Birla Cellulose

Medical Textile and Opportunity in India

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Contents

Birla Cellulose

Birla Cellulose

Aditya Birla Group and Birla Cellulose

AB Group – Taking India to the World

Birla Cellulose

- The Aditya Birla Group is a US$ 29.5 billion conglomerate
- It is anchored by a force of 130,000 employees, belonging to 25 nationalities.
- Our operations span 25 countries
- The Group has been adjudged “The Best Employer in India and among the top 20 in Asia” by the Hewitt, Economic Times and Wall Street Journal Study 2007.
- The Group is present in diverse Manufacturing and Service businesses with leadership position in several of them.

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Leadership across Businesses

Global Size and Competitiveness

VSF:	World's largest produce; 23% global market share
Metals:	Global cost leadership; regional major
Cement:	11th Largest Globally
Insulators:	4th largest in the World
Carbon Black:	4th largest in the World

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India Market Leadership

Largest Player:	Aluminum, Copper Viscose Staple Fibre, Insulators Branded Apparels
Amongst Top-5:	Cements, Mutual Fund, Fertilisers, Chemicals, Textiles, Telecom, Life Insurance (Private), Carbon Black, Viscose Filament Yarn

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Birla Cellulose : The Company

- Birla Cellulose is the umbrella brand and Flag ship of the Aditya Birla Group

  World leader in Viscose Staple fibre with a Global share of 23%

- Operations span 6 countries :
  - Plantations : India, Canada & Laos
  - Pulp plants : India and Canada
  - Fibre plants: India, Thailand, Indonesia and China

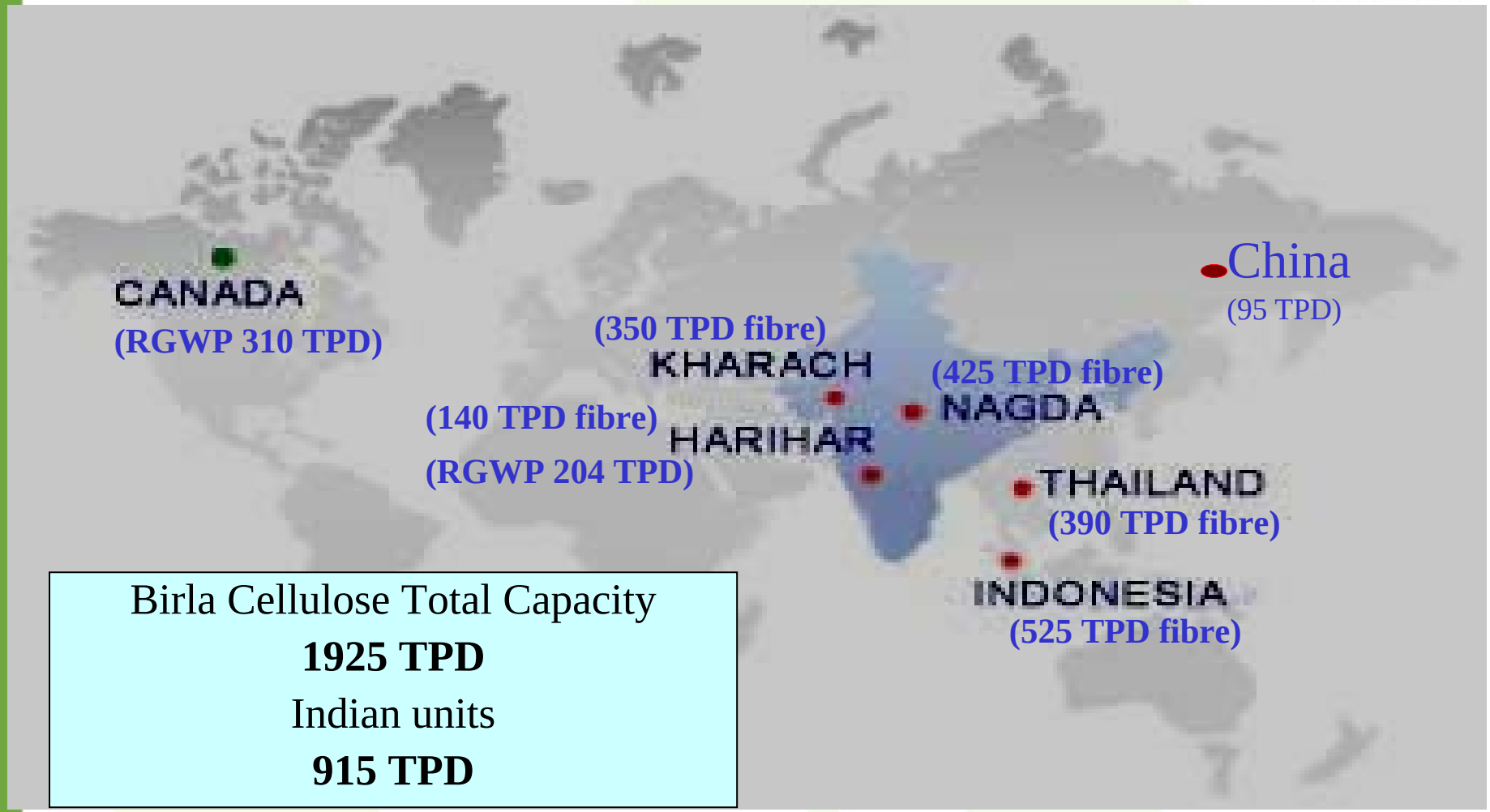
Fully integrated operations with In-house:

