

# ***THE INDIAN SCENARIO FOR CORRUGATED CASE RAW MATERIAL***

## **Challenges & Opportunities**

---

# Contents

---

- × CCRM Industry Structure
  - + Producers
    - × Raw Materials
    - × Technology
  - + Converters
    - × Raw Materials
    - × Technology
  - + End Users
    - × Supply Chain Characteristics
- × CCRM Grades
  - + Specifications for Paper
  - + Specifications for Boxes
  - + Trade Practices
- × Opportunities for Mills
- × Challenges

# Producers – Size & Distribution (source : IPPTA Directory 2020)

<b>KRAFT PAPER (CCRM)</b>	<b>No.of Mills</b>	<b>Total Capacity (MT/day)</b>	<b>Average Size MT/day</b>
West Zone	146	12,435	85
North Zone	108	12,775	118
South Zone	95	8,145	86
East Zone	27	2,485	92
<b>All India</b>	<b>376</b>	<b>35,840</b>	<b>95</b>

<b>Capacity</b>	<b>Number of Mills</b>				
	<b>&lt;50 TPD</b>	<b>50-100 TPD</b>	<b>100-200 TPD</b>	<b>200-300 TPD</b>	<b>&gt;300 TPD</b>
West Zone	33	60	43	5	5
North Zone	21	27	38	11	11
South Zone	39	28	15	8	5
East Zone	10	6	7	3	1
<b>All India</b>	<b>103</b>	<b>121</b>	<b>103</b>	<b>27</b>	<b>22</b>
	<b>27%</b>	<b>32%</b>	<b>27%</b>	<b>7%</b>	<b>6%</b>

# Producers – Size & Distribution (source : IPPTA Directory 2020)

Capacity	Aggregate Capacity MT/day				
	<50 TPD	50-100 TPD	100-200 TPD	200-300 TPD	>300 TPD
West Zone	900	3,570	5,065	1,050	1,850
North Zone	600	1,665	4,630	2,210	3,670
South Zone	1,235	1,670	1,990	1,650	1,600
East Zone	255	370	840	620	400
<b>All India</b>	<b>2,990</b>	<b>7,275</b>	<b>12,525</b>	<b>5,530</b>	<b>7,520</b>
	8%	20%	35%	15%	21%

Capacity	Average Capacity MT/day				
	<50 TPD	50-100 TPD	100-200 TPD	200-300 TPD	>300 TPD
West Zone	27	60	118	210	370
North Zone	29	62	122	201	334
South Zone	32	60	133	206	320
East Zone	26	62	120	207	400
<b>All India</b>	<b>29</b>	<b>60</b>	<b>122</b>	<b>205</b>	<b>342</b>

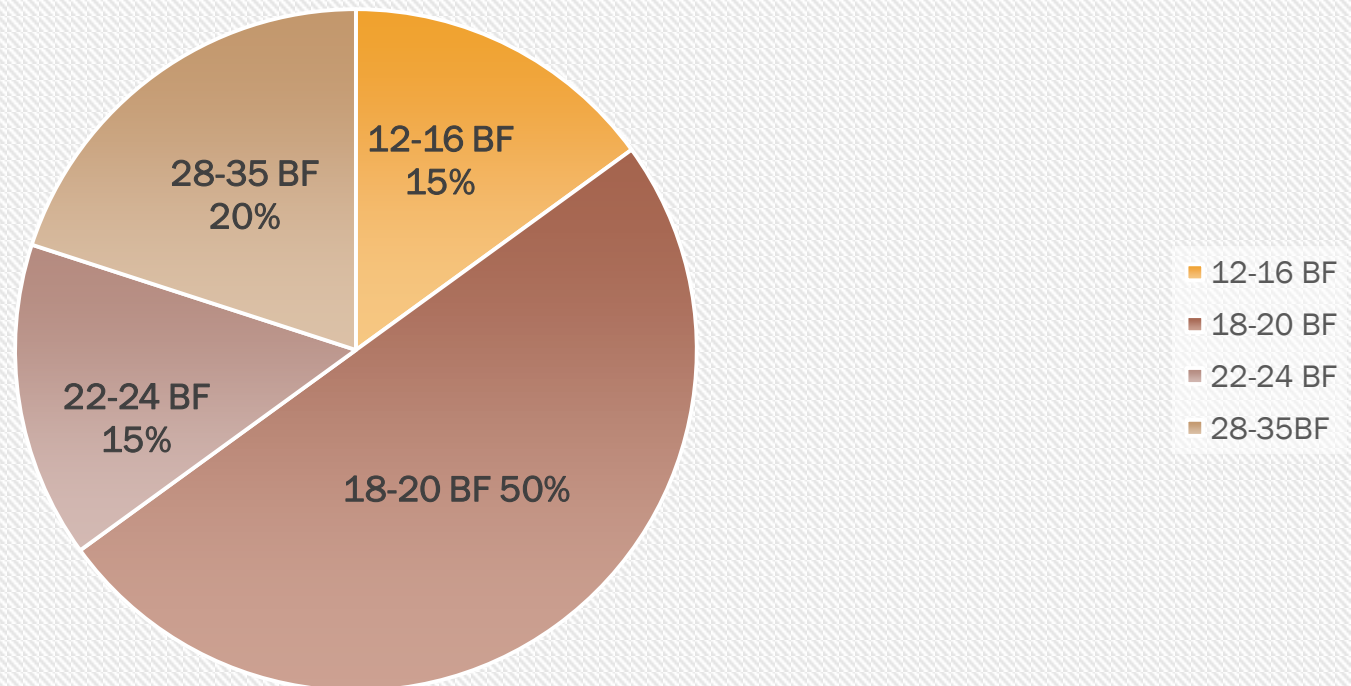
# HOW IS CORRUGATED CASE RAW MATERIAL (CCRM) IN INDIA SPECIFIED AND TRADED CURRENTLY?

