilot-scale pulper 125°F (±5°) that is 20% coated/treated corrugated or OCC-e material and 80% untreated corrugated. As a control, a charge of 100% of the same untreated corrugated is also pulped using identical conditions. Each pulped material is passed through (in succession) a pressure screen equipped with a basket with 0.062" holes or 0.024" slots, the same screen or a similar screen equipped with a basket with 0.010" (± 0.001") slots and a lightweight cleaner under conditions specified in the procedure.

Handsheets (3.0 gram) are made from the final stage (cleaner) accepts. For each batch tested, the Handsheets are pressed and dried under standard Technical Association of the Pulp, Paper and Converting Industry (TAPPI) conditions and tested for product performance properties. Properties include slide angle, short span compressive strength (STFI), bursting strength, and water drop penetration using the established TAPPI official test methods. Stickies tests shall be done according to the procedure outlined in Appendix B. The final sheets shall have no more than 15 stickies counts, or not exceeding 30% greater counts than the control, with an area of ≥ 0.4 mm2 area, averaged over 3 sheets. The properties and appearance of the Handsheets from the recyclability test sample and control (untreated corrugated or OCC-e material) tests will be compared. Detailed procedures for recyclability are given in Appendix B.

### PART 3: Performance Levels

Treated corrugated and OCC-e material satisfying all of the requirements of the voluntary standard will be regarded as repulpable and recyclable. There are three general performance requirements: fiber yield and rejects, operational impact and product requirements.

**Percent Fiber Yield** from the Repulpability test must be equal to or greater than 60% based on the total weight of the oven dry mass charge to the blender.

**Percent Rejects** from the Repulpability test must be less than or equal to 20% based on the total weight of the oven dry Accepts + the oven dry Rejects from the material being tested. The material being tested must be compliant with the minimum/maximum thresholds in both tests.

## Operational impact is acceptable if:

1. The entire procedure can be completed without using an acid wash to clean the flat screen in the Repulpability Test or dismantling the pressure screens to clean them before finishing the Recyclability Test, and
2. There is no visible deposition on any part of the blender or disintegrator during the Repulpability Test or in the pulper during the Recyclability Test.

## Product requirements are satisfied if:

1. The appearance of the Handsheets made from the recyclability test sample show no substantial difference from the Handsheets made from the control and the stickies count is ≤15 counts, or not exceeding 30% greater counts than the control, with an area ≥ 0.4 $mm^2$, averaged over 3 sheets.
2. The decrease in the slide angle of the Handsheets (the average of five first slides) made using the recyclability test sample from the slide angle of the Handsheets made from the control must be no greater than 15%.
3. STFI and burst strength of the Handsheets made using the recyclability test sample, normalized to the sheet basis weight, must show no more than a 10% decrease from the respective values for the control. All test results are to be reported in English units.
4. The water drop penetration of Handsheets made from the recyclability test sample must not exceed the water drop penetration of the control Handsheets by more than 200 seconds.

# CERTIFICATION AND MARKING

**1.** Tests for Parts 1 and 2 are repeated a maximum of three times per sample; two of the tests must pass. For each set of tests, the results for the first coated/treated sample must be compared to the results for the first untreated sample tested. Similarly, the results of the second coated/treated sample must be compared to the results of the second untreated sample. If the recyclability test sample passes all tests on both trials, it satisfies the standard. If it passes all tests on one trial, but fails some on the other, it must be retested in a third trial. The recyclability test sample must pass all tests in the third trial to satisfy the standard.

**2.** Manufacturers of coated/treated corrugated or OCC-e material or corrugated coatings/treatments **may not** self-certify their own products. Please see Appendix E for more information on Lab Certification.

**3.** Coated/treated corrugated or OCC-e material must be recertified if there is any significant change in coating/treatment product, substrate chemistry or any increase in the ratio of coating/treatment to fiber. Minor modifications to a coating/treatment material, which do not affect the water resistance or the repulpability/recyclability of the coated/treated boxes or OCC-e material, will not require recertification. However, if the chemistry of the coating/treatment material is changed such that the water resistance is increased or the repulpability/recyclability of coated/treated containerboard or OCC-e material could reasonably be expected to be more difficult, the coating/treatment material must be recertified. The substrate chemistry will be considered to have been changed, requiring recertification, if wet strength chemicals, a high level of sizing chemicals or other chemicals significantly affecting the repulpability of the substrate (which were not used in the original certification test) are used in conjunction with the previously approved coating/treatment product.

Note: Conventional wet strength linerboard and corrugating medium, by definition, is not considered to be repulpable/recyclable unless it has passed the tests in this Voluntary Standard. Wet strength containerboard may not be substituted for standard kraft or recycled containerboard without being re-certified at a lab and re-registered with the FBA. Conventional water-resistant corrugating adhesives may be substituted for lower grades of moisture resistant or domestic corrugating adhesive; however, the substitution of proprietary or special corrugating adhesives with known extra water resistance would require re-certification by a lab and re-registration with the FBA.

