Update on PS-52 Markets

July 2017
# TABLE OF CONTENTS

- Disclaimer .......................................................................................................................... 3
- Introduction .......................................................................................................................... 4
- Background .......................................................................................................................... 4
- Summary of Markets as of June 2017 ................................................................................. 5
- Current Market News and Updates ..................................................................................... 6
  - Current State ...................................................................................................................... 6
  - General Material Quality Comments .............................................................................. 6
  - Rewall Expansion .............................................................................................................. 7
  - New South Korean Mill Under Construction .................................................................. 7
  - Other Export Markets ....................................................................................................... 7
- Conclusions .......................................................................................................................... 7
- ReWall Fiber Specifications .................................................................................................. 8
- Fox River Fiber Specifications ............................................................................................. 9
- Great Lakes Tissue PSI-52 Specifications .......................................................................... 10
DISCLAIMER

This Project has been delivered with the assistance of Resource Productivity and Recovery Authority’s Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the author(s), and Resource Productivity and Recovery Authority and Stewardship Ontario accept no responsibility for these views.

© 2017 Resource Productivity and Recovery Authority and Stewardship Ontario

All rights reserved. No part of this publication may be reproduced, recorded or transmitted in any form or by any means, electronic, mechanical, photographic, sound, magnetic or other, without advance written permission from the owner.
INTRODUCTION

Recyclable Materials Marketing (ReMM) was retained by the Continuous Improvement Fund (CIF) and Stewardship Ontario (SO) to provide an update on the current status of the North American and South Korean markets for the commodity grade: PSI-52 Aseptic Packaging and Gable Top Containers. Also known as AS-GT and AGTC Grade 52.

The most recent definition by the Institute of Scrap Recycling Industries (ISRI) of this material grade dated January 21, 2016 is:

(52) Aseptic Packaging and Gable-Top Cartons Consists of liquid packaging board containers including empty, used, polyethylene (PE)-coated, printed one-side aseptic and gable-top cartons containing no less than 70% bleached chemical fiber and may contain up to 6% aluminum foil and 24% PE film. Prohibitive Materials may not exceed 2% Outthrows plus prohibitives may not exceed 5%.

ISRI specifications are used as a guideline. In addition to the above materials noted, some mills accept hot and cold beverage cups and other polycoated white fibre packaging such as ice cream containers in with this commodity grade. Each individual mill will have their own specification for the materials they accept (see attached material specifications for three North American mills).

PSI-52 is predominantly used by tissue mills as an alternative feedstock to materials such as sorted office waste. Once the polycoat and aluminum are removed, the long, white bleached fibre works quite effectively in tissue products. It is now also being used in other applications, such as building materials and molded pulp products.

BACKGROUND

The materials that make up the PSI-52 commodity grade, equate to slightly more than 2% (by weight) of all the total material captured in the residential blue box. The minimal volume of this commodity makes it a “niche” material, not managed by all fibre mills. The movement of this commodity can be affected dramatically by mill maintenance shut-downs, mills closures and even by the increase of material available in the marketplace. While several markets do exist, their capacity to manage this grade is limited.

This document provides a summary of results following a series of phone calls and email conversations with various market representatives and industry brokers.
# SUMMARY OF MARKETS AS OF JUNE 2017

