
TECHNOLOGY OF GLUE AND ADHESIVES WITH ADHESIVES BONDING AND FORMULATIONS

SILANCE COUPLING AGENTS
• What is a Silane-coupling agent
• How does a silane Coupling Agent Work
• Hydrolysis Considerations
• Selecting A Silane Coupling Agent
• Inorganic Substrate Perspective
• Selecting A Silane coupling Agent
• Polymer Applications
• Thermosets
• Urethanes
• Moisture Cureable Urethanes
• Epoxies
• Phenolics
• Thermoplastics
• Thermoplastic Condensation Polymers
• Polyolefins
• Selecting a Silance Coupling Agent
• Interphase Considerations
• Hydrophobicity and Wetting
• Chromatography
• Liquid Crystal Displays
• Self Assembled Monolayers (SAMs)
• Special Topics
• Dipodal Silance
• Linker Length
• Effect of Linker length on the separation of aromatic hydrocarbons
• Thermal Stability of Silance Coupling Agents
• Aqueous Systems & Water borne Silanes
• Masked Silances Latent Functionality
• Masked Silanes Moisture Triggered
• Masked Silanes Heat Triggered
• Coupling Agents for Metal Substrates
• Metals that form hydrolytically stable surface oxides e.g. aluminium, tin, titanium
• Metals that form hydrolytically or mechanically unstable surface oxides e.g. iron, copper, zinc
• Metals that do not readily form oxides, e.g. nickel, gold and other precious metals
• Metals that form stable hydrides, e.g. titanium, zirconium, nickel
• Difficult Substrates
• Applying Silanes
• Deposition from aqueous solution is employed for most commercial fiberglass systems
• Integral blend methods
• Anhydrous liquid phase deposition
• Chlorosilanes
• Applying Silanes
• Vapor Phase Deposition
• Spin-On
• Spray application

ADHESIVES BASED ON BIOBASED

• Protein Adhesives
• Soy Based
• Non-Cross Linked
• Covalently Cross Linked
• Other Proteins
• Casein
• Blood
• Hoof and Hide
• Biomass Aromatic Adhesives
• Tannin
• Lignin

DENTAL ADHESIVES

• Chemical composition
• Resin components
• Methacrylic acid (MA)
• Methyl methacrylate (MMA)
• Hema
• Met
• Aeta
• 10-MDP
• MAC-10
• Phenyl-P
• Di-Hema phosphate and Hema Phosphate
• Di-methacrylates
• (Meth) acrylamides
• Initiator systems
• Photo initiators
• Camphorquinone/co-initiator system
• 1-phenyl-1, 2 propanedione (PPD)
• Acylphosphine oxides
• Chemical initiators
• Inhibitors
• Solvent
• Water
• Ethanol
• Acetone
• Filter
• Specific ingredients
ADHESIVE BONDING OF THICK STEEL ADHERENDS FOR MARINE STRUCTURES

- Adhesive properties
- Durability in wet environments
- Resistance to elevated temperatures
- Bending behaviour of bonded panels
- Local behaviour of stiffener/plate attachment
- Elastic stress analysis

UNDERWATER REPAIR ADHESIVES

- Underwater FRP and Epoxies
- Underwater Bridge Pile and Pipe Repair
- North River Bridge, North Carolina
- Friendship Trails Bridge, Florida
- Underwater Pipe Wrapping/Curing
- U.S. Navy Propulsion Shaft covering Repair
- In-the wet Repair Factors
- Surface Preparation
- Electrolytic Corrosion
- Vacuum/Pressure Application for enhanced bond strength
- Cure Time
- DDG-1000 Composite Twisted Rudder (CTR)
- Underwater CTR Assessment and Repair Theory
- Single sided repair
- Taper Angle/Stope
- Material selection Precured versus Co-Cured Patch
- Co-Cure Pre-preg versus wet layup
- Application method
- Post Repair Assessment