**4.** Once a coating/treatment material has been approved at one location, it does not need to be recertified for use in another location, if it is applied at the previously approved, or lower, treatment-to-fiber ratio and is applied on standard kraft or recycled containerboard. All locations of the company registering the coating/treatment material may use the coated/treated material without further registration, as long as the coating/treatment-to-fiber ratio is not exceeded and it is applied on standard kraft or recycled containerboard or OCC-e material.

However, if a different company purchases coated/treated containerboard or coating/treatment chemicals, or performs production functions on purchased sheets, or markets coated/treated materials under the name of a company that has not registered the use of these coated/treated materials, that company must register their use of these coated/treated materials with the FBA. The same restrictions regarding not exceeding the coating/treatment-to-fiber ratio and the application on standard kraft or recycled containerboard or OCC-e material continue to apply. Companies selling registered coatings/treatments or coated/treated materials to companies that will be re-selling previously registered coatings/treatments or coated/treated materials are required to provide sufficient technical information so that the company purchasing the coatings/treatments and/or the coated/treated containerboard for resale can comply with the coating/treatment-to-fiber ratio maximums and that the application is on standard kraft or recycled containerboard or OCC-e material. (See the “Option B” registration procedure on pages 15-16 of this document.)

Multiple trade names may be used for the same registered coating/treatment as long as the coating/treatment is applied or the coated/treated materials are combined so that the previously approved, or lower, coating/treatment-to-fiber ratio is not exceeded and the application is on standard kraft or recycled containerboard or OCC-e material. All trade names for a given registered coating/treatment or coated/treated material must be reported to the FBA on a continuing basis with additions, deletions, and changes reported within 30 days of implementation. Identical trade names may not be used for different registered coatings/treatments or coated/treated materials. However, a common "Family Name" with varying prefixes and/or suffixes is allowed.

The objective of having all sellers of registered coatings/treatments or coated/treated materials report all relevant trade names is to allow the FBA to know who is producing coatings/treatments and coated/treated materials and how they may be identified in the marketplace. This information is critical to permit the FBA to facilitate tracing any complaints from containerboard mills back to a box plant.

**5.** Marking

If the repulpable/recyclable certification marking (as shown below) is used, it must clearly appear on the box with the box manufacturer's name and location.

See Appendix D for guidelines on use of this symbol.

**MODIFIED CORRUGATED RECYCLES SYMBOL**

# SAMPLES

**1.** In addition to common basis weights and except for the coating(s)/treatment(s), to the extent possible, control and coated/treated samples should be made as alike as possible. (e.g. common rolls of containerboard for non-treated components, consecutive corrugated runs, etc.)

**2.** Because of differences in pilot plant equipment, test labs will each have their own sample size, quantity, etc., requirements. Consult with your test lab to understand their sample submission parameters.

# APPENDIX A: REPULPABILITY TEST PROCEDURE

## PURPOSE

To determine the repulpability of corrugated board and OCC-equivalents. (Note that the Repulpability Test must be run a maximum of three times on the coated/treated corrugated board or OCC-e material. The sample must pass two out of three tests.)

### APPARATUS

- Specimen Cutting Device
- Balance (accurate to 0.01 gram)
- Waring Blender (with special blade, see Figure 1)
- Hot Water 125°F ± 5°F (52°C ± 3°C) at a pH of 7 (± 0.5 pH)
- Standard Disintegrator (Standard Apparatus for Pulp Evaluation: TAPPI T-205 Appendix A)
- Open Flat Screen 10 Cut (0.010" ± 0.001"), such as the Valley or Somerville screens. Check that the slots are the appropriate size (± 0.001 inch) using feeler gauges such as the PROTO Step-Cut Feeler Gauges.
- Weighing Pan(s): Aluminum; Crucible, or Glass
- Laboratory Oven at 221°F (105°C)
- 200 Mesh Basket or Bag

### SPECIMEN TESTING

1. Cut sample into 1.25" (31.8 mm) by 4" (102 mm) strips.
2. Weigh out .055 lb. (25 gm.) of oven dry sample.
3. Place sample in 1500 ml. of water at 125°F ± 5°F (52°C ± 3°C).
4. Preheat blender and disintegrator to 125°F ± 5°F.
5. Blend in a one-gallon Waring blender (equipped with special blades) on 15,000 rpm speed for four minutes.
6. Rinse all fibers from the blender with 500 ml. of water at 125°F ± 5°F.
7. Deflake for five minutes in the disintegrator (2000 ml. total volume) at 3000 rpm.
8. Using a Valley-type screening device: Run on .010" (.254 mm) slotted open flat screen at 4.0 - 4.5 gal/min of 60-80°F water, using a water shower to maintain a 2.5" water head from the bottom of the screen compartment for 20 minutes; save the accepts by collecting them in a 200 mesh screen basket or bag and transferring the material to weighing pan(s).
   Using Somerville-type equipment: Run on 0.10" (.254 mm) slotted open flat screen at 8.6 liters/min of 60-80°F water using a spray nozzle with 12 equally spaced horizontal holes mounted at the center of the screen plate to maintain a 4" water head above the screen surface – transferring the material to weighing pan(s).
9. Dry in a laboratory oven for 12 hours (± 4 hours) at 221°F ±5° (105°C ± 3º).
10. Weigh the pan(s) and record the net weight of accepts and rejects.

