BULK PACKAGING IN INDIA
We have carried out an in-depth study on BULK PACKAGING IN INDIA during the last 4 months. This paper presents the salient findings of this study.

S. Chidambar
CONTENTS

Presentation focus on findings and qualitative & quantitative data

✓ Basic Assumptions

✓ Major Systems
  - Present State of Development
  - Potential
  - Trends & Projections

✓ Future Systems

✓ Summary

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BASIC ASSUMPTIONS
BULK PACKAGING

Definition

What constitutes Bulk Packaging?

There are a lot of grey areas

A basis needs to be established

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BASIC GUIDELINES

✓ Determine scope for “Packaging” as an input

✓ Focus on areas that have a reasonable technology input

- exclude some products transported in bulk with no specialised packaging

- exclude some liquids and gases transported in tankers, returnable cylinders or pipelines

- exclude the cushioning segment and packaging of fragile products for physical protection

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DEFINING BULK

Approaches

✓ Lay down a minimum unit content threshold – weight/volume

✓ Basic function of packaging system – retail vs. institutional bulk

✓ Consumption by mfg./processing industrial incl. grading/repacking and bulk institutional users for own use or redistribution

Packages that contain products meant for large-scale or industrial consumption as intermediate inputs for conversion into smaller denominations or other products

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Some exceptions have to be made:

- items of high unit consumption even at retail level
- intermediate or transport packaging or packages unitised/collated for distribution or handling/logistic benefits

Definition has been tempered on a selective basis to include large applications requiring more “bulk-based” technology than conventional retail packaging.
DEFINING BULK

Grey Areas

Packaging needs to be studied as a total system
Therefore, there are significant areas of overlap

✓ Materials handling systems – transit and in-plant
✓ Bulk transportation - containers
✓ Bulk storage, warehousing and retrieval systems
✓ Logistics and 3PL
✓ Supply chain
✓ Complexity : multiple points – in-plant, end-users, intermediate points, trans-shipment points like ports & railheads

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Basic focus of study has been on the Packaging Systems involved

- Segmentation has been based on systems
- Primary focus has been on systems and materials involved
- There is some coverage on technologies involved
- Where relevant, machinery, consumables and components of bulk packaging systems have been touched upon

Bottom line has been to try and evolve quantitative parameters relevant to visitors and exhibitors at the Bulk Packaging Show and potential investors in this sector

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BULK PACKAGING

Major Systems Studied

Two possible approaches to segmentation

✓ Material basis – metals, plastics, paper, composites

✓ Packaging form – rigid, flexible, semi-rigid, industrial textiles, combinations

✓ Specialty – aseptic, non-aseptic, food and pharma grade, legislation

No rigid segmentation basis has been used

A selective approach has been adopted using all of the above with cross references where relevant

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BULK PACKAGING

Major Systems Studied

Focus is only on large bulk applications

✔ Metal packaging – steel drums & barrels, large cans
✔ Rigid plastic packaging – plastic barrels, IBC’s, totes/crates
✔ Industrial textile based – woven sacks, FIBC’s, WPP bags, Leno bags, hessian sacks
✔ Flexible plastic packaging – stretch and shrink wrapping
✔ Paper packaging – CFC’s, multiwall packaging, fibre drums
✔ Bag-in-box and bag-in-drum systems
✔ Aseptic bulk packaging
✔ Composites – flexitank & flexidrum, composite cylinders
✔ Miscellaneous logistic consumables
✔ Relevant emerging technologies

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IMPORTANCE OF BULK PACKAGING

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BULK PACKAGING

Where Needed

Where is Bulk Packaging needed?

- Primarily required for industrial production and wholesale distribution
- Essential component of intermediate and transport packaging even for retail packs
- Several intermediate stages of production that require packaging, transportation and handling of intermediates, inputs and components

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Why is Bulk Packaging needed?

✓ Volumes to be handled
✓ Convenience
✓ Time required
✓ Manpower requirements
✓ Turnaround time
✓ Storage and in-plant handling
✓ Sustainability
✓ Lower total system costs

Although upfront costs and investments in infrastructure & facilities, space and materials can be substantial, the real benefits come from savings across the entire supply chain

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Worldwide, the Bulk Packaging segment constitutes over 40% of the total Packaging industry.

Reasons for size:
- Several intermediate production stages for each retail product
- Several packaging cycles for each retail product
- Packaging is required across the entire supply chain

Bulk packaging requires a different kind of competence and is a specialised part of the Packaging business entailing special technologies and processes.

Systems need thorough understanding of product, customer needs and infrastructure and solutions have to be customised and tailored for each situation.

Some infrastructure may even be required in the public domain.