- Technology
- Engineering Division
- Chemicals
- Power generators

- In house Research & Development facility for Plantation to Garments

Birla Cellulose-at a glance

(Pulp and fibre Business)



Birla Cellulose Total Capacity

1925 TPD

Indian units

915 TPD

Birla Cellulose : Eco-friendly fibre

Responsible sourcing of raw material

In India, Birla Cellulose believes in credible sourcing of self-sustained raw materials by encouraging scientifically raised plantations of high yielding Eucalyptus trees on even fallow lands and Canada operations depends on sustained forestry.

- Eco-friendly products

  Birla Cellulose is 100% Natural and bio-degradable.

  Is the only manufacturer of Heavy Metal free viscose

- Eco-friendly processes

  The treated effluents are completely non toxic and abundant fish are seen in it.

Birla Cellulose : Eco-friendly fibre

Land conservation

The yield of viscose is more than 7 times than that of cotton for the same land acreage.

Water conservation

With use of Birla Cellulose, downstream textile processes conserve water by the elimination of processes like scouring, pre-treatment and washing, saving 84 liters of water per kg of viscose processed.

Spun-dyed VSF saves 30 litres of water per meter of fabric produced compared to processing of piece dyed fabrics

Strong presence in Textiles & Clothing

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Unique features of all Birla Cellulose fibres vis-à-vis other Textile Fibres

Birla Cellulose

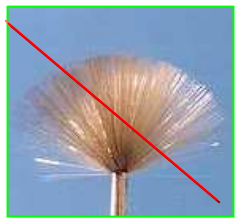
Eco-friendly

Soft feel

Vibrant color depth

Highly Uniform

Breathable &
Highly absorbent



Static Dissipation

All Birla Cellulose fibres are Oeko tex 100 certified

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Product Offerings

Birla Cellulose viscose
FEEL THE COMFORT.