Almost all CCRM is Specified by a two parameters - Burst Factor & Substance

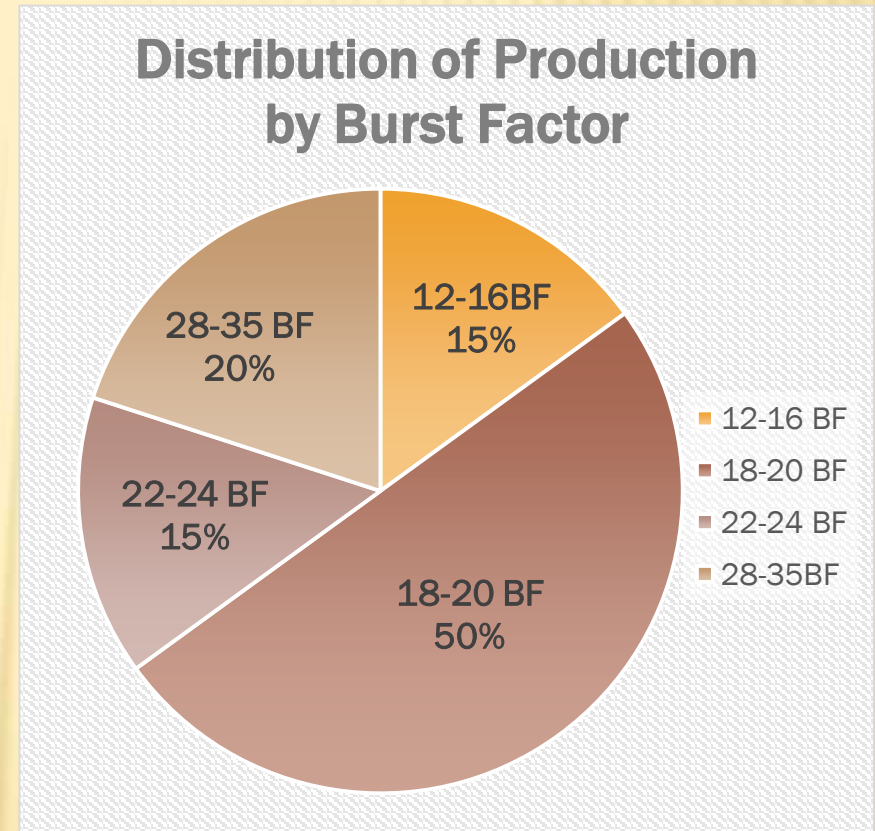
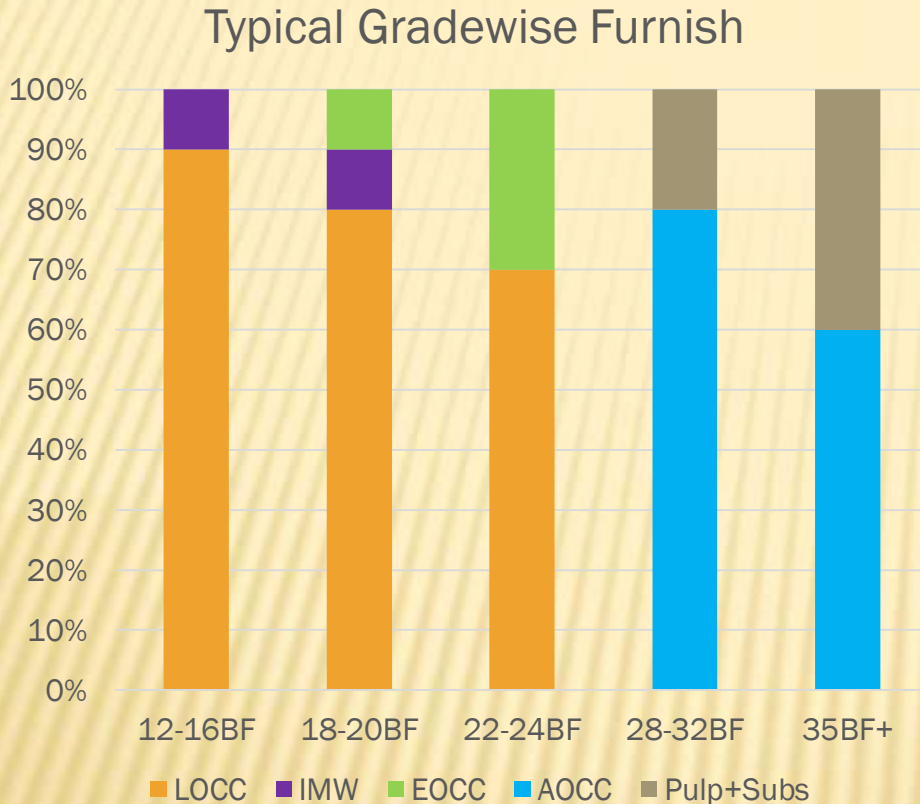
Currently, there is no clear distinction made between Liners and Fluting