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Bulk Packaging in India is facing several constraints

- Infrastructure is woefully inadequate
- Domestic demand for some systems is very low
- Customers not very keen to invest in high-cost facilities
- Space at existing locations is often a problem
- Immense potential for growth

- Preliminary estimates show annual industry revenues could be as much as Rs. 25,000 crores (over US$ 5 billion) and, if one includes some components of materials handling and logistics, this value is even higher

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As exports from India to developed countries grow, so will Bulk Packaging.

If India’s GDP grows even @ 8% per annum, industrial output will have to grow @ at least 12% - 15% per annum >> organic growth.

Growth in organised retail and contract manufacture/repacking will drive growth in Bulk Packaging.

Sustainability concerns will drive reusable & recyclable packaging and bulk handling/packaging.

Potential for new applications is immense.

Enormous demand potential for agricultural produce.

We can foresee very healthy growth for this industry.

The Indian Bulk Packaging industry is highly competent and is a major international player in many segments despite very low domestic demand in some areas.

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ANALYSIS OF MAJOR SYSTEMS
SYSTEMS BASED ON INDUSTRIAL TEXTILES

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Flexible Intermediate Bulk Containers (FIBC’s) are large bags stitched from a woven polypropylene fabric.

The fabric is usually extrusion coated for additional barrier and leak-proofness.

Accessories like handles and straps or loops can provided to facilitate mechanised handling.

Aids to filling, closing and discharge like flaps, valves and spouts can be provided.

Bags used by themselves or with additional loose liners for extra barrier.

Size and design customised to product requirements and method of handling/filling/discharge.

Bags can be printed as required.

Mostly used in combination with pallets.

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FIBC’s

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FIBC’s
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FIBC’s

✓ Bag capacities range from 200 kgs and upwards depending on the bulk density of the product

✓ Mostly used for the packaging of powders, granules, pellets and other free-flowing solid products

✓ Extensively used in developed countries for all kinds of products ranging from industrial chemicals, resins and agro products to food-grains

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FIBC’s

Indian Industry

✓ Indian industry very capable and highly developed despite low domestic demand

✓ India is the world’s second largest player after China with a global market share of 22%-25%. China (45%-50%), India and Turkey account for over 85% of world mkt.

✓ Exports are mainly to developed countries like the USA, W. Europe, Japan, Korea and Australia

✓ A little over 30 manufacturers

✓ Evolution of the industry in India >> Strengths

✓ Output is presently 125,000 MT/yr valued at about Rs. 1,400 crores

✓ CAGR has been 15%-20% over the last 10 years

✓ Will grow @ at least 15% over the next 5 years

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FIBC’s Indian Industry

✓ Domestic annual demand is presently under 2 million bags (3000 MT valued at Rs. 30 crores)

✓ Major users are IOC and Mitsubishi (for PTA), Vedanta (for alumina), RIL and some other PET manufacturers and Continental Carbon/Hi Tech Carbon for carbon black

✓ Immense potential for other products

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WOVEN PLASTIC SACKS

✓ Sacks are stitched from woven PP or HDPE fabric
✓ Manufacture is similar to FIBC’s
✓ Usage of PP or HDPE depends on product and distribution/storage of packaged products
✓ PP bags mainly used for cement packaging and HDPE is mainly used for packaging of fertilisers and agro-chemicals
✓ Usage of PP is 65%-70% and that of HDPE is 25%-30%
✓ One of the fastest growing segments of the Indian Packaging industry at CAGR of 15% or more
✓ Bag capacities typically 20 kgs-50 kgs
✓ Present output is almost 1 million MT/yr valued at about Rs. 11,000 crores
✓ Preferred system vs hessian sacks for better protection and lower costs
✓ Typical PP 50 kg sack costs Rs. 16 against Rs. 25 per hessian sack

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WOVEN PLASTIC SACKS

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WOVEN PLASTIC SACKS
Indian Industry

✓ Evolution of Indian industry
✓ Constraints
  - Infrastructure/handling
  - Jute Packaging Materials Act (JPMA)

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WOVEN PP BAGS

✓ A new system developed in the last 3 years
✓ Used for bulk retail packs of 5 kgs to 25 kgs
✓ Made from a laminate of reverse printed BOPP film extrusion laminated to woven PP fabric
✓ Printing is by high quality rotogravure in up to 8 colours
✓ High-end system used for niche markets
✓ Woven fabric provides impact strength, tear strength and resistance to splitting and tear propagation
✓ Pillow type and gusseted bags
✓ Special accessories like handles and straps or slider zippers for reclosure can be provided
✓ Mostly used for special products like pet foods, domestic feed, bird foods, chemicals, food-grains, cereals and sugar

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WOVEN PP BAGS

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There is only one large manufacturer of this system in India – Uflex who is the world’s largest producer.