## CALCULATION

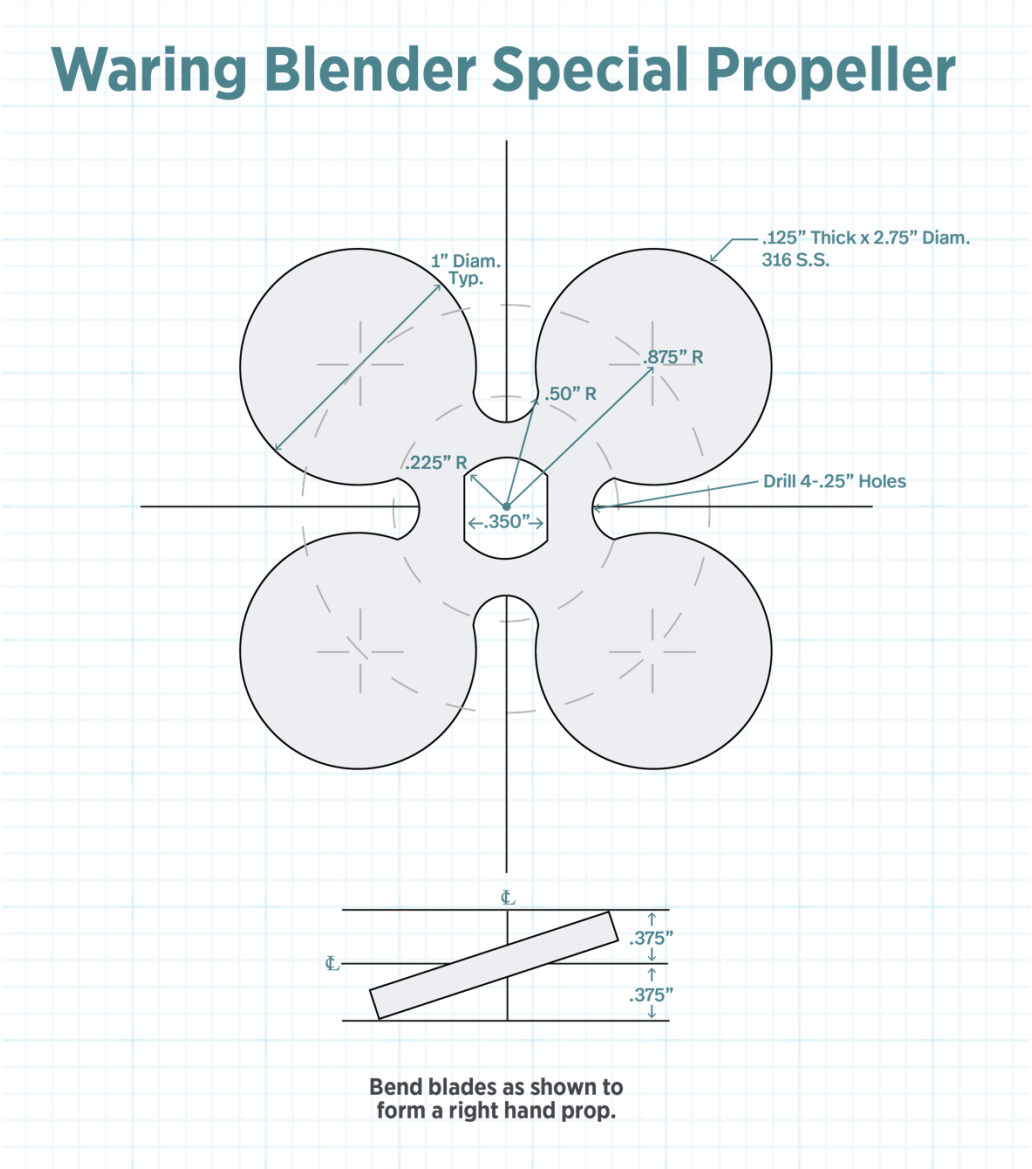
$$\text{Percent Fiber Yield} = \frac{\text{Oven Dry Accepts}}{\text{Oven Dry Charge to the Blender}} \times 100$$

$$\text{Percent Rejects} = \frac{\text{Oven Dry Rejects}}{\text{Oven Dry Accepts + Oven Dry Rejects}} \times 100$$

## REPORT

Percent Fiber Yield and Percent Rejects percentages to the nearest 0.1%.

