Complete Technology of Nonwovens Fabrics, Carry Bags, Composites, Geotextiles, Medical Textiles, Fibres, Felts, Apparels, Spunlace And Absorbent Nonwoven

INTRODUCTION

Applications
Hygiene
Medical
Filters
Geotextiles
Other
Staple nonwovens
Spunlaid nonwovens
Air-laid paper
Other
Bonding
Disposability
Medical
automotive applications
Clothing
Personal care & Hygiene
Home furnishings
Industrial/Military

APPLICATIONS OF TEXTILES IN AGRICULTURAL AND HORTICULTURAL

Characteristics of agrotextiles
Benefits of applying agrotextiles
Raw material requirement for making agrotextiles
Indian market scenario for potential agrotextiles
Techniques of producing agrotextile products
Weaving and woven product
Knitting
Nonwovens
Classification of Agrotextiles
Agrotextile products
Agricultural applications
Horticultural applications
Protected Agriculture
Greenhouse
Characteristics of greenhouses
Types of greenhouse structures
Hoop house
The arch
The gable
Greenhouse covering
Protective screen fabrics
Shade cloth
Solar and thermal screens
Insect screen

TECHNOLOGY OF NON WOVENS (THERMAL BONDING)

Calender Bonding
Type of Loading
Top and bottom rollers at kept at an angle
Top roller is made slightly convex
Thermo hydrein calender by Ramisch Kleinwefers
'S' roll by Andritz Kusters
Preheating
Area Bonded Nonwovens
Bonding with low melt fibre
Calender Roller Pressure
Binder fibre concentration
Temperature
Material Speed
Base Fibre Properties
Tyre of binder fibre
Quench Rate
Single nip and double nip
Low melt monocomponent fibres
Bicomponent fibres
Islands in Sea bicomponent
Segmented pie structure
Thermal Bonded Cotton nonwovens
Area Bonded
Point bonded cotton nonwovens
Point Bonded Nonwovens from synthetics
Fibre Orientation
Bond point Geometry
Process Parameters
Mechanism of Breakage
Morphology of Fibre
Computer Simulation
Testing Conditions
Applications
Belt Calendering
Embossed calender bonding
Through Hot Air Bonding
Struto Technology
Air laying
Fibre properties and process parameters
Applications
Applications
Radiation Bonding

DEMANDS OF NON-WOVENS IN APPAREL INDUSTRY

Overview of nonwovens
Official ISO and CEN definition of nonwovens
Global market for nonwovens
Indian market for nonwovens
Feasibility of nonwovens in apparel sector
Practical applications of nonwoven in apparels
Nonwovens for medical apparel

USES OF YARNS IN GEOTEXTILES AND NONWOVEN

Geotextiles
Classification of geotextiles
Woven geotextiles
Knitted geotextiles
Nonwoven geotextiles
Yarn manufacture
Extrusion of filaments, tapes and films
Basic forms
Monofilaments
Multi filaments (yarns)
Tapes and weaving film
Yarns prepared from films
Additives
Physical properties
Raw material
Natural fibres for geotextiles Jute
Flax/coir
Coconut (Coir) Matting
Cotton
Hemp
Straw
Composite/synthetic materials for geotextiles
Yarns made from high performance fibres
Kevlar
Twaron and Technora
Application areas
Concrete reinforcement
Masonry reinforcement
Blast mitigation
Geotextiles
APPLICATIONS OF AEROGEL IN TEXTILES

Overview of aerogel
Properties
Method of manufacturing
Applications in textiles
Insulating textiles
Green building
Aerogels in intelligent textile structures
Antibacterial textiles
Silica Biopolymer hybrids for medical textiles
Flame retardant textiles
Carbon nanotube aerogels

AUTOMOTIVE SEAT BELT FABRICS

Literature survey
Pe requisites of seat belt
What are seat belts?
Force acting on passenger during accident with and without seat belt
Seat belt formation
Defects in seat belts and their remedies
Experimental work
Raw material use
Material used for warp
Material used for weft
Machine used for webbing seat belts warping machine
Weaving machine (Needle loom)
Processing Chemical used for nylon seat belt sample
Results and discussion

BATT FORMATION IN NONWOVENS: METHODS, MERITS AND MEASURES

Merits and limitations of nonwovens against wovens
Wet laid nonwovens
Raw materials
Method of manufacture
Process control measures
Dry laid nonwovens
Major raw materials
Batt formation
Opening and mixing
Batt formation involving carding
Parallel laying
Card-crosslapping
Batt uniformity
Continuous volumetric feed
Weight control
Autoleveller
Carding
Production rates
Feed Roller
Card clothing
Dust removal
Carding quality
Process control and maintenance
Random Card
Process control
Crosslapping
Profiling systems
Web Drafting
Spunbonding
Batt manufacture
Major applications
Meltblown nonwoven
Process Checkpoints