<table>
<thead>
<tr>
<th>Mill/Broker</th>
<th>Location/Destination</th>
<th>Acceptance of Ontario Material</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Fox River Fiber | DePere, Wisc | Yes | • Current over-capacity with this grade  
  • Local U.S. recycling programs have started accepting this material, increasing the local material they receive  
  • Other recyclables such as: metal, hdpe and boxboard are the most prevalent contaminants  
  • Expansion possible in the future but requires large investment  
  • **Accept:** PSI-52 plus cups and ice cream containers |
| Paper Tigers (on behalf of Great Lakes Tissue) | Cheboygan, Mich | Yes | • Running as normal  
  • Currently receiving majority of material under contract from Alberta and Saskatchewan, leaving minimal capacity for Ontario material  
  • No issues or rejections in the past few years  
  • **Accept:** PSI-52 plus cups and ice cream containers |
| Resolute | West Virginia | No | • Discontinued accepting Canadian material in 2016 due to increase in duplex board (unbleached) in aseptic containers  
  • Continuing to accept U.S. material as normal |
| ReWall | Des Moine, Iowa | Yes | • Expanding production, increasing capacity late summer 2017  
  • Looking to build 1-2 additional facilities in 2018  
  • **Accept:** PSI-52 grade plus cups and ice cream containers, pre/post consumer and bales of all aseptic containers |
| International Cellulose | South Korea | Yes | • Have reportedly moved a few loads recently (April/May 2017) out of Ontario  
  • Contact with MRF’s in June has been on/off |
| Storelli Recycling – broker | South Korea | Yes | • State they work with many SK mills and can place loads at various mills based on content/photos (May 2017)  
  • Attempted to make contact to update information during June with no success |
| Ekman Recycling – broker | Unknown | Yes | • Reportedly moved 8 loads of PSI-52 in June  
  • Deal with two North American mills |
| ReMM - broker | Buyer for ReWall and brokering to N.A. & S.K. | Yes | • Moving loads based on mill availability |
CURRENT MARKET NEWS AND UPDATES

CURRENT STATE

As of April/May 2017 loads moving to South Korea began to slow down and now seem to have stalled. Anecdotal information states that this may be due to the mills cracking down on material quality on imports. Loads containing excessive amounts of contamination (other recyclables or off spec. material such as hot beverage cups or aseptic made with duplex board (unbleached)), and mold are being detained and risk rejection and return to Canada.

The mills in North America have all been experiencing a backlog in processing of this grade, due in part to their own internal processes and an increase in the overall volume of material currently available on the market. This material grade has been recently added to several U.S. programs, thus increasing the available loads.

Due to the mill issues in South Korea and the over-abundance of material in the U.S., it has been cited by some Ontario MRF’s that they have had to either landfill bales or are stockpiling in hopes of finding an end market. Unfortunatley, this grade of material can degrade over time and stockpiled material is not preferred by most mills.

The South Korean market has been a very consistent market for the PSI-52 grade over the past several years, taking material when the North American markets have struggled. Representatives for this market say this is a “blip”, and that it is simply due to mill issues and volume of material.

The U.S. mills (with the exception of Resolute) all state that they are working to clear their backlog of material, and will continue to accept loads of Ontario material based on their available capacity.

GENERAL MATERIAL QUALITY COMMENTS

In interviewing the North American mill buyers and brokers, they did not seem to be having issues with contamination. While no buyers have had to reject a load, one stated that their two mills will only buy material from two-stream facilities.

When speaking with their counterparts for the South Korean market the following three issues were raised (in order of concern):

- Non-spec. recyclables – materials such as PET, aluminum and other plastics in the bales
- Duplex (non-bleached) board in aseptic (tissue mill specific)
- Mold on bales

The first concern is MRF specific and can be easily dealt with. The concern with the increasing amount of duplex board in the aseptic portion of the bale is a new concern, and one that needs more study to determine the true impact. The final concern of mold on bales is unfortunately a result of wetter than normal weather in many of the provinces/states shipping export, and the fact that those damp bales sit in a sea container for 4+ weeks in high temperatures.
REWALL EXPANSION

ReWall, a manufacturer of building materials from recycled content (http://www.rewallsolutions.com/) recently announced they have begun expansion at their Des Moines, Iowa facility. They have completed installation of new equipment that will enable them to double their capacity to use pre and post consumer aseptic and gable-top carton material. This new equipment will increase their production to meet their growing demand for the ReWall building materials they produce. They are also searching for new sites to build the next ReWall facilities in 2018.