Pricing is based on Burst Factor

**Distribution of Production by Burst Factor**



# Raw Material – nearly 100% RCP



Total Demand for Corrugated Boxes = 8.5 million MTPA

Average Capacity Utilization = 75% - 80%



# MILLS' TECHNOLOGY – CURRENT STATUS - 1

---

- ✘ Entirely RCP Based
- ✘ Pulping, Screening and Cleaning – Batch Operations.
- ✘ Absence of Loop Separation between PM & STO
- ✘ “ZLD” operation without “Bio Kidney System” for COD reduction in water loops and Storage Vessels.
- ✘ Rudimentary Fiber, Water Recovery and Re-use Systems

# MILLS' TECHNOLOGY – CURRENT STATUS - 2

---

- ✘ Poor/Inadequate Shower Systems on PM
- ✘ Most of the Capacity is with Single Fourdrinier
- ✘ Low Load Roll Presses
- ✘ Hood Less/Semi Hood Dryer Sections
- ✘ Crude Steam Delivery and Condensate Recovery Systems
- ✘ Low technology Rewinders



# ***HISTORICAL FACTORS CONTRIBUTING TO PRESENT INDUSTRY STRUCTURE***

---

- × **Reservation** of the Corrugated Box Making for the SSI, with an investment cap of INR 10 Million (1.0 Cr) till 2008
  - + **Result:** Low CAPEX Entry Barrier, Proliferation of low productivity, low output & low quality Box Making facilities across the country
- × **Structure of Excise Duties:**
  - + ED / CENVAT on Paper was based on Raw Material & Mill Capacity .
    - × Prior to April 2006, Output of Mills below 3500 MT / year was completely exempt from Excise Duties.
    - × For Production above 3500 MT / year, ED = 16%
  - + Corrugated Boxes were exempt from charging ED / CENVAT .
  - + Broken CENVAT chain between Paper Mills and End Users.
  - + **Result :** Vertical alignment of Excise Duty exempted Paper producers, exempted Box Manufacturers & exempted End Users.