DETAILED PROCESS OF SPUNBONDED FABRICS FROM RECYCLED PLASTICS

Primary Study
Plastic nonwoven production by thermal bonding using heated calenders
Experiment
Materials tested, results and discussion
Optimum Bond Strength
Determination of the optimum conditions of production of technical nonwovens out of extrusion continuous filament yarns (before bonding)
Independent variables
Experimental analysis

ENERGY SAVING POTENTIALS IN THERMAL NONWOVENS PROCESSES

JUTE APPLICATION IN GEOTEXTILES

Benefits of using jute geotextiles
Types of jute geotextiles
Open Meshjute generation Application areas
Woven jute geotextile Application areas
Nonwoven jute geotextile
Application areas for jute geotextiles
Soil erosion control
Erosion control applications
Agro plant mulching
Reinforcement
River & canal bank protection
Where applicable
Why applied
Product specification
Rural roadpavement
Product specification
Separation
Filtration & drainage
Technical functions
Limitations of jute geotextile

LYOCELL: A HIGH PERFORMANCE FIBRE FOR NONWOVENS

Properties of Lyocell
Courtaulds Lyocell Process
Lyocell processing
Fabric properties
Spun lacing
Needle punching
Latex bonding
Air laying
Wet laying
Thermal bonding
Finished product benefits
Advantages of Lyocell nonwovens

MANUFACTURING OF NONWOVEN COMPOSITES FROM RECLAIMED FIBRES

Fibre and textile waste utilisation
Why composites materials?
Methodology
Collection of Waste
Raw material preparation
Web formation
Chemical bonding process
Composite development
Hand laminating
Resin injection techniques
Hot press methods
Filament winding
Pultrusion
Conclusion
MATERIALS USED IN CASUAL AND SPORTS WEAR TEXTILES

Textile treatment with PCM microcapsules
Function of textile structure with PCM
Applications of textiles containing PCMs
Medical textiles
Experimental Analysis Methods
Materials
Lower sensor (near the human body)
Laboratory Testing
Determination of fabric weight
Determination of thermal resistance
Results and discussion
Effect of different concentrations of microcapsules on thermal resistance

NEEDLEPUNCH FELTS

Performance of heat resistant polymer fibres
Applications
Cement clinker cooler plants
Gypsum
Lime kilns
Production of insulating materials on mineral basis
Construction industry
Coal fired boilers
Household waste incineration
Waste incineration at clinics hospitals
Properties of Fibre
Commercial heat resistant fibres
TFA Toray Fluorofibers (America) Teflon
Fratelli Testori

NONWOVEN INTERLININGS IN APPARETS

Interlining
Interlining types
Knitted Interlinings
Nonwoven Interlinings
Water Repellent Interlining
Embroidery backings
Hair Interlinings
Fusing recommendations
Machine check up
Nonwoven fusible interlinings
Random
Parallel
Cross
Composite
Fusing procedure
Functions of nonwoven interlinings
Interlining fabric for shaping and support
Nonwoven interlining for stabilising and/or stiffening
Nonwoven interlinings for providing bulk
Properties of nonwoven interlinings
Functional elements of nonwoven interlinings

**NATURAL FIBRES IN AGROTEXTILES**

Need for agrotech products and their application arena
Agrotextiles
Fibres for agrotextiles
Composition and properties of common material fibres used in agrotextiles
Jute
Use of jute in agricultural textiles
Area wise applications of jute agrotech products are given below
The following are the coir based products used in agriculture
Wool
Use of wool in agricultural textiles
Other natural fibres

**NONWOVENS IN PACKAGING, MEDICAL, AGRICULTURE AND OTHER FIELDS**

Application of nonwoven in agriculture and horticulture
Application of nonwoven as crop cover fabric in agriculture
Application of nonwoven as blanket fabric in agriculture
Mulching fabric
Application of nonwoven in greenhouse shading
Nonwoven materials for home furnishing and furniture industry
Furniture construction
Bedding construction
Napkins and Tablecloth
Wallcover
Application of nonwoven in protective clothing
Spunlace Nonwovens in Motor Sport Racing Suits
Spunlace Nonwovens in Fire Fighter Suits
Nonwoven for military/police
Spunlace nonwovens used in cooling technology
Nonwoven in packaging
Luxury packaging
Food packaging
Nonwoven in wiping products
Key requirements for wipes

NONWOVEN INDUSTRY (CARRY BAGS, SURGICAL GOWN, FACE MASK, ROUND CAPS, SHOE COVER, GLOVES)