### FIGURE 1



# APPENDIX B: RECYCLABILITY TEST PROCEDURE

*Note: Both the Control sample and the sample of test material must pass two tests (with a maximum of three tests conducted).*

## APPARATUS

- Balance capable of weighing large amounts of material
- Laboratory Oven at 221°F (105°C)
- Pilot-scale Pulper capable of pulping at 3% consistency
- Hot water at 125°F (± 5°)
- Pressure screen
  - 0.0625" hole or 0.024" slot screen basket
  - 0.010" slot screen basket
- Lightweight contaminant cleaner
- TAPPI Handsheet Mold and Press

**1.** Obtain a sample of the corrugated or OCC-e test material to be evaluated and an untreated control material. The amount of the material used will vary depending on the capacity of the pilot-scale pulper to be used, but there should be enough material obtained to complete three replicates each of the control and a 80% control/20% treated mix sample. The selection should be as representative as possible of the material as a whole. Use selected sample materials of any convenient size, but no smaller than 1" x 1" squares. Also obtain a sufficient amount of corrugated control to run the protocol. Selection of the charge size will depend upon the capacity of the pilot plant pulper to be used. Pulping is to be carried out at the consistency and time recommended by the pulping equipment manufacturer.

**2.** Determine the moisture content [TAPPI T-412]. Perform steps 3 through 10 twice—once with the control sample, once with the recyclability test sample.

**3.** Bring the equipment to 125°F (± 5°). Raise the temperature of the pulper to 125°F (± 5°). Add the test material to the pulper with sufficient 125°F water to achieve 3% consistency or the consistency recommended by the pulping equipment manufacturer. Charge the pulper and pulp for enough time to fully pulp the material. Pulping time for both the test and control materials should be the same and be documented.

**4.** Repeat step 3 until sufficient material has been obtained for the following steps.

**5.** Combine the pulp from several batches, as necessary, and dilute to the pressure screen manufacturer's recommended consistency with water heated to 125°F (± 5°). Adjust the pH to 7 (± 0.5 pH). Preheat a screen basket with 0.0625" holes or 0.024" slots to 125°F (± 5°). Pass the pulp sample through the preheated screen at a volumetric reject rate of 10% of the feed rate.

**6.** With the accepts from step 5, repeat the procedure in step 5, using a screen basket with 0.010" (± 0.001") slots, again maintaining the temperature, consistency, and a 10% reject rate.

**7.** Pass the accepts from step 6 through a lightweight contaminant cleaner, maintaining the temperature at 125°F (± 5°), consistency, and the pressure differential specified for the cleaners being used. Determine the volumetric reject rate and report.

**8.** From the accepts from step 7, form Handsheets according to TAPPI T-205 with the following exception: TAPPI T-205 specifies 1.2 gram (60 gsm) sheets; these need to be 3 gram sheets.

**9.** Perform the stickies/spot count test below using the accepts from step 7.

10. Test the Handsheets for:
    - Basis Weight [TAPPI T-220]
    - Slide Angle [TAPPI T-815]
    - Short Span Compression (STFI) [TAPPI T-826]
    - Bursting Strength [TAPPI T-403]
    - Water Drop Penetration [TAPPI T-831]
    - Stickies (see method below)

    **Note 1.** The Slide Angle test on the Handsheets is to be tested blotter side to blotter side.

    **Note 2.** The Water Drop Penetration test is to be conducted with five (5) drops each on the wire side and the blotter side of the Handsheets.

    **Note 3.** Basis Weight, STFI, Bursting Strength and the Indexed Value are to be reported in English units.

11. If the test must be halted to clean any post pulping apparatus in any aspect of the procedure, note your observations on the test report.

12. Report the results using the form provided (Appendix C).

## HANDSHEET PREPARATION FOR STICKIES/SPOT COUNT TEST

### APPARATUS

- Press capable of heating to 350°F and pressing to 500 psi (e.g., Carver press)
- TAPPI Handsheet mold and related apparatus according to T-205
- 8" square blotters
- Black or white filter papers
- Speed dryer capable of heating to 310°F
- TAPPI dirt count estimator or image analysis system

1. Turn on press and pre-heat top and bottom platens to 350° F.
    - Caution: use heat-resistant gloves and wear safety glasses when using the press – the plates get very hot and can burn you.
2. Dilute test stock to approximately 0.3% consistency.
3. Form and dry a 600 ml check sheet according to T-205.
    - Couch off the excess water with two blotters, the round metal plate, and the roller.
    - Dry on top of a new blotter in the speed dryer at 310°F.
4. Weigh the test Handsheet and mark its identification and dry weight on the Handsheet.
5. Calculate the amount of slurry to use for test sheets using the following formula:
    - 2.00 grams ÷ dry sheet weight x 600 = mls of slurry to use for test sheets.
6. Form 3 Handsheets for testing by using the calculated amount of slurry.
    - Couch off the excess water with two blotters, the round metal plate and the roller.
7. Remove the bottom blotter and dry on the speed dryer for 3-5 minutes or until dry.
8. Remove test sheets from the speed dryer and mark their identification.