# THE CONVERTING INDUSTRY

---

- ✘ Much has changed since this Industry was “De-reserved” in 2008
- ✘ The rate of change in technological sophistication and scale in the Converting Industry far out paces the change in the Supplier Paper Industry.
- ✘ Introduction of GST – a game changer

# ***TECHNOLOGICAL SPREAD IN INDIAN CORRUGATED BOX INDUSTRY***

- ✘ **The Main Stream (Small Players) 50 to 100 MT Conversion per Month:**
  - + Board Making:
    - ✘ “Semi Automatic”- Litho-Lam Board making with natural drying
  - + Converting :
    - ✘ Stand alone Scoring and Slotting Units
    - ✘ Stand alone 1-2 colour Flexo Long way Printers
    - ✘ Stand alone Stitcher- Manual and Semi Automatic.
    - ✘ Flat bed Traversing / Manual Die Cutter
- **The Evolving Majority (Larger Players) 500 to 1000 MT Conversion per Month:**
  - Continuous Corrugated Board Manufacturing Line with low Automation intensity
    - Converting :
      - Printers Slotters with Rotary Die Cutting
      - Stand alone Stitcher- Manual and Semi Automatic
      - Stand alone Folder Gluers –Automatic and Semi Auto setups
      - Manual In-process Material Handling

# *Technology in Indian Corrugated box Industry ...*

---

The “Movers and Shakers” 1500 MT and above Conversion per Month :

- Corrugated Board Making :

- High speed Continuous Corrugated Board Manufacturing Line with high degree of Automation and quick flute change capabilities.

- Converting :

- Conveyerized In-process Material Handling
- Printer - Slotters with Pre - Feeders
- Stand Alone Automatic Folder Gluers with Counter - Ejectors
- Case Makers (Flexo Folder Gluers with in-line Pre - Feeders, Strappers and Load Formers)
- Auto Platens



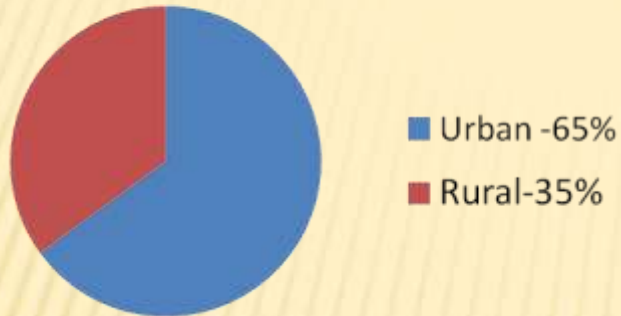
# END-USER INDUSTRIES

---

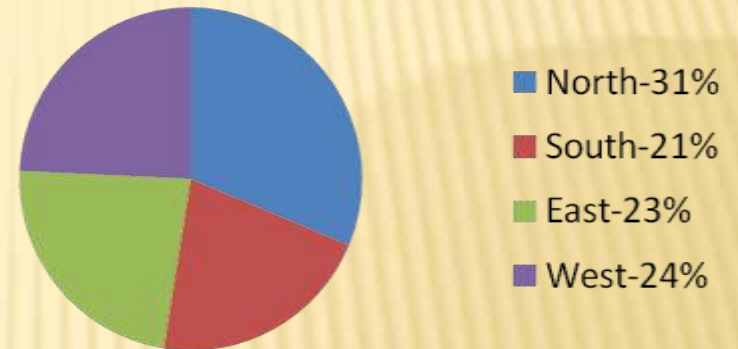


# FMCG MARKET SEGMENTATION

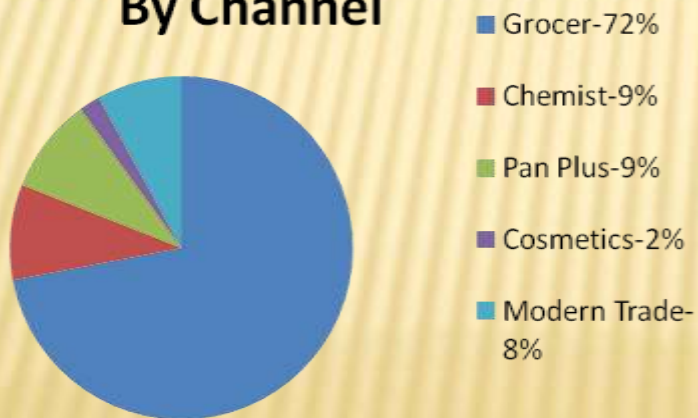
## Urban/Rural



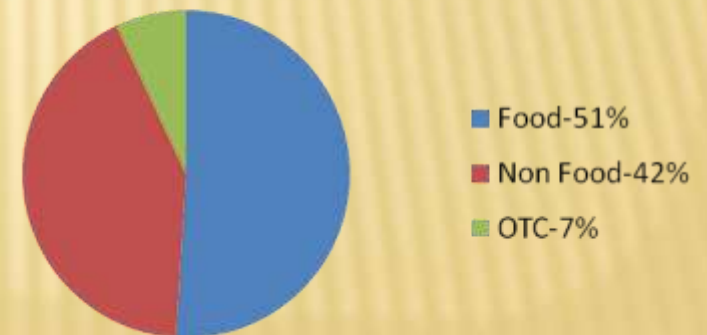
## Geography



## By Channel



## By Basket



# THE BOX HANDLING ENVIRONMENT & ITS DEMANDS ON CORRUGATED BOXES

*The Box handling Environment is harsh !*



*Any solutions for this ?*



# THE BOX HANDLING ENVIRONMENT & ITS DEMANDS ON CORRUGATED BOXES



*How does a box actually fail in protecting the goods being stored /transported ?*