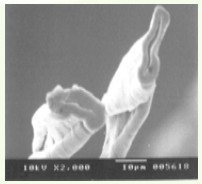
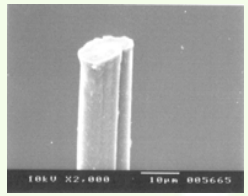
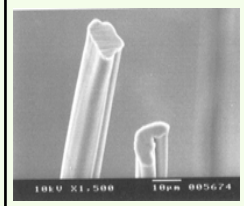
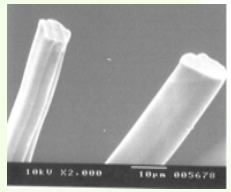
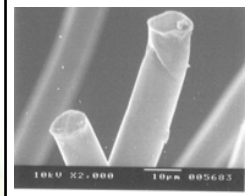
Birla Cellulose viscose plus

Birla Cellulose modal
LOOK GOOD. FEEL GREAT.

Birla Cellulose excel
TIMELESS FASHION.

SpunShades™
Colours Inspired by Nature

Typical Fibre Properties

	Cotton	Regular Viscose	Viscose Plus	Modal	Excel
Photomicro – graphs					
• **Tenacity**					
Dry (gpd)	2.8	2.6	2.9	3.8	4.2
Wet (gpd)		1.3	1.7	2.4	3.5
Ratio wet/dry	1.14	0.50	0.58	0.63	0.84
• **Elongation %**	8	20	19	15	13
Moisture R %	7.5	13	13	13	13
• **Initial wet modulus gpd**		0.25	0.40	0.7	1.42
• **Fibrillation**	No	No	No	No	**Yes**

Supports offered by Birla Cellulose

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- **Design and Development Support**
- **Technical Support**
- **Marketing Support**
- **Logistic Support**
- **Information Support**

TEXTILE RESEARCH AND APPLICATION DEVELOPMENT CENTER

Birla Cellulose

- **Total Solution Provider for Value chain Partners**
- **State-of-the-art textile equipment from spinning to garments, enabling small to mid bulk sampling**
- **Center of excellence for textile research innovations**
- **Research Projects and training to improve industry skills**

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Medical Textile & Opportunity

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Definition of Medical Textiles

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Medical textiles encompass all those textile goods which find their use in health care applications in consumer and medical usage segments.

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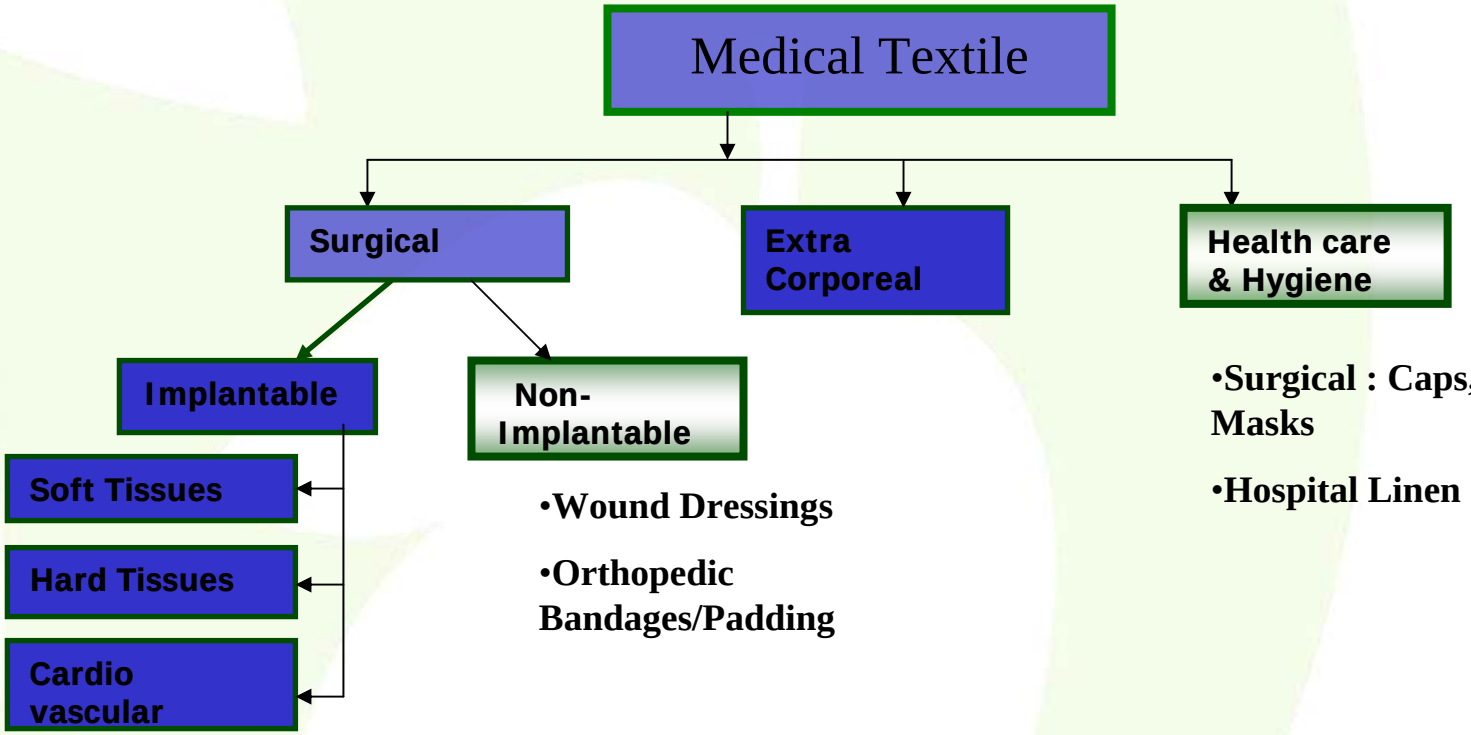
Classification of Medical Textile