NEW SOUTH KOREAN MILL UNDER CONSTRUCTION

A new paper mill is under construction in South Korea. They expect to have their lines installed by October, testing done in November and be operational by December. Expectations of the mill operating for the first quarter of 2018 seem reasonable. They intend to purchase material from both the U.S. and Canada, and will begin making purchasing plans in August. The overall carton grade capacity for the facility will be 3000 tonnes/month, with plans to purchase a 1/3 of that from North America. Their products will be kraft, liner, medium and high bright paper, so this will allow them to use both duplex (unbleached) and bleached board in the mix.

OTHER EXPORT MARKETS

The demand for aseptic and polycoat seems to be growing in other export markets. The Carton Council has been contacted by brokers/buyers for places such as Malaysia, Indonesia, Thailand and most recently Central and South America. These markets can all use both duplex and bleached fibre.

CONCLUSIONS

The market for polycoat materials is a niche market, that can be impacted by the value and movement of other materials (i.e. in tissue mills the demand for PSI-52 declines when the price of sorted-office mix declines). It is also contingent on minimal contamination, and specifications can change from mill to mill.

Based on recent information, the markets for this commodity are slowly expanding. The current known expansion will be able to manage the broader mix of material (i.e. hot/cold beverage cups and ice cream containers), and will not be impacted by the variances in duplex vs bleached board in aseptic. This is all very positive, but will be slow progress that needs to be monitored.
REWALL FIBER SPECIFICATIONS

FIBER SPECIFICATIONS FOR THE REWALL COMPANY, LLC

The ReWall Company ("TRC") is a manufacturer of healthy, high performance building materials from upcycled beverage cartons and their components. To ensure consistent quality of the ReWall products, TRC defines the following acceptable grades, their specifications and terms of sale.

Acceptable Grades ("fiber"):

1. **Post-consumer Aseptic and Gable-Top Cartons**: AGTC Grade 52 as defined by The Paper Stock Industries Chapter of ISRI.
2. **Post-industrial Aseptic Cartons**: Bales of unsold liquid packaging containers that have been emptied, 2-side polyethylene (PE)-coated, unprinted or printed one-side aseptic cartons containing 70% bleached, unbleached or duplex fiber, 6% aluminum foil and 24% PE film.
3. **Aseptic Carton Converting Waste**: Aseptic carton stock in rolls or never-filled, unfolded cartons containing 70% bleached unbleached or duplex fiber, 6% aluminum foil and 24% PE film.
4. **Other 2-side Polyethylene-coated Specialty Grades**: Poly-aluminum beverage packaging or packaging waste and other 2-side PE-coated paper packaging such as Polycoated Cup Stock, Polycoated Bleached Kraft—Unprinted and Printed and Polycoated Milk Carton Stock.

**Outthrows, Prohibitive Materials and Moisture Content**
Any Fiber other than the Acceptable Grades and soft plastic films other than low-density polyethylene are considered Outthrows and may not exceed 3%. All other materials other than Fiber and Outthrows are considered Prohibitive Materials and may not exceed 1%. All fiber must be packed air dry. Where excess moisture is present in the shipment (above 15% of moisture content), TRC has the right to request an adjustment of the gross invoice weight.

**Packing and Tare**
Unit type, i.e.: bales, skids, rolls, pallets, boxes, securely tied bundles or loose should be specified. Sides and headers may be used to make a satisfactory delivery of the bales but must not be excessive. The weight of skids, Gaylord boxes and other similar packing materials shall be deducted from the gross invoice weight.

**Pricing, Terms and Invoicing**
Payment terms are NET 30 days. Invoices shall be emailed to dkel@rewallmaterials.com.

**Acceptance, Shipping Instructions, BOL and Carrier Selection**
All orders shall be confirmed in writing by TRC in form of Purchase Order sent to Seller. TRC currently accepts Fiber shipments only by truck. Delivery address is 2425 Hubbell Avenue, Des Moines, IA 50317. Receiving hours are Monday to Friday from 8am to 3:30pm. A bill of lading shall accompany each shipment to TRC and should include Date of shipment, Release number (TRC Purchase Order Number), Number of bales/rolls, Grade of paper, Name of trucking company, Trailer number and driver’s signature and Shipper’s signature. Selection of the carrier is at the discretion of the Seller unless otherwise agreed.

