

COMPETENCE CENTRE FOR NONWOVENS
AT BTRA

- ✓ Pilot plants facilities
- ✓ Projects carried out in nonwovens
- ✓ Affiliation to nonwoven agencies
- ✓ Properties tested at BTRA for nonwovens
- ✓ Special instruments available for testing nonwovens & polymers
- ✓ Nonwovens tested at BTRA as per INDA/EDANA & other National/International standards
- ✓ INDA / EDANA test methods followed at BTRA



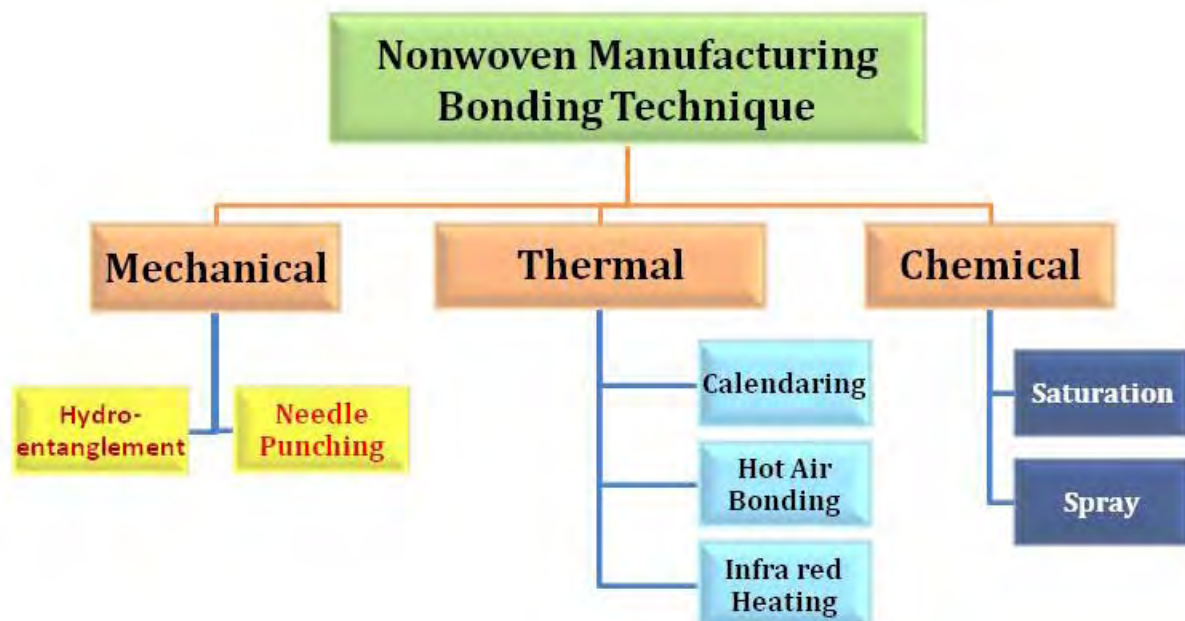
PILOT PLANTS FACILITIES

NON- WOVEN PILOT PLANT

- ✓ **NEEDLE PUNCHING: DILO, GERMANY**
- ✓ **CROSS LAPPER: DILO, GERMANY**
- ✓ **ROLLER CLEARER CARDS: CORMATEX, ITALY**
- ✓ **HOT AIR BONDING MACHINE: INDIGENOUS**
- ✓ **HYDROENTANGLEMENT: FLEISSNER**

CHEMICAL PILOT PLANT

- ✓ **POWDER COATING**
- ✓ **THERMAL CALENDERING [Infrared Heating]**
- ✓ **STENTER**
- ✓ **CALENDERING FOR SATURATION BONDING**
- ✓ **DYEING & PRINTING**



PROJECTS CARRIED OUT IN NONWOVENS

- ❖ Development of low cost nonwoven fabric for geo-textile and other application using needle punching and thermal bonding techniques (1987-1989)
- ❖ Development of nonwovens from cellulosic fibers (1989-1990)
- ❖ Design and development of nonwoven geo-composite canal liners (1991)
- ❖ Development of structure needled jute based nonwoven carpets (1997)
- ❖ Techno-economic feasibility and product profile on jute based nonwoven products (1999-2000)