Evolution and Developments

Hermetically sealed bags

Special bottom construction >> stand-up facility

Very little domestic consumption

Mostly exported to developed markets like the USA and Western Europe; major users are large FMCG majors like P&G, Walmart, Nestle, Cargill, General Mills and AGS

Present output about 100 million bags per year valued at Rs. 300 crores

High growth expected

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LENO BAGS

✓ These bags are made from PP woven fabric with a relatively open weave

✓ These are mainly used for the packaging of fruits and vegetables

✓ Bag capacities range from 50 kgs to 70 kgs

✓ This is a relatively new system in the Indian market (since 2001-2) and capacity has grown from 9 looms to 900 looms

✓ Very useful for products requiring cold storage and controlled temperature storage

✓ Present annual demand is equivalent to about 12,000 MT valued at about Rs 115 crores

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LENO BAGS

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HESSIAN & JUTE SACKING

✓ Hessian is a twill-woven fabric from jute yarn

✓ Sacking is fabric woven from coarser jute yarns designed to handle heavy-duty applications

✓ Traditional bulk pack for almost all categories of non-sensitive products

✓ Most transportation and handling systems were originally designed to handle hessian sacks

✓ Hessian can be made food-grade by treating with vegetable oils that negate harmful hydrocarbons

✓ Advantages are open-ness of the weave which permits air circulation and “breathing” of products

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HESSIAN PACKAGING
Indian Industry

- Total Indian production is 1.3 million MT/yr
- Packaging applications account for 0.8-1.0 million MT/yr valued at Rs. 2,500-3,000 crores
- Gradually losing out to plastic woven sacks on barrier and price
- Protected by the JPMA
- Ad hoc dilution of JPMA mandate from time to time due to supply constraints
- Use is expected to stagnate or decline marginally in the next 5 years

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SYSTEMS BASED ON PAPER

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CORRUGATED PKGG

✓ Corrugated Fibreboard Cartons (CFC’s) are a dominant packaging segment worldwide

✓ Used mainly for intermediate and transport packaging of packaged consumer goods

✓ Used for cartons, fitments and as a cushioning material

✓ Trend towards shelf-ready and display systems

✓ Cartons made from 3-ply and 5-ply structures

✓ Over 85% of the market is “brown” boxes

✓ Trend towards attractive printed boxes

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Highly fragmented and mostly in SME sector
Over 20,000 manufacturers
Location has to be within 200 km radius of end-user
Highly competitive and price-sensitive market
China model
150 automatic plants, 50-60 imported plants installed in last 4-5 years
Present output of “brown” segment is 2 million MT/yr valued at about Rs. 7,000 crores
Historic CAGR 15% per annum, will be maintained for conventional applications
Packaging of fresh produce could add substantial volumes and increase added value
Automation of end-user packaging lines could drive shift to automatic CFC making lines

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The Indian industry operates under several constraints:

- Non-availability of local high-strength pulp
- Shortages of high-strength paper
- Costs and availability have worsened significantly since Q4 2009
- Extremely high fibre costs >> 80%
- Extremely low margins
- All automatic lines still running at a loss
- Dispute over performance based standards and pricing norms
- Big thrust could come from organised retail and fresh produce

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MULTIWALL PAPER PKGG

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MULTIWALL PAPER PKGG

✓ Sacks made from multiple layers of high strength paper (ESKP)
✓ Barrier layers used when necessary – foil, films, laminates
✓ Loose liners used for extra barrier, product contact and leak-proofness >> open-mouth sacks
✓ Typically use 3 to 5 layers of 80 to 100 gsm ESKP
✓ Manufacture
✓ Developed in India in the 1960’s, quality is good
✓ Most common construction uses pasted self-sealing valve and flat bottom construction; other formats are open-mouth, pinch bottom, sewn sacks and window sacks
✓ Used mainly for industrial bulk packages and for some retail applications that require bulk quantity unit packs
✓ Bag capacities range from 5 kgs to 60 kgs depending on product
✓ Mostly used for packaging of cement, bulk industrial chemicals, bulk tea, bulk food products, produce, masonry & rock products and agro-chemicals
✓ Bags are usually unitised on pallets for bulk shipments

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MULTIWALL PAPER PKGG

Indian Industry

- 50 kg cement packaging is largest end-user segment >> 100-120 million sacks/yr
- Non-cement segment accounts for 36-40 million sacks/year
- Total industry output valued at about Rs. 225 crores per year (80% cement: 20% non-cement)
- CAGR is 10%, will be maintained
- Major players are APRSL, Karur KCP, B&A Multiwall and Elson Packaging
- Industry capacity utilisation is 70%
- About 35%-40% more expensive than plastic woven sacks
- Advantages – disposability, reuse, recycling, stackability, biodegradability