Introduction
Printed Nonwoven Punch Bag
Nonwoven Tote Bag W/Zipper
Foldable Nonwoven Tote Bag
Specifications
Features of the Non Woven Shopping Bag
Specifications
Products Applications
Plant Economics of Nonwoven Indi Products (Carry Bags, Surgical Gown etc.)
Plant & Machinery
Fixed Capital
Raw Materials
Total Working Capital/Month
Total Capital Investment
Turn Over/Annum
Suppliers of Plant and Equipments

NONWOVEN FABRIC PRODUCTION

Introduction
Some Prominent Products Made from Nonwovens
Fully automatic nonwoven fabric production line detail
Production process
Process Flow Chart
Spunbond Process
Melt blown process
Water jet Process
Plant Economics of Spun bonded non woven fabric production
Plant & Machinery
Fixed Capital
Raw materials
Total working capital/month
Total capital investment
Turn over/Annum
Suppliers of Plant and equipments
NONWOVENS FOR MEDICAL TEXTILES

Introduction
Fibers used
Cotton
Medical Textiles
Viscose
Wood Pulp
Cotton Linters
Medical Textiles
Implantable Medical Textiles
Non-implantable materials
Extra Corporeal Devices
Mechanical Lung
Health Care Textiles
Products used for medical surgical dressings
Wound care products
Bandages
Pressure Garments for Hypertrophic Skin
Gauze
Plaster
Other Dressings

PROTECTIVE APPARELS MANUFACTURE

Materials
Method
Classification
Fire protection
Heat and cold protection
Mechanical impact protection
Ballistic protective helmet
Biological protection
Electrical protection
Radiation protection
Nuclear Radiation Protection
UV Radiation Protection
Applications
Conclusion

PROCESSING, FINISHING LINES AND NON WOVENS MACHINERY

Major Line Components
Continuous Processing Lines and Finishing Systems for Loose Stock fibres, Tops and Tows
Drying line for bleached and dyed fibres
Raw wool scouring line
Anti felt finishing line for wool tops
Impregnation lines for tuffed and needle felt carpets
Finishing Lines for Woven and Knit Goods
HT Steamset heatsetting line for tubular goods
Latest innovations from the textile division
Fleissner machinery for the nonwovens industry
Fleissner as system supplier
Fleissner Aquajet spunlace system for spunlacing of Nonwovens
Large width lines
Fleissner Leanjet for reduced production capacities
Fleissner Aquajet Lines for bonding and softening of spunbonds
Roofing lines

SEAM STRENGTH OF GEOTEXTILES

Seam types, appurtenances & efficiencies
Geotextile
Determining seam strength requirement
Experimental
Nonwoven
Slit film woven
Monofilament woven
High strength PET woven
Threads
Stitch density
Results and discussion
Wide width tensile strength of Geotextile Fabric Sample Nonwoven
Conclusion

SPUNIACE NONWOVENS

Bonding & finishing with chemical binders & chemicals
Binding agents & binder dependent nonwovens characteristics
Application methods
Liquid binders & foamed binders
Application of liquid binders
Wet in wet application
Application of foamed binders
Wet in wet foam application
Curing of binders
Binder migration
Migration is subject to various influences
Chemical methods
Printing, printbonding
Gravure printing
Round screens
Chemical finishing/dyeing
Dyeing
Chemical finishing
Bonding of spunlace nonwovens by hot air
Thermofusion with hot air
Heatsetting

SURGICAL DRESSES (DOCTOR'S DRESS)

Introduction
Market Potential
Process of Manufacture
Quality Control and Standards
Production Capacity (per annum)
Motive Power
Pollution Control
Energy Conservation
Financial Aspects
Fixed Capital
Working Capital (per month)
Total Capital investment
Machinery Utilisation
Financial Analysis
Cost of Production (per year)
Turnover (per year)

TECHNOLOGY OF ABSORBENT NONWOVENS

Definition of nonwoven
High absorbent nonwovens
Raw materials
Absorption mechanism
Production process
Suspension polymerisation
Solution polymerisation
In-situ polymerisation
In situ process vs conventional process
Conventional and formation from solutions polymerisations
Preparation of Monomer solution
Cellulose fibres
Air laid
Limitations
Conclusion
NONWOVEN CARRY BAGS

Introduction
Printed Nonwoven Punch Bag
Nonwoven Tote Bag W/Zipper
Foldable Nonwoven Tote bag
Specifications
Nonwoven Shopping Bag
Specifications
Products Applications
Market potential for the NW Automatic bag
Assumption for this project
Investment and profitability Analysis
Investment
Non woven Materials are used in numerous Applications including
Fully Automatic Nonwoven Bag Making Machine
Technical Specifications
Fully Automatic Multi functional Nonwoven Bag Making Machine
Plant Economics of Non woven carry/shopping Bags
Fully Automatic Multi functional nonwoven Bag Making Machine Technical specifications
Plant & Machinery
Fixed Capital
Raw Materials
Total working capital/Month
Total capital investment
Turn over/Annum
Details of the Name of Supplier