**9.** Place each test sheet between filter paper and blotters in the following configuration (bottom to top):

| |
|---|
| Blotter |
| Filter |
| Sticky Sheet |
| Filter |
| Blotter |

**10.** Set the stacks of test sheets on top of each other and press them in the pre-heated press for five minutes at 350°F and 500 psi. Watch to see that the pressure gauge maintains 500 psi.

**11.** Allow a cool-down period of at least 5 minutes. Do not peel the sheets while hot.

**12.** Remove the test sheets from the press and weigh each sheet.
- Record dry weight on each sheet

**13.** Count the spots in the Handsheets that are ≥ 0.4 mm2 in area using any appropriate analysis tools, such as the dirt count estimator in TAPPI T-537 or the image analysis system mentioned in TAPPI T-277 and TAPPI T-563. Count spots on both the top and bottom sides of the Handsheets and record the average.

# APPENDIX C: APPLICATION, MATERIALS and TEST REPORT

*(To be completed by submitter.)*

## COMPANY APPLICATION

### Submitted Information

Company Name:_____

DBA (if applicable):_____

Division (if applicable):_____

Product Management:_____

Contact Name:_____ Position: _____

Address:_____

Phone:_____ Fax: _____

E-mail: _____

### Company Function(s):

☐ Corrugated Converter ☐ Containerboard Mill ☐ Treatment/Coating Vendor ☐ Other: _____

### Coating/Treatment Product Information:

Product Name(s) (as applicant plans to market and sell it/them) : _____

Coating/Treatment Type; i.e., emulsion (aqueous), modified wax, solvent-based coating, other (describe "other"):

Coating/Treatment 1: _____

Coating/Treatment 2: _____

Coating/Treatment 3: _____

**Affirmation:** To be signed by a person who is an officer of the above company and authorized to represent/bind the above company.

*Note: Please check one of the options below:*

## Option A: ____

- All materials and information submitted to the lab and FBA for the purposes of testing and certification of the above product are accurate as represented above.
- Appropriate company personnel have thoroughly read and understood the voluntary standard and have prepared and submitted materials and information in accordance with the standard.
- Test material corrugated or OCC-e products represented (by this company or licensee), as certified to the voluntary standard, meet and will continue to meet the certification and marking sections of the standard as they are manufactured, tendered for commerce and enter the recycling stream.
- Should this company sell test material containerboard, coated/treated combined board, or coating/treatment chemicals (if applicable) to another company that plans to sell finished corrugated or OCC-e products to the marketplace, or even sell coated/treated containerboard, coated/treated combined board, OCC-e products, or coating/treatment chemicals to a second company that will resell finished corrugated or OCC-e products to the marketplace, the "Option A" company must advise purchasers that in order to market the purchaser's products as having passed the Voluntary Standard testing protocol and use the "Corrugated Recycles A" symbol, the purchasing company must complete this Company Submission form and forward it to the FBA with the "Option B" section (below) checked. The FBA will review the completed form, will register the purchasing company's coated/treated product(s), and will provide the purchaser with its own "WPxyz" registration number.
- In addition to advising the purchasing company/companies of the need to register with the FBA, the "Option A" company must provide the purchasing company/companies with sufficient information to manufacture the finished product(s) to conform to the same specifications as the test material/corrugated or OCC-e products originally certified.

## Option B: ____

- These test materials/corrugated or OCC-e products are being certified based on testing done by another company. We will manufacture them with similar substrates and will have the same specifications as the test materials/corrugated or OCC-e products originally certified.
- We acknowledge that we have been provided with sufficient information to manufacture the finished product(s) to conform to the same specifications as the test material/corrugated or OCC-e products originally certified.
- Should we sell our coated/treated products (if applicable) to a company or companies that will be selling finished coated/treated product(s) to the market place under their own name, using ours or their trade name, and whether or not the purchasing company performs any manufacturing/processing on the corrugated or OCC-e products, we will follow the requirements in the fourth and fifth bullet points, above, in the "Option A" section of this form.

**Signed:** _____ **Date:** __ /__ /__ **Phone:** _____

**Print Name:** _____ **Title:** _____

### FBA Use Only

Registration Number: _____

Company: _____

Date Information Received: _____

Received By: _____

Date Response Sent to Company: _____

Signed: _____

☐ Laboratory Test Report Received

Testing Lab : _____

Testing Date : _____

Signed by : _____

☐ Control Material Samples ☐ Handsheets – Control

☐ Test Material Samples ☐ Handsheets – Test

# MATERIAL SUBMISSION INFORMATION FORM

(to be completed by submitter)

| (1) Component | (2) Nominal Basis Weight (Lbs./MSF) | (3) Coating(s) or Treatment(s) (if applicable) (Dry lbs. applied per MSF) | (4) Processes (How is/are treatment(s) applied) | (5) Adjusted Basis Weights (Increase medium wt. by TU factor) | (6) Adjusted Dry Lbs. Applied (Increase medium app. wt. by TU factor) | (7) Lbs. of Coating or Treatment per lb. of Fiber (if applicable) |
|---|---|---|---|---|---|---|
| $L_1$ | | | | | | Column 3 ÷ Column 2 |
| $M_1$ | | | | | | Column 3 ÷ Column 2 |
| $L_2$ | | | | | | Column 3 ÷ Column 2 |
| $M_2$ | | | | | | Column 3 ÷ Column 2 |
| $L_3$ | | | | | | Column 3 ÷ Column 2 |
| $M_3$ | | | | | | Column 3 ÷ Column 2 |
| $L_4$ | | | | | | Column 3 ÷ Column 2 |
| Totals | N/A | N/A | N/A | | | Column 6 ÷ Column 5 |