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FIBRE DRUMS

- Drums are made from high strength kraft paper
- Drums custom designed for product – diameter range from 12” to 20” (10 litres to 250 litres)
- Variety of closure systems
- Used for pkgg of bulk drugs, agro-chemicals, dyes & indl. chemicals and automotives
- Manufacture – spiral and convolute winding
- Loose liners used for additional barrier, product contact and leak-proofness
- Location has to be close to end-user
- Typically use 10 layers of 300 gsm kraft; barrier layers possible
- Major players are Fibre Foils, Atlas and Anoop
- Price ranges from Rs. 50 – Rs. 650 per drum >> size, offtake
- CAGR has been 5%, will be maintained
- Total industry output estimated at about Rs. 120-150 crores per year
- Approx. 20% cheaper than steel and plastic barrels

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FIBRE DRUMS

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SYSTEMS BASED ON PLASTICS

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RIGID PLASTIC BARRELS

- Rigid plastic barrels are made by blow moulding and tube extrusion
- Mostly made from HDPE
- Used mainly for packaging liquids and industrial chemicals
- Standard barrel size is 210 litres and costs Rs. 800 per barrel
- Raw material is mostly imported from Chevron-Phillips
- Industry is well developed and quality is good

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The total annual demand is 4.2-4.5 million barrels valued at about Rs. 350 crores.

Major players are Time Technoplast (3 million) and Balmer Lawrie-Van Leer (0.6 million).

CAGR has been 20% per annum although 2008-9 saw a dip in demand.

There is also a large market for PP pails typically of 20-25 litres capacity for packaging of paints & varnishes and lubricants but this is mainly in the retail segment.

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IBC’s

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IBC’s

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IBC’s

Manufactured by Time Technoplast

Capacity 1 MT

Used for packaging of liquids

Price range Rs. 6,000 – Rs. 14,000

Present usage 10,000 units valued at about Rs. 10 crores

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Crates and totes – usage about 25,000 MT per year valued at Rs. 265 crores

Pallets – usage about 18,000 -20,000 MT per year valued at Rs. 200 crores

Some usage of blow moulded jerry cans

New developments – composite gas cylinders

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MISC. RIGID PLASTIC SYSTEMS

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FLEXIBLE PLASTIC SYSTEMS

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SHRINK WRAPPING

- Used mainly for intermediate packaging
- Mostly uses LDPE films
- Present usage about 45,000 MT per year valued at Rs. 480 crores
- New developments – hood shrink

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STRETCH WRAPPING

✓ Uses mainly LLDPE films
✓ Mostly manual operations
✓ Pre-stretch yet to catch on
✓ Nobody manufactures films for powered pre-stretch
✓ Present usage is about 25,000 MT to 30,000 MT per year valued at about Rs. 305 crores
✓ New developments

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RIGID METAL SYSTEMS

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STEEL DRUMS

✓ Mainly 200 litre high-end coated steel barrels

✓ Cost per barrel is Rs. 1,000

✓ Present usage is 6.5 million barrels per yr. valued at Rs. 650 crores

✓ CAGR 3%-4% per annum

✓ 30 manufacturers, Largest is Balmer Lawrie (45%)

✓ Low-end uncoated steel barrels – 2 million barrels per year valued at about Rs. 200 crores

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MISCELLANEOUS SPECIALTY SYSTEMS

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MISC. SYSTEMS

- Bag-in-box systems: non-aseptic and aseptic systems
- Bag-in-drum systems
- Flexitank
- Flexidrum
FLEXITANK

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FLEXITANK

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SUMMARY
<table>
<thead>
<tr>
<th>Product</th>
<th>Demand (Rs.)</th>
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<tr>
<td>FIBC’s</td>
<td>1,400 cr.</td>
</tr>
<tr>
<td>Woven Plastic Sacks</td>
<td>11,000 cr.</td>
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<tr>
<td>WPP Bags</td>
<td>300 cr.</td>
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<tr>
<td>Leno Bags</td>
<td>115 cr.</td>
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<tr>
<td>Hessian Bags</td>
<td>3,000 cr.</td>
</tr>
<tr>
<td>Corrugated Packaging</td>
<td>7,000 cr.</td>
</tr>
<tr>
<td>Multiwall Paper</td>
<td>225 cr.</td>
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<td>Fibre Drums</td>
<td>150 cr.</td>
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<td>Plastic Drums</td>
<td>350 cr.</td>
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<td>IBC’s</td>
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<tr>
<td>Plastic Pallets</td>
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<td>Shrink Films</td>
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<tr>
<td>Shrink Films</td>
<td>305 cr.</td>
</tr>
<tr>
<td>Metal Barrels</td>
<td>850 cr.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>25,650 cr.</strong></td>
</tr>
</tbody>
</table>

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and, finally

Thank you

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