POLYIMIDE STRUCTURAL ADHESIVE (SEMICRYSTALLINE)

- Experimental
- Synthesis
- Characterization
- Surface treatment
- Results and Discussion
- Thermal Stability
- Melt Rheology
Morphology of TPERBPDA-PA
Surface Preparation
Optimization of Bonding Process
Durability Studies on Lap shear Bonds
Effect of various solvents
Conclusions

THERMOPLASTIC COMPOSITES (NON-WOOD/WOOD)

Wood Thermoplastics
Thermoplastic Matrix Materials
Additives
Processing
Performance
Mechanical Properties
Durability
Markets and Future Trends
Nonwood Fibers in Thermoplastic Composites
Agricultural Fibers
Other Fibers
Bioplastics
PLa Manufacturing
Melt Processing of PLAs
Properties of PLAs
Thermal Properties
Hydrolytic Stability
Biodegradability
Mechanical Properties
SUSTAINABILITY
Polylactide Fiber Composites

ANALYSIS OF ADHESIVES

Technical for Analysis and Characterization
Average Molecular Weight and Molecular Weight Distribution
Gel Permeation Chromatography and Size Exclusion Chromatography
Vibrational Spectroscopy
Nuclear Magnetic Resonance Spectroscopy
Thermal Analysis
Differential Thermal Analysis
Differential Scanning Calorimetry
Dynamic Mechanical Thermal Analysis
Development of new adhesives
Conclusions
ADHESIVES FOR SPECIALITY APPLICATIONS

- Formulations of Quick Setting
- Underwater Adhesives
- High functionality liquid
- 2,4,6 Tri (dimethylamino methyl)
- Viscous liquid polyamide
- Beta (3,4-epoxy cyclohexyl)
- Cyanocrylic Acid Esters
- Water based special adhesive for high clay coated Boxes (Vinyl Alcohol)
- Water based water proof fibre drum adhesive (Vinyl alcohol/starch)
- Paper cone and paper tube adhesives
- Water-based adhesives for bonding paper cones (Protein)
- Water based tube winding adhesive (Dextrin)
- Water based tube winding Adhesive (Dextin)
- Water based tube winding adhesive (VA/Starch)
- Paper to Paper or Other Substrate Adhesives
- Water based adhesive for bonding paper to aluminium foil (Acrylic)
- Water based adhesive for bonding paper to aluminium foil (Acrylic/Vinyl acetate)
- Water based adhesive for bonding paper to aluminium foil (Butadiene-Acrylonitrile/Resin)
- Water Based adhesive for bonding paper to paper board (Resins/Styrenebutadiene)
- Water based adhesive for bonding paper to various substrates (Vinyl Acetate/Resin)
- Water based water resistant non-koll cross paste for paper (Vinyl alcohol)
- Water based high tack adhesive for heavy weight paper (Dextrin)
- Adhesives in the Electrical industry
- Electromagnetic Shielding

ADHESIVES FOR MEDICAL AND BIOLOGICAL FIELD

- Denture Adhesive cream
- Formulation
- Denture adhesive cream
- Denture adhesive powder
- Denture adhesive powder
- Refractory protective composition

ADHESIVES FOR NONWOVEN FABRICS

- Butadiene Copolymer Latexes
- Water based adhesive for bonding canvas to aluminium
• Water based adhesive for bonding saturated paper to nonwoven fabrics
• Water based adhesive for bonding nitrile and epichlorohydrin rubber to non-woven fabric
• Resin master batch
• Acrylic Polymers (Polyacrylates)
• Water based adhesive for bonding nonwoven fabric to fibre

METAL BONDING ADHESIVES

• Carboxy Modified Olefin Copolymer for Can Seams
• Aluminium to Steel Adhesive
• Casein

BONDING OF PLASTICS (ADHESIVES FOR PLASTICS)