AFFILIATION TO NONWOVEN AGENCIES

- BTRA is a member of INDA - **Association of the Nonwoven Fabrics Industry, USA**
- BTRA is a member of EDANA - **European Disposables and Nonwovens Industry Association, Belgium**
- BTRA is member of Nonwoven Sectional Committee (TX 30) of **Bureau of Indian Standards, New Delhi**



**PROPERTIES TESTED AT BTRA
FOR NONWOVENS**

- ✓ Abrasion resistance (Flat / Flex)
- ✓ Absorbency
- ✓ Air Permeability
- ✓ Bending Length
- ✓ Breaking strength: Wide width tensile
- ✓ Bursting Strength (Ball & Diaphragm)
- ✓ Compressional Recovery
- ✓ Dynamic Loading
- ✓ Electrical Resistivity
- ✓ Electrostatic charge
- ✓ Flammability
- ✓ Grab strength - Single rip / double rip
- ✓ GSM
- ✓ Hexapod Tumbler Test
- ✓ Impact Resilience test
- ✓ Liquid Strike Through Time
- ✓ Lisson Test
- ✓ Peel bond strength
- ✓ Pilling
- ✓ Pore Size of Filters
- ✓ Thickness
- ✓ Trapezoidal Tear strength
- ✓ Water Permeability (Through-Plane)



SPECIAL INSTRUMENTS AVAILABLE FOR TESTING NONWOVENS & POLYMERS

- ✓ FTIR SPECTRPHOTOMETER
- ✓ DSC & TGA THERMOGRAPH
- ✓ X-RAY DIFFRACTROMETER
- ✓ HONESTOMETER (static charge)
- ✓ ELECTRICAL RESISTIVITY TESTER
- ✓ SCANNING ELECTRON MICROSCOPE
- ✓ ESTAMETER (static charge)
- ✓ LOI TESTER

ECO LAB

- ✓ HPTLC , AAS
- ✓ GC MS , TOC

PHYSICAL TESTING

- ✓ Universal Testing Machine [Tinius Olsen / Instron / STAR]
- ✓ Tensorapid
- ✓ UT3
- ✓ EDAX / SEM
- ✓ Martindale Abrasion cum Pilling Tester
- ✓ Mullen (Diaphragm) Bursting Tester
- ✓ Vibromat

CHEMICAL TESTING

- ✓ UV Weatherometer
- ✓ XENON Arc Light Fastness Tester
- ✓ Spray Tester and Others



NONWOVENS TESTED AT BTRA
AS PER INDA/EDANA & OTHER
NATIONAL/INTERNATIONAL STANDARDS

Filter (Woven, Nonwoven)

- ◆ Weight (GSM)
- ◆ Thickness
- ◆ Tensile Strength
- ◆ Pore Size
- ◆ Air Permeability
- ◆ Water Permeability
- ◆ Diaphragm/Ball Bursting strength

Floor Mats/Rugs/Carpets

- ◆ Weight
- ◆ Thickness
- ◆ Tensile Strength
- ◆ Abrasion Flat / Flex / Martindale / Taber
- ◆ Pilling - Martindale / Hexapod
- ◆ Colour Fastness by Light / Rubbing
- ◆ Colour Fastness – Acid / Alkali
- ◆ Dynamic / Static Loading
- ◆ Static Charge (Honestometer / Estameter)
- ◆ Hexapod Tumbler Test (H.T.T.)
Change in Structure / Color
- ◆ Lisson Test (Treading Wheel Test Apparatus)
- ◆ Pilling / Fuzing (Pilfuz Tester)
- ◆ Compressional Recovery
- ◆ Co-efficient of Friction

Wadding (High loft)

- ◆ Mass
- ◆ Thickness
- ◆ Compressional Recovery
- ◆ Air Permeability
- ◆ Cyclic Loading

Automotive

- ◆ Weight
- ◆ Thickness
- ◆ Tensile Strength
- ◆ Colour Fastness to Light (Xenon Arc)
- ◆ Colour Fastness to Rubbing
- ◆ Abrasion/Pilling - Flat / Flex / Taber / Martindale
- ◆ Resistance to Cold
- ◆ Resistance to H₂S
- ◆ Water repellency
- ◆ Seam strength
- ◆ Peel bond strength
- ◆ Flame spread rate
- ◆ Ageing test
- ◆ Cold flexibility
- ◆ Compression deflection
- ◆ Indentation – Static