Importance of Medical Textiles

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- Meditech is a key to Health, Safety, Hygiene, most important for any country
- In developed countries an ageing population necessitated better medi-care
  - In Europe 41% of the population is above 60 in 2007, compared to 22% in 1980.
- World population is growing at CAGR of 1.14%
- Developing countries are improving health & hygiene standards, supporting meditech growth

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Importance of Medical Textiles

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- Attitudes to health & changes in standard of living across the developing markets fuel growth
- Increased share of non-woven brought about by benefits of performance, convenience and disposability. More than 70% is Non-woven
- Product innovation brought about by leading brands across the globe has ensured better usage & growth
- Medical tourism is projected to touch USD 1.0 bil market in India by 2012. 1 million health tourist per annum are expected to contribute USD 5 bil to the economy.

Meditech - Global Scenario

- Consumption of fibre into Medical Textiles amounted to 1.5 Mil Tons valued at USD 5.4 billion in 2000
- With a CAGR of 4.5% it is to reach 2.4 Mil Tons valued at USD 8.2 billion by 2010. (source DRA)
- Meditech forms 9.5% of the total technical textile market
- Hygiene market share is 33% of deliveries amounting to 497,900 tons in 2006
- Medical/Surgical had a growth rate of 25.1% in 2005

Market Segmentation : Usage pattern

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Matured / Developed Markets

- US, EU, Canada
- Japan, Korea, Taiwan, Singapore, Hong Kong
- Australia / New Zealand

Growing / Developing Markets

- China
- South East Asian countries like Thailand, Indonesia, Malaysia, Philippines

Nascent / Still Under developed Markets

- Indian subcontinent
- Middle east / North Mediterranean Africa
- Latin American countries

Major Global Players In Medical Textile Market

Company	Product Area
Procter and Gamble (Worldwide)	Diapers, Feminine Hygiene, Adult Incontinence, Wipes
Kimberly Clark/Scott (Worldwide)	Diapers, Feminine Hygiene, Wipes, Adult Incontinence, Medical Textiles
Johnson & Johnson (Worldwide)	Feminine Hygiene, Wipes, Adult Incontinence , Medical Products
SCA Hygiene Products (Europe/worldwide)	Feminine Hygiene, Wipes, Adult Incontinence
Mölnlycke Health Care (Europe/ worldwide)	Medical and Hospital Textiles
Baxter (US)	Medical Textiles
Smith & Nephew (Worldwide)	Medical Products
Lehm and Fink (US)	Wipes
Uni-Charm (Japan)	Diapers, Feminine Hygiene, Adult Incontinence
Kao (Japan)	Diapers, Feminine
Paragon (US)	Diapers
DuPont (Worldwide)	Disposable Medical Clothing
3M	Disposable Medical Clothing, Surgical Dressings