• Monomer Phase
• Aqueous Phase
• Polyvinyl Acetal Adhesives
• Hot Melt adhesives
• metal Coatings
• Wood Sealer
• Textile Coatings

THERMOPLASTIC RESIN ADHESIVES

• Asphalt or Bitumen Adhesives
• Gas Tight Joints Cement
• Photographic & Optical Lenses Adhesive
• Coumarone Indene Resin Adhesives
• Wood flour to give a doughy consistency
• Pressure Sensitive tapes
• Linoleum Cement
• Coumarone Indene Resin Adhesives
• Adhesives for Linoleum
• Surgical Dressing Adhesives
• Moisture Vapour Resistant Film
• Vinyl to Fabric Adhesives
• Solution for Joining Cycle Tubes
• Shoe Adhesive
• Shellac adhesives
• Metal to Metal Adhesive
• Cement for porcelain & China
• Gum Arabic etc. Adhesives
- Postage Stamp Adhesive
- Water Resistant Glue
- Cellophane Adhesive
- Waxed Paper Glue

**ETHYLENE COPOLYMER HOT MELT ADHESIVES**

- Book Binding Adhesives
- Carton and Case Sealing adhesives
- Carpet application
- Shoe adhesives
- Pressure Sensitive Adhesives (PSA)
- Furniture Adhesives

**PLYWOOD GLUES**

- Experimental Procedures
- Materials
- Preparation of standard foamed glue mixes
- Plywood processing
- Evaluation of adhesive quality
- Modification and evaluation of soy protein based formulations of foamed plywood glues
- Statistical analyses
- Results and discussion
- Adhesive quality of standard foamed glue mixes
- Protein content based replacement of animal blood in foamed glues
- Adhesive quality of modified foamed glue mixes
- Cost comparisons of blood based and soy based modified glues
- Phenol formaldehyde resin preparation and tannin extract
- Lignin and glyoxalation of lignin
- Heat and pressure treatment of lignin
- Soy flour formaldehyde resin preparation
- Soy flour formaldehydelignin (or phenol) preparation
- Soy flour glyoxal preparation

**ADHESIVE BASED ON POLYURETHANE**

- Thermoplastic Composites (Nonwood/Wood)
- Formulations
- Manufacturing Process
- Plant Economics
ADHESIVE FOR PAPER BOARD

- Introduction
- Process & Formulations
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

ADHESIVE TAPE MANUFACTURING

- Introduction
- Process & Formulations
- Formulations
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

B.O.P.P. SELF ADHESIVE TAPES

- Introduction
- Process & Manufacture
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

CONSTRUCTION ADHESIVE
- Introduction
- Formulations with Manufacturing Process of Construction Adhesive
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

LATEX RUBBER BASED ADHESIVE
- Introduction
- Manufacturing Process
- Formulations and Raw Material
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

LIQUID ADHESIVE FOR CORRUGATED BOARD AND BOXES
- Introduction
- Formulations
- Manufacturing Process
- Plant Economics
- Plant & Machinery
- Fixed Capital
- Raw Materials
- Total Working Capital/Month
- Total Capital Investment
- Turn Over/Annum

PRESSURE SENSITIVE ADHESIVES FOR BOPP TAPES (ACRYLIC ADHESIVES)
TAPOICA STARCH ADHESIVE FOR CORRUGATED BOARD AND BOXES (IN POWDER FORM) (READY MIX)

VULCANISING ADHESIVE FORMULATION VULCANIZING RUBBER SOLUTION/CEMENT FOR AUTOMOBILE TYRES

WATER BASED LATEX ADHESIVES
• Formulations for Water Based Latex Adhesives
• Physical Contants
• Key Properties
• Process of Manufacture
• Plant Economics
• Plant & Machinery
• Fixed Capital
• Raw Materials
• Total Working Capital/Month
• Total Capital Investment
• Turn Over/Annum

SUPPLIERS OF PLANT AND MACHINERY FOR GUMS AND ADHESIVES