---

The ReWall Company, LLC  * P.O. Box 1818, Des Moines, IA 50305 * 515.265.1400  www.rewallmaterials.com

**PSI-52 Material Grade Update July 2017**
Aseptic Packaging and Gable-Top Cartons
Consists of liquid packaging board containers including empty, used, polyethylene (PE)-coated, printed one-side aseptic and gable-top cartons containing no less than 70% bleached chemical fiber and may contain up to 6% aluminum foil and 24% PE film.

This grade must be limited to a combined maximum of 2% of the following prohibitives and outthrows:

a) Pre-Consumer Material  
b) Groundwood  
c) Old Newspapers  
d) Unbleachables: chipboard, brown kraft, beater dyed colors  
e) Metal and foil  
f) PET liquid containers  
g) Old Corrugated Containers  
h) Glass  
i) Organic Garbage  
j) Floor Sweepings  
k) Wood
May, 2017

Post-Consumer, Polycrusted Beverage Carton
Bale Specifications

ACCEPTABLE MATERIALS - Polycrusted Beverage Carton Bales: Any gable top or aseptic carton that is generated from a curbside, drop-off, or other public or private recycling collection program. Examples of gable top cartons include: milk and juice cartons with or without plastic caps, lids or aluminum linings, some fabric softeners and candy cartons. Examples of aseptic cartons (also known as drink boxes) include: small aseptic cartons with straws popular with children, or containing juice concentrates, larger aseptic cartons containing soy milk, rice milk, tomato purees, etc. All cartons should be free of contents or free flowing liquids, rinsed, and have closures (caps, lids, and rings) removed to the greatest extent possible.

ALLOWABLE LEVELS OF CONTAMINANTS: Individual contaminants shall not exceed the following levels by weight:

<table>
<thead>
<tr>
<th>Material</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP/Groundwood cartons</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Plastic bottles</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Caps, closures, rings</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Metals (ferrous and non-ferrous)</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Newspapers/magazines</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Glass</td>
<td>0%</td>
</tr>
</tbody>
</table>

THE TOTAL MAXIMUM LEVEL OF CONTAMINATION SHALL NOT EXCEED 2% BY WEIGHT

PROHIBITED CONTAMINANTS: THE FOLLOWING CONTAMINANTS ARE NOT ALLOWED AT ANY LEVEL:

- No liquids seeping out of bales. SATURATED BALES ARE UNACCEPTABLE.
- No apparent contamination from insects or rodents.
- Prohibitive materials (wood, glass, dirt, oils, grease)
- No objectionable odor at time of delivery. Cartons must be free of all liquid contents.
- No medical, or hazardous waste, or potentially hazardous material, including but not limited to agricultural products, pesticides, herbicides, waste oil, medical products (drugs, IV solutions, syringes/hypodermic needles, sharps), flammable, corrosive or reactive liquids, grease and solvents are expressly prohibited. This rule applies even if the aforementioned material was not the original contents of the carton. (Suppliers must certify that the bales they supply do not contain the above prohibited materials). Many purchasers will reject an entire load if any of the above materials are found and will return them at the supplier's expense.

BALE SIZE: Approximately 30"x42"x48" or 30"x48"x60" (or other appropriate sizes that maximize packing efficiency as discussed in the text).

BALE DENSITY: Approximately 15-20 lbs/ft³

BALE INTEGRITY: Bale should be compressed and strapped firmly without falling apart throughout loading, shipping, unloading and storage.

MINIMUM SHIPPING WEIGHT: 40,000 lbs.

MAXIMUM SHIPPING WEIGHT: 45,000 lbs.

STORAGE: Bales should be stored indoors or covered outdoors. Material must not be stored outdoors uncovered for a period exceeding four (4) weeks to prevent UV degradation from direct sunlight and moisture contamination.

BALE TAGS: Each bale should have some type of identification on it. This can be either in the form of bale tags or a system as simple as a slip of paper with the shipper's identification on it slipped behind a bale wire.