Indian Scenario

- Indian Meditech data has been collated along with FICCI task force
- The market size figures through purchased web reports vary widely and hence need authentication through fresh survey
- Growth in Indian market is higher than world market @ 18-20% p.a at present level.
- The Non-implantable market size is approx 57300 TPA
- The Gowns and Drapes market size is approx 9000 TPA

Indian Scenario

- In Non implantable the scenario is as follows
  - Supplies are mostly from unorganized sectors concentrated in Rajapalayam, Kanth and Ahmedabad in woven non implantable
  - Datt Medical is a prominent exporter from India. Premier Enterprises, Supreme Bandages, Arumugaperumal, Shriram Mediproducts are others. **They are exporting almost all their produce. We should ask ourselves why?**
  - World leaders, Smith and Nephew, J and J and KOB have set up facilities for certain products for export and domestic usage
  - **The irony is that there is negligible nonwoven usage where as the world usage is otherwise**
  - Ginni has started spunlace nonwoven unit as well as converted surgical non implantables

Indian Scenario

- For Health Care products the scenario is as follows
  - Ahlstrom has incorporated it's subsidiary, Ahlstrom Fiber Composites India Pvt Ltd for manufacturing medical technical textiles in India at Mundra SEZ with investment of Euro 38 Million. Capacity 10000 TPA of meditech nonwoven
  - Du Pont India is supplying nonwoven meditech fabrics for thje last 5 years to major converters of gowns and drapes
  - Woven products are from fragmented sources around the country and form the bulk usage but decreasing due to tech superiority of barrier properties of nonwoven
- For Implantables
  - J & J are the market leaders
  - Sutures India, Surgiware and few others
- Chinese imports increasing and mostly in nonwoven

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Meditech - Global Vs Indian Scenario

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Non-woven – Global vs Indian Scenario

S.No.	Particulars	India	China	W. Europe	N. America	World
		Developing	Developing	Developed	Developed	Developing
1	Per Capita NW Consumption (Kg)	< 0.001	0.6	3	4	0.7
2	Disposable Share (%)	33	30	63	65	55
3	Durable Share (%)	67	70	37	35	45

- Non-woven particularly spun lace technology has been the major technological innovator for meditech product.
- Gini , Supreme & Alpha have commissioned Spun lace plants

Global vs. Indian – Reason for difference

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Global	Indian
Positives • Cultural - Disposability - Hygiene • Better Technology – HE • FMCG Players Driven • Huge Retail Sector • Government Legislation	**Positives** • Low cost producer • Raw Material availability – VSF,PSF, Cotton • Mid-segment Population • Export Potential • Technical manpower
Limitations • Higher cost of production • Saturated Markets	**Limitations** • Less Hygiene consciousness, • Less Tilt towards Disposables • Lack of Intensive Marketing • Lack of Converters • Price Sensitive-domestic • IP /BIS standards do not mention nonwoven products

Specific Meditech Applications

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- Four Major Application Heads identified
  - Non- Implantables
  - Healthcare Products
  - Implantables
  - Extra Corporeal
- All applications have extensive usage and are in use in India
- In Health care products, predominantly woven cotton cloth is in use which involves laundry and is not as effective
- Taskforce report contains details of all except Extra corporeal as these are owned as patents by International mfrs

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Fibre /Fabric/Application- Non-implantable