- $L_1$ is always the outside liner: $SW = L_1 \times M_1 \times L_2$; $DW = L_1 \times M_1 \times L_2 \times M_2 \times L_3$; $TW = L_1 \times M_1 \times L_2 \times M_2 \times L_3 \times M_3 \times L_4$
- TU = Take Up Factor: Use 1.53 for A flute; Use 1.43 for C flute; Use 1.32 for B flute; Use 1.26 for E flute
- To convert treatment lbs./ton to lbs./MSF (if necessary): [lbs. applied/ton ÷ lbs./MSF of substrate] ÷ 2000 lbs./ton = lbs./MSF of treatment applied.
- If more than one treatment is applied to a single component, add the information to the same cell as the cell will expand to accommodate the additional information.
- Normal manufacturer's joint adhesive and printing inks need not be reported as they are routinely accepted into the OCC stream today.
- Conventional water resistant corrugating adhesives may be substituted for lower grades of moisture resistant or domestic corrugating adhesive; however, the substitution of proprietary or special corrugating adhesives with known extra water resistance would require re-certification by a lab and re-registration with the Fibre Box Association (FBA). If a special corrugating adhesive is used that contributes to the water resistant properties of the "Treatment", over and above that of a conventional water resistant corrugating adhesive, then the special corrugating adhesive must be reported. Use the "Comments" section below to report the dry lbs. applied.

Comments:

## REPORT RESULTS: REPULPABILITY PROCESS (PART I)

Completed by lab

*Note: To be completed by Lab Manager actively involved in the test process.*

Trial No.: _____ Date Run: __ / __ / __

| | Set #1: | Set #2: | Set #3 (if required) |
|---|---|---|---|
| Is sample representative of the material as a whole? | Y/N | Y/N | Y/N |
| STARTING SAMPLE: | | | |
| Moisture Content | _____% | _____% | _____% |
| Temperature Range (°F) | _____ | _____ | _____ |
| Amount of Fiber in Charge (0.0g) | _____ | _____ | _____ |
| Temp & pH Maintained | Y/N | Y/N | Y/N |
| Hot Slurry Charged To Flat Screen, as Instructed | Y/N | Y/N | Y/N |
| FINISHED SAMPLE: | | | |
| Oven Dry Mass | _____ | _____ | _____ |
| Amount of Fiber Accepted | _____ | _____ | _____ |
| % Fiber Yield of Sample | _____ | _____ | _____ |
| % Rejects of Sample | _____ | _____ | _____ |
| Observe and note deposition on vessel walls, screens, moving parts, etc. | | | |
| Deposition Observed? If yes, detail below. | Y/N | Y/N | Y/N |

| | | | | |
|---|---|---|---|---|
| SUMMARY | Operational Impact: | pass/fail | pass/fail | pass/fail |
| | Fiber Yield: | pass/fail | pass/fail | pass/fail |
| | Percent Rejects: | pass/fail | pass/fail | pass/fail |

Notes, details:

## TEST REPORT: RECYCLABILITY PROCESS (PART 2)

Completed by lab

Trial No.: _____ Date Run: __ / __ / __

| | Recyclability Test Sample: | Control: |
|---|---|---|
| Is sample representative of the lot as a whole? | | Y/N |
| Moisture Content: | | _____% (calculated) |
| Pulping at Consistency Recommended by the Pulping Equipment Manufacturer: | Y/N | Y/N |
| 20/80% Charge by Wt. | Y/N | |
| - If greater than 20/80% ratio used, specify here: | _____ | |
| Temp & pH Conditions Maintained, per App. B, #3 | Y/N | Y/N |
| No. of Batches Required | _____ | _____ |
| 0.0625" Screens or .024" Slots: | | |
| 1% (note if different) Consistency, Temp & pH, per App. B, #5 | Y/N | Y/N |
| 10% Volumetric Reject Rate | Y/N | Y/N |
| 0.010" (± 0.001") Slot Basket: | | |
| Temp, pH & Reject Rate, per App B, #6 | Y/N | Y/N |
| Flow-through Cleaners: | | |
| Temp & Pressure Differential, per App B, #7 | Y/N | Y/N |
| Determine Volumetric Reject Rate | _____ | _____ |
| Was it necessary to stop the test to clean any apparatus at any time during this procedure? | Y/N | Y/N |
| Deposition observed? If yes, detail below. | Y/N | Y/N |
| Were the required Temp & pH maintained throughout the entire protocol? | Y/N | Y/N |