Interlining/Cover stock

- ◆ Weight
- ◆ Thickness
- ◆ Tensile Strength
- ◆ Liquid strike through test
- ◆ Water absorbency as per EDANA
- ◆ Wicking Rate

Medical Textiles

- ◆ Weight
- ◆ Thickness
- ◆ Absorbency
- ◆ Liquid strike through test
- ◆ Wicking rate
- ◆ Water Vapour Transmission / Absorption
- ◆ Bacterial Filtration efficiency



INDA / EDANA TEST METHODS FOLLOWED
AT BTRA

Properties Tested	Description	WSP Method	ISO Reference
ABSORPTION	<ul style="list-style-type: none"> ➤ Nonwoven Absorption ➤ Rate of Sorption of Wiping Materials 	WSP 10.1 WSP10.2	9073-6:2000
ABRASION RESISTANCE	<ul style="list-style-type: none"> ➤ Inflated Diaphragm ➤ Flexing and Abrasion ➤ Double Rotary Platform ➤ Martindale 	WSP 20.1 WSP 20.2 WSP 20.4 WSP 20.5	
BURSTING STRENGTH	<ul style="list-style-type: none"> ➤ Diaphragm Burst ➤ Ball Burst 	WSP 30.1 WSP 110.5	
ELECTROSTATIC PROPERTIES	<ul style="list-style-type: none"> ➤ Surface Resistivity ➤ Decay 	WSP 40.1 WSP 40.2	
STIFFNESS	<ul style="list-style-type: none"> ➤ Cantilever Bending 	WSP 90.1	
PERMEABILITY	<ul style="list-style-type: none"> ➤ Air Permeability ➤ Liquid Strike-Through ➤ Water Vapour Transmission Rate 	WSP 70.1 WSP 70.3 WSP 70.4	9073-8:1995
REPELLENCY	<ul style="list-style-type: none"> ➤ Penetration by water (Spray Impact) ➤ Water Resistance (Hydrostatic Pressure) 	WSP 80.3 WSP 80.6	
TEAR STRENGTH	<ul style="list-style-type: none"> ➤ Elmendorf ➤ Trapezoid Tear ➤ Tongue Tear 	WSP 100.1 WSP 100.2 WSP 100.3	9073-4:1997
THICKNESS	<ul style="list-style-type: none"> ➤ Thickness ➤ Thickness of High Loft ➤ Compression and Recovery, High loft ➤ Thickness 	WSP 120.1 WSP 120.2 WSP 120.3 WSP 120.6	
WEIGHT	<ul style="list-style-type: none"> ➤ Mass per Unit Area 	WSP 130.1	9073-1:1989
TENSILE	<ul style="list-style-type: none"> ➤ Grab Tensile ➤ Strip Tensile 	WSP 110.1 WSP 110.4	9073-3:1989
BACTERIAL	<ul style="list-style-type: none"> ➤ Filtration Efficiency 	WSP 300.0	
SUPERABSORBENT MATERIALS	<ul style="list-style-type: none"> ➤ pH of polyacrylates (PA) Powders ➤ Residual Monomers ➤ Particle Size Distribution ➤ Mass Loss upon Heating 	WSP 200.2 WSP 210.2 WSP 220.2 WSP 230.2	17190-1:2001 17190-2:2001 17190-3:2001 17190-4:2001
GEOTEXTILES	<ul style="list-style-type: none"> ➤ Conditioning ➤ Bursting Strength ➤ Air Permeability ➤ Cantilever Stiffness ➤ Trapezoid Tear ➤ Force and Elongation Grab ➤ Breaking Force Strip ➤ Thickness ➤ Thickness of High Loft ➤ Mass per Unit Area 	WSP 3.0 WSP 30.0 WSP 70.1 WSP 90.1 WSP 100.2 WSP 110.1 WSP 110.4 WSP 120.1 WSP 120.2 WSP 130.1	ISO 554