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Fibre Type	Fabric Structure	Applications
Cotton, viscose, lyocell	Nonwoven	Absorbent pad
Alginate fibre, chitosan, silk, viscose, lyocell, cotton	Woven, Nonwoven , knitted	Wound-contact layer
Viscose, lyocell, plastics film	Woven, nonwoven	Base material
Cotton, viscose, lyocell, polyamide fibre, elastomeric-fibre yarns	Woven, Nonwoven , knitted	Simple non-elastic and elastic bandages
Cotton, viscose, lyocell, elastomeric-fibre yarns	Woven, Nonwoven , knitted	High-support bandages
Cotton, viscose, lyocell, elastomeric-fibre yarns	Woven, knitted	Compression bandages
Cotton, viscose, lyocell, polyester fibre, polypropylene fibre, polyurethane foam	Woven, nonwoven	Orthopaedic bandages
Cotton, viscose, plastics film, polyester fibre, glass fibre, polypropylene fibre	Woven, Nonwoven , knitted	Plasters
Cotton, viscose, lyocell, alginate fibre, chitosan	Woven, Nonwoven , knitted	Gauze dressing
Cotton	Woven	Lint
Viscose, cotton linters, wood pulp	Nonwoven	Wadding
Polyactide fibre, polyglycolide fibre, carbon	Spunlaid, needle-punched nonwoven	Scaffold

Fibre/Fabric/Application – Healthcare/Hygiene

Fibre Type	Fabric Structure	Applications
Cotton, polyester fibre, polypropylene	Woven , nonwoven	Surgical gowns
Viscose, PP, PSF	Nonwoven	Surgical caps
Viscose, polyester fibre, glass fibre	Nonwoven	Surgical masks
Polyester fibre, polyethylene fibre	Woven, Nonwoven	Surgical drapes, cloths
Cotton, polyester fibre, polyamide fibre, elastomeric-fibre yarns	Knitted	Surgical hosiery
Cotton, polyester fibre	Woven, Knitted	Blankets
Cotton, Poly cotton, Poly viscose	Woven	Sheets, pillowcases
Cotton, poly Cotton, Poly viscose	Woven	Uniforms
Polyester fibre, polypropylene fibre	Nonwoven	Proactive clothing, incontinence, diaper/sheet, coverstock
Superabsorbent fibres, wood uff,	Nonwoven	Absorbent layer
Polyethylene fibre	Nonwoven	Outer layer
Viscose, lyocell with polyester blend	Nonwoven	Cloths/wipes

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Fibre/Fabric/Application Implantable

Fibre Type	Fabric Structure	Applications
Collagen, catgut, polyglycolide fibre, polylactide fibre	Monofilament, braided	Biodegradable sutures
Polyester fibre, polyamide fibre, PTFE fibre, polypropylene fibre, polyethylene fibre	Monofilament braided	Non-biodegradable sutures
PTFE fibre, polyester fibre, silk, collagen, polyethylene fibre, polyamide fibre	Woven braided	Artificial tendon
Polyester fibre, carbon fibre, collagen	Braided	Artificial ligament
Low-density polyethylene fibre		Artificial cartilage
Chitin	Nonwoven	Artificial skin
Poly (methyl methacrylate) fibre, silicon fibre, collagen		Eye contact lenses and artificial cornea
Silicone, polyacetyl fibre, polyethylene fibre		Artificial joints/bones
PTFE fibre, polyester fibre	Woven, knitted	Vascular grafts
Polyester fibre	Woven, knitted	Heart valves

Fibre/Fabric/Application - Extracorporeal

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Fibre Type	Application	Function
Hollow polyester fibre, hollow viscose	Artificial kidney	Remove waste products from patients blood.
Hollow viscose	Artificial liver	Separate and dispose of patients plasma and supply fresh plasma
Hollow polypropylene fibre,hollow silicone membrane	Mechanical lung	Remove carbon dioxide from patients blood and supply fresh oxygen

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Medi-tech requires Fibre attributes of……