***HOW SHOULD BOXES BE DESIGNED &  
SPECIFIED TO MEET THE RIGORS OF THIS  
ENVIRONMENT?***

There are no simple answers

---

# ***CORRUGATED BOARD IS A MECHANICAL STRUCTURE.***

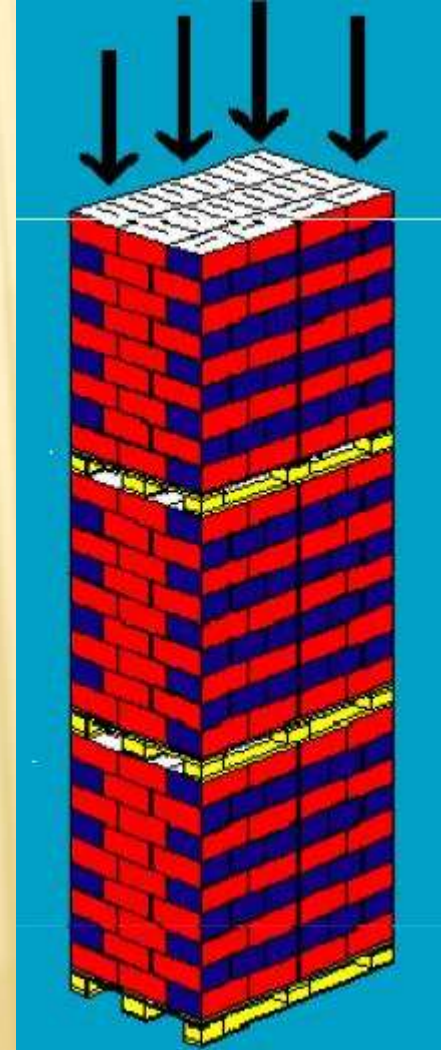
---

- ✘ A wholistic view on functional role of the box from packing through storage and transit is required for selection of performance-oriented Liners and Flutings.
- ✘ A specification of bursting strength in isolation is likely to be inadequate and expensive.
- ✘ The role of Fluting Paper is significant, and this must be understood well.