Notes, details:

# TEST REPORT: HANDSHEET FORMATION AND PRODUCT PERFORMANCE

Completed by lab

Trial No.: _____ Date Run: __ / __ / __

Was TAPPI T-205 used to form the Handsheets, per App. B, #8? Yes/No _____
(Initials)

**Product Performance** **Control** **Recyclability Test Sample**

## 1. Slide Angle T-815 (Note: Test blotter side to blotter side.)

| Handsheet # | Test Data | Handsheet # | Test Data |
|---|---|---|---|
| _____ | _____° | _____ | _____° |
| _____ | _____° | _____ | _____° |
| _____ | _____° | _____ | _____° |
| _____ | _____° | _____ | _____° |
| _____ | _____° | _____ | _____° |

$X_C$ = _____° $X_R$ = _____°

Is $X_R$ ³ 0.85 $X_C$? Yes/No _____(Initials)

## 2. Water-Drop Penetration T-831 (Note: Test 5 drops each on the wire side and on the blotter side.)

| Handsheet # | Test Data | Handsheet # | Test Data |
|---|---|---|---|
| _____ | _____sec | _____ | _____sec |
| _____ | _____sec | _____ | _____sec |
| _____ | _____sec | _____ | _____sec |
| _____ | _____sec | _____ | _____sec |
| _____ | _____sec | _____ | _____sec |

$X_C$ = _____ sec $X_R$ = _____sec

Is $X_R$ ³ $X_C$ + 200 ? Yes/No _____(Initials)

## TEST REPORT: PRODUCT PERFORMANCE (CONTINUED)

Completed by lab

Trial No.: _____ Date Run: __ / __ / __

**Product Performance** **Control** **Recyclability Test Sample**

### 3. Short Span Compression (STFI) T-826

| Handsheet # | Basis Wt. | STFI Value | Indexed Value | Handsheet # | Basis Wt. | STFI Value | Indexed Value |
|---|---|---|---|---|---|---|---|
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| $X_C$ = | _____ | _____ | _____ | $X_R$ = | _____ | _____ | _____ |

* Is the indexed STFI of the treated recyclability test sample no more than 10% lower than that of the control (untreated) test sample?

Yes/No _____(Initials)

Notes, details:

# TEST REPORT: PRODUCT PERFORMANCE (CONTINUED)

Completed by lab

Trial No.: _____ Date Run: __ / __ / __

**Product Performance** **Control** **Recyclability Test Sample**

## Burst Strength T-403

| Handsheet # | Basis Wt. | Burst Value | Indexed Value | Handsheet # | Basis Wt. | Burst Value | Indexed Value |
|---|---|---|---|---|---|---|---|
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| $X_C$ = | _____ | _____ | _____ | $X_R$ = | _____ | _____ | _____ |

* Is the indexed burst of the treated recyclability test sample no more than 10% lower than that of the untreated control test sample?

Yes/No _____(Initials)

Notes, details:

_____

_____

_____

**Product Appearance**

STICKIES/SPOT COUNT TEST VALUES AVERAGE COUNT FOR 3 SHEETS

| Material | Trial #1 | Trial #2 | Trial #3 |
|---|---|---|---|
| | | | |
| | | | |

Is the spot count ≤15, or, no more than 30% greater than that of the control?

Yes/No _____(Initials)

## PASS/FAIL SUMMARY

Completed by lab

| | Trial #1 | Trial #2 | *Trial #3 |
|---|---|---|---|
| 1. Substrate, samples, specimens appropriate? coated/treated and control (pass/fail) | _____ | _____ | _____ |
| 2. % Fiber Yield ≥ 60%? | _____ | _____ | _____ |
| 3. % Rejects ≤ 20%? (pass/fail) | _____ | _____ | _____ |
| 4. Operational Impact acceptable? (pass/fail) | _____ | _____ | _____ |
| 5. Product Performance acceptable? (pass/fail) | _____ | _____ | _____ |
| 6. Product Appearance/Spot Count Acceptable? (Pass/Fail) | _____ | _____ | _____ |
| **Overall Pass / Fail - by trial:** | _____ | _____ | _____ |



MATERIAL AS SUBMITTED "PASSES" VOLUNTARY STANDARD.

(Write pass or fail): _____ Signed: _____ Date: _____ /___ /___

Name: _____

Name of Lab: _____

# TEST REPORT (CONTINUED)

Completed by lab

### Affirmation:

The facilities and equipment in this certified lab (see Appendix E) are suitable for testing the tendered product within the instructions and tolerances of the current Voluntary Standard.

Personnel running and reporting these tests are competent and trained to accurately do so. They have followed the letter and spirit of the subject voluntary standard.

Objective and subjective information, as contained herein, is accurate.