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- Purified and Hygienic
- Bio – degradable
- Fast & Highly absorbent
- Wicking performance
- Barrier to percolation
- Good Insulation
- Good thermal stability

- Soft feel
- Excellent drape ability
- Breathability
- Static Dissipation
- Engineered Specialties

  -Anti-bacterial

Standards for Meditech

- The taskforce had decided to have standards for all classes in Non Implantables and Levels in Health Care products.
- Standard for Non – Implantables are furnished in Non Implantables Dutt.doc
- Most applications have a mention in IP and BP
  - Standards are for woven fabrics only, Nonwoven is not mentioned as a product option

Issues of Concern & Recommendations

Birla Cellulose

- Indian Medical Textile Industry is highly fragmented and standards are not followed
- Majority of buyers are also not aware about the international standards and they go for low cost product
- Strong regulatory body need to be in place to standardize and regulate the product.
- Awareness creation among manufacturer and buyer
- Imports are happening for different product mainly which need to be restricted by giving same level product.
- Discussed with Asst Drug Controller General of India about regulatory aspects

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Issues of Concern and Recommendations

Birla Cellulose

- As in **Drug and Cosmetic Act of India, Part XII, Rule 124, 2 (c)** , any standard finding a mention in other listed Pharmacopoeias would be applicable for Indian Pharmacopoeia users. This has facilitated the manufacture and sale of meditech products in India wherever other Pharmacopoeia we can quote.
- For Health care products, no standards are in place. Standards have to be approved by BIS and thereafter IP has to do necessary amendments. Till such time there is no restriction for usage in any manner
- In nonimplantables, BIS standards as well as IP only mentions woven products and hence all hospitals are not encouraging better nonwoven products
- All standards for Non-implantables should have Woven & Nonwoven both as product option; and should thus find a place in govt. tenders

Market Size

1) Gauze

S. No	Market	Production TPA	Remarks
1	Rajapalayam	**36000**	· 55,000 looms 25gsm · 35% Export 65% Cap. utilization
2	Kanth	**7200**	· 25,000 looms · 22 gsm · All Domestic ·
3	Ahmedabad	**1800**	· 5,000 looms · 25 gsm · All Domestic (65% utilization)
4	Organised	**7200**	· 500 high speed looms · 23 gsm · All export 90% utilisation
	Total	**52200**	

2) Bandages : The market is dominitaed by organised players : Datt, J & J, Smith and Nephew, KOB, Sabberwal

Product : 75 gsm Market size : **4800** TPA

3**) Orthopeadic Rolls** : The market is dominitaed by organised players : J & J, Smith and Nephew

Product : 100 gsm Market size : **300** TPA

Health Care Products – Market Size

Gowns

	Product	Consumption TPA	Assumptions
1	Linen - Woven	**8000**	Hospital beds per thousand population – 1.11. (Ernst and Young)· 11.0 lakh hospital beds approx in India · 30 wash cycles · 4 Gowns per bed and one cycle is 3 days · 4 sq m per gown · 130 gsm approx · Number of gowns per annum -17600 lakhs
			If single use gowns replace woven – linen, then the multiplying factor is 30 wash cycles but only 65 gsm.
2	Single use - Nonwoven	**1000**	· 4 sq m per gown · 50/65 gsm · Market info base
	Total	**9000**	

How Birla Cellulose can support

- Development of product at R&D center and with associate with existing fiber of viscose and excel
- Continuous development of entire value chain by BC support as per the Global trends in Medical Textiles
- Trial and all relevant test during development will be taken care by BC.
- New fiber coming: Antibacterial, Mosquito Repellent which can be tried in product development and seeding
- Awareness creation among buying community
- Branding support
- Support with extensive marketing network which is already working to expand application of fiber in Medical Textile
- Technical support for product perfection and logistic support at vendor place.

Contacts

If you want to know more about Birla Cellulose or you want to get associate in Medical Textile, you may contact at:

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Thanks for the Attention

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