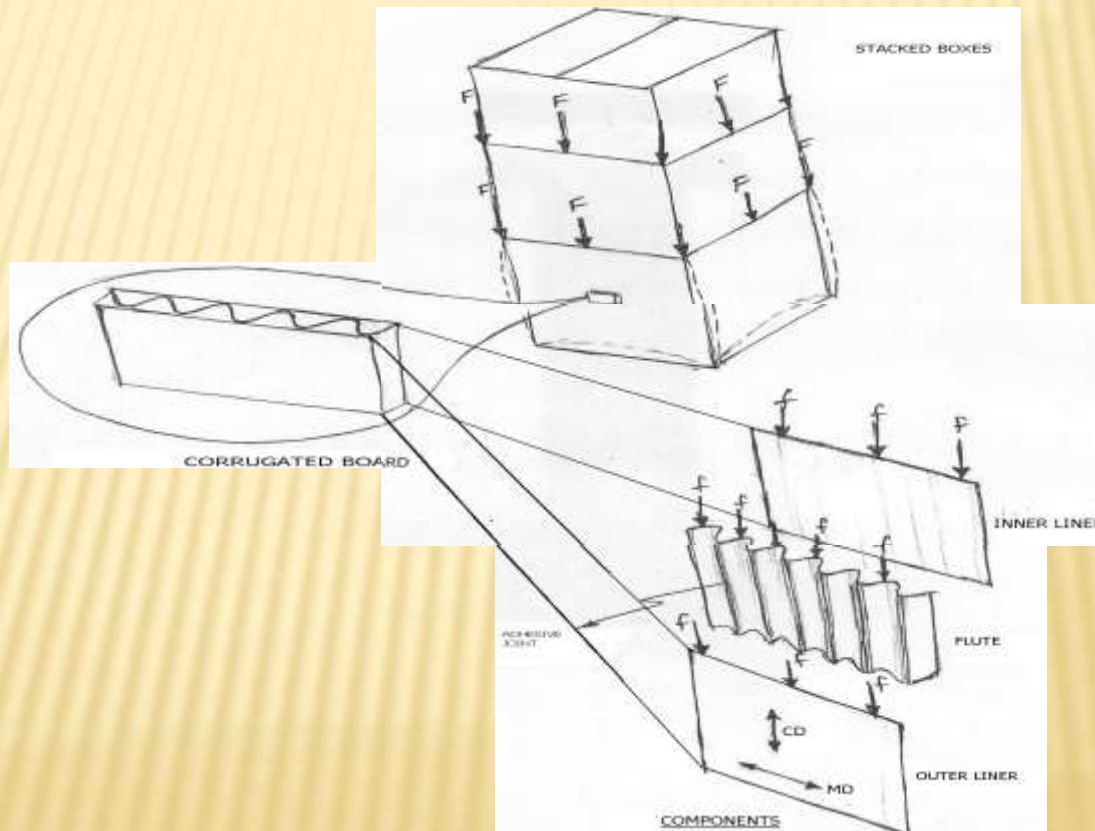
# THE SHIFT FROM BS TO BCT

*The ability of the box to withstand top-down loading ( Stacking strength ) is critical in many if not most FMCG applications.*



# THE SHIFT FROM BS TO BCT

*What is the role of individual components of the board in imparting stacking strength ?*



# ***THE SHIFT FROM BS TO BCT***

---

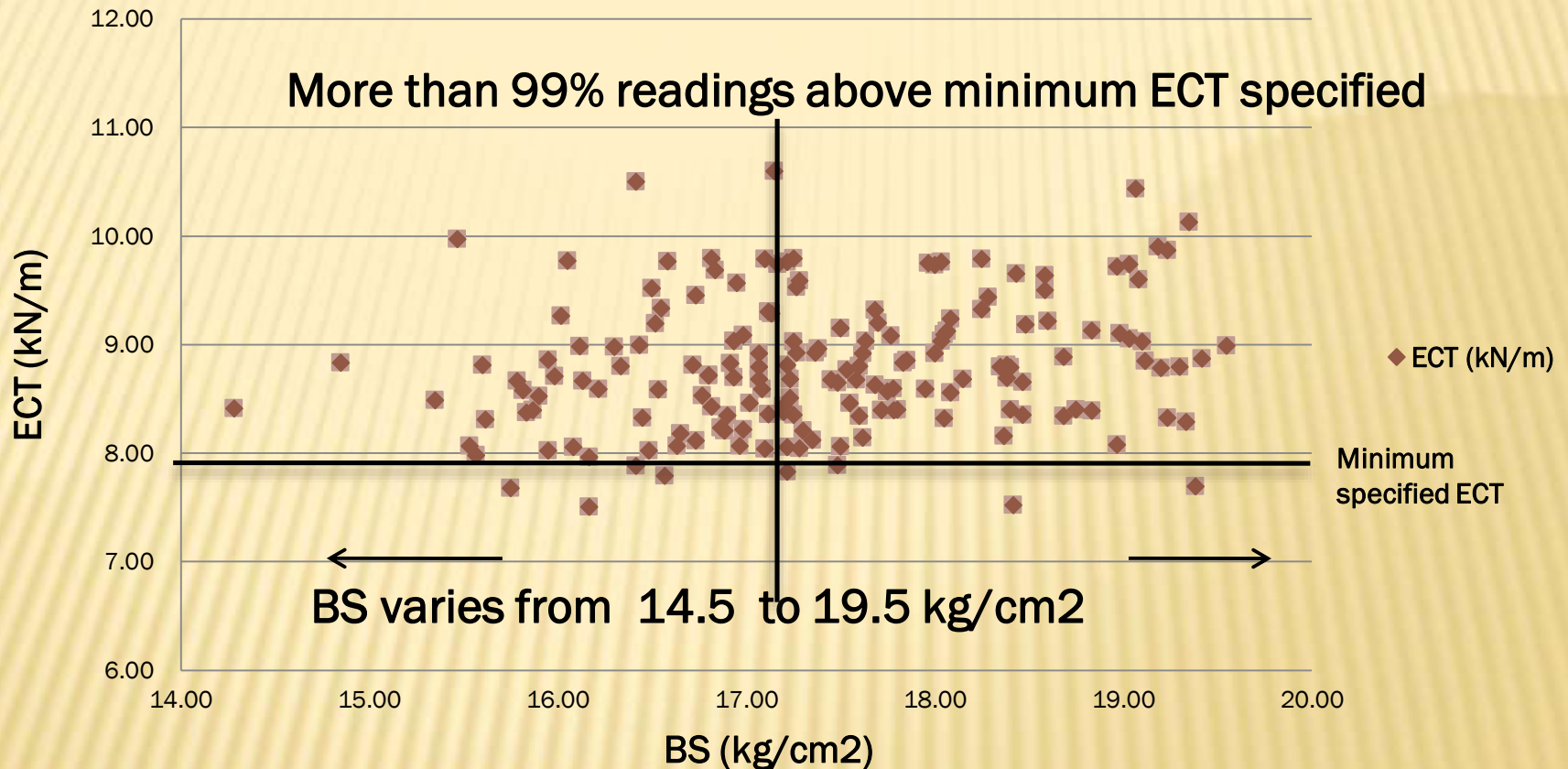
- ✘ More than 70% of CCRM in India is used to produce boxes for FMCG's.
- ✘ Since 2010 there has been a continuous shift in specifying boxes in terms of BCT-ECT.
- ✘ Today most progressive FMCG's use the BCT-ECT specification for their boxes.