Signed:_____ Lab Manager

_____ Name

_____ Title

_____ Name of Lab

_____ Phone

_____ /_____ /_____ Date

## Instructions if material "passes":

### Testing Lab Manager:

- Make two (2) photocopies of the entire Report Document for a total of three (3), sets of documents. An original signature is required on this page (22) of each set of Report Documents.
- Prepare three (3) "Report Packages" consisting of the following:
  - A copy of the signed Report Document
  - 2 @ 12 inch x 12 inch samples of the control material
  - 2 @ 12 inch x 12 inch samples of the treated material
  - 3 representative hand sheet samples from each of the control and treated evaluations.
  - Retain one of the "copies" of the Report Packages indefinitely.
- Send the original and remaining copy of the Report Package to the submitting company.
  NOTE: The "Original" Report Package contains the Report Document from which the two copies were made. The "Original" should have the data entries and other comments shown in their original ink state. A Corporate Officer must complete the page 16 signature page.

### Submitting Company (If the Submitting Company wishes to receive FBA certification):

- Send the complete "Original" Report Package as described above, including samples to the FBA.
- When you receive your FBA Certification Letter with the FBA Certification Number, you may imprint/certify packaging made using this treatment material as meeting this voluntary standard, **provided; 1) the material is used on substrates similar to those tested, and 2) at application levels less than or equal to those tested.**

# APPENDIX D

## THE CORRUGATED RECYCLES SYMBOL

The Fibre Box Association (FBA) has adopted a mark, the *Corrugated Recycles* symbol, which can be used to both promote the recycling of corrugated and promote its ultimate recyclability. FBA grants permission to its box manufacturers to use the symbol according to the following guidelines.

### What Does the Corrugated Recycles Symbol Mean?

The term Corrugated Recycles is both a statement of fact and a way to promote recycling. By printing the symbol on corrugated products, the corrugated customer and ultimate consumer are aware of corrugated's inherent recyclability.

Placing the symbol on a corrugated container does not indicate that "this container is made from recycled material." Rather, it simply means that "this container can and should be recycled."

### When Do I Use the Corrugated Recycles Symbol?

FBA recommends placing the Corrugated Recycles symbol on all corrugated products that are readily recyclable. "Readily recyclable" corrugated products are those that have not been coated or otherwise treated with substances that are not repulpable or are of limited repulpability.

Coated/treated corrugated products that have passed the AF&PA/FBA Repulpability/Recyclability Standard Protocol *(originally issued 2/1/05 with revisions issued on 11/20/07, 5/15/10, 8/16/13, and 3/31/25)* and have met all its requirements may carry the special "Corrugated Recycles" logo.

### What is the Special Coated/Treated "Corrugated Recycles" Logo?

It is the Corrugated Recycles symbol, with or without extra wording, with the letter "A" positioned immediately to its right. The "A" must be of a type size at least as large as the open box pictured inside the Corrugated Recycles symbol. The name of the container manufacturer that is certifying the box or OCC-e material has passed this protocol, along with the manufacturing location, must also be obvious on the container.

### When Don't I Use the Corrugated Recycles Symbol?

Do not place the Corrugated Recycles symbol on corrugated containers that are not readily recyclable. The special "Corrugated Recycles" logo with the accompanying "A" cannot be placed on any corrugated container that has not passed the Repulpability/Recyclability Standard Protocol.

### What Can I Add to the Pictorial Corrugated Recycles Symbol?

The pictorial Corrugated Recycles symbol is the black box and encircling arrow. As you implement the use of the symbol in your particular region, you are encouraged to add the words "Corrugated Recycles," or an equivalent phrase, near the pictorial marking in the appropriate language to your region.

### Where Else Can I Use the Corrugated Recycles Symbol?

The Corrugated Recycles symbol may be placed on ancillary materials to help promote the recyclability and recycling of corrugated and OCC-e materials—e.g., on company or association stationery, Web sites, etc.

*FBA recommends that organizations wishing to use the international Corrugated Recycles symbol check with local authorities regarding packaging marking regulations.*

# APPENDIX E

## LAB CERTIFICATION

The Fibre Box Association (FBA) will certify labs in the U.S. and Canada that want to provide the service of testing the product identified in the Voluntary Standards for Repulping and Recycling Corrugated Fiberboard and its Equivalents in the Old Corrugated Containers (OCC) Recycling Stream.

The approved lab will be given a certificate and identified on the AF&PA and FBA websites as certified labs for the protocol. To be certified, the requesting lab must do the following:

- Own the equipment identified in the protocol (blenders, screens, disintegrators, ovens, etc.)
- Have trained and competent personnel running the equipment
- Perform tests in Parts 1 and 2 (both) for their clients
- Provide complete reporting of protocol documents and samples
- Have passed a testing of yields based upon a control sample provided by FBA
- Have completed a recertification process every two years from date of certification

Labs interested in certification should contact FBA's Chase Kammerer at ckammerer@fibrebox.org or (847) 364-9615.