# ***IS THERE A CLOSE CORRELATION BETWEEN BS AND RCT/SCT FOR INDIAN CCRM?***

- ✘ The Simple Answer: No – there are no guarantees.
- ✘ Would it do to specify the paper in terms of its BF only?



# Study of BS / ECT Co-relations :



\* More than 1000 test readings of 7.87kN/m , (44 lbs/in) ECT board grade, tabulated over a period of one year - Source **SIPM PPD** lab database.



# **THE TECHNO-COMMERCIAL DISCONNECT:**

**Between Trade Practice and Performance  
Requirements**

---

Has a correlation been determined  
elsewhere in the World?

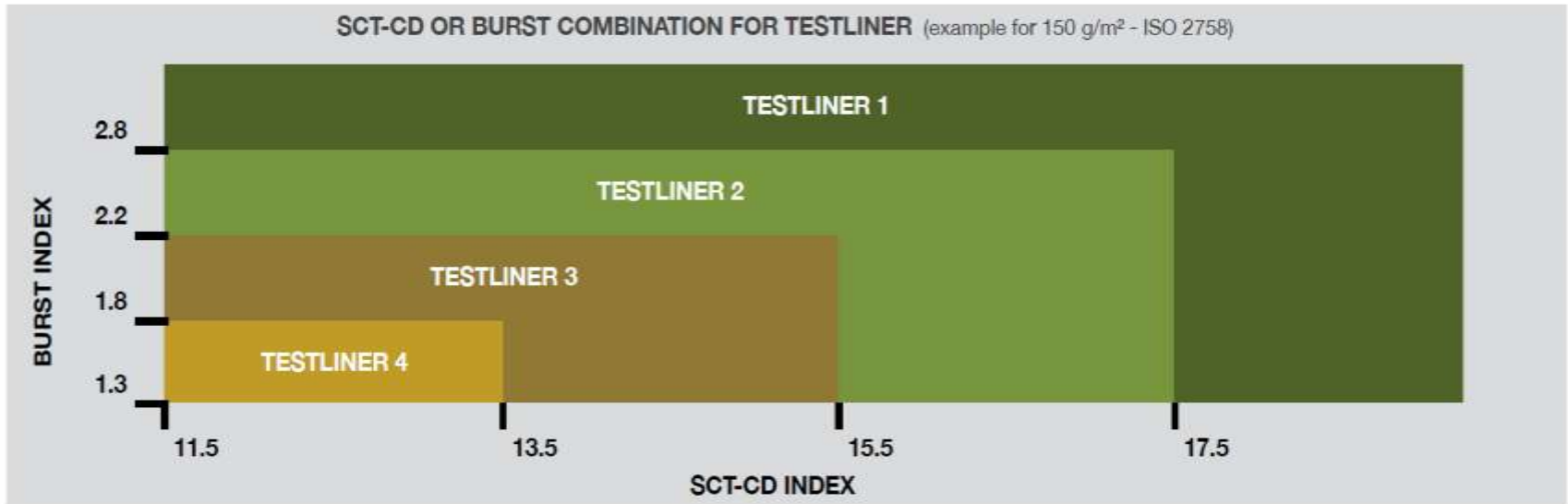
# Uniform Freight Classification Rules

## Uniform Freight Classification Rules USA - Rule 41

		A	B	C	D	E
3 Ply Boxes		Max Wt. Box and Contents lbs.	Max outside dimensions summed inches	Minimum combined weight of facings in lbs./msft	Minimum Bursting Strength lbs/sq.in.	Minimum Edge Crush Test in lbs/in.
<b>Single Wall</b>	<b>SW1</b>	20	40	52	125	23
	SW2	35	50	66	150	26
	SW3	50	60	75	175	29
	SW4	65	75	84	200	32
	SW5	80	85	111	250	40
	SW6	95	95	138	275	44
	SW7	120	105	180	350	55

		A	B	C	D	E
5 Ply Boxes		Max Wt. Box and Contents lbs.	Max outside dimensions summed inches	Minimum combined weight of facings in lbs./msft	Minimum Bursting Strength lbs/sq.in.	Minimum Edge Crush Test in lbs/in.
<b>Double Wall</b>	<b>DW1</b>	80	85	92	200	42
	DW2	100	95	110	275	48
	DW3	120	105	126	350	51

# CEPI (European) STANDARD FOR TEST LINERS & FLUTING





# CEPI STANDARD FOR SEMI CHEMICAL FLUTING



	CMT 30 INDEX	and either	CCT 30 INDEX	or	SCT-CD INDEX
Semi Chemical 1	≥ 2.2		≥ 20.0		≥ 21.0
Semi Chemical 2	> 1.9		> 16.0		> 17.0

# Where do we stand in terms of having performance specifications for Boxes?

Performance Requirements for Corrugated Fiberboard Boxes						
IS 13228: 2006	Box Style	Contents	Bursting Strength (kg/cm <sup>2</sup> )	Compression Strength (kgf/cm of Base)	Puncture Resistance (kgf.cm)	Cobb Value (30 min)
Frozen Sea Food & Frog Legs	0201	25 kg	14		200	80
Canned Sea Food	0204	25 kg	14		200	80
Processed Foods in Glass Jars & Bottles	0201 or 0204	20 kg	12			
Cigarettes Type 1	0201	10,000 pcs		2.0	30.5	100
Cigarettes Type 2	0202	10,000 pcs		1.0	61	100
Soaps	Nil	Nil	6.5	1.0	120	80
Apples	0320	18 kg	15	1.0	240	80
Butter	0201 or 0204	25 kg	14		200	100

# ***Is the Bursting Strength Specification for Corrugated Board Obsolete?***

---

- Bursting Strength is not obsolete per se.
- Its role as the solely defining parameter for CCRM certainly is.
- Bursting Strength is important for Liners in many applications. However, it must be recognized as a surrogate parameter.
- Bursting Strength is best achieved using long fiber stock which imparts properties to the Liners which are desirable from an application perspective.
- Liners with a high bursting strength must be used in Box construction based on the application.
- Bursting Strength as a parameter is irrelevant for Fluting.
- Specifying only the Bursting Strength for Corrugated Board often results in a poor design from a performance perspective.

# **OPPORTUNITIES IN CCRM *BEYOND FMCG***

---

- ✘ Heavy Duty Boxes for Industrial Products
- ✘ Boxes/Trays for Fruits & Vegetables in Cold Chains
- ✘ Boxes for Consumers Durables
- ✘ Boxes for Footwear & Garments
- ✘ Boxes for Consumer Electronics
- ✘ Boxes for Toys
- ✘ Boxes for Pharmaceuticals
- ✘ Food Service, Take Out boxes



# ***SPECIFIC ISSUES WITH INDIAN CCRM***

---

- ✘ Odour
- ✘ Web Cleanliness
- ✘ Low and Non-Uniform Moisture profiles.
- ✘ Brittleness with poor scoring performance.
- ✘ Frequent Web Breaks
- ✘ Poor Rewind quality.

# ***LIMITATIONS:***

---

- ✘ High dependency on Recycled Fiber.
- ✘ High dependency on prime imported fibre for high performance grades.
- ✘ Zero domestic supply base for SW Virgin Fiber.
- ✘ Highly fragmented supply base with low technology and poor economy of scale.
- ✘ Competition from FTA's where operating scale and technological sophistication is much higher due to a consolidated producer base.

# THE WAY FORWARD

---

- ✘ Need for a shift from an Adversarial to Collaborative relationship between the Paper Industry and the User Industry.
- ✘ A better understanding of the different roles of CCRM components
- ✘ Consolidation?
- ✘ Integration?

Thank You for a Patient  
Hearing