Products of PP&PDC

Ultra Marine Blue

Process	**Pilot plant for the production of Ultramarine Blue**
Area	**Inorganic Chemical**
	**Uses** **Commercially used in stereo chroming of paper hangings, calico printing, coloring printing inks, bluing linen and in cotton fabrics.** • **It is also used in the manufacture of paper, soap, paraffin candles, sugar, starch etc.** • **In paint industry it is used as a useful material in lime washes and in distemper paints.**
Salient Features	**The sulfur content of the product has been found lower than the imported one.**
Scale of Development	**The process is standardized at pilot plant scale**
Major Raw Materials	**China Clay, Sodium Carbonate and Sulfur.**
Major Plant Equipment/Machinery	• **Muffle furnace** • **ball mill** • **pot grinder** • **drier** • **sieve tray**
Details of specific application	**Bluing cloth, paper etc**
Status of Development	**Ultramarine blue is produced and field tested and ready for commercialization.**

Sunflower Oil

Process	**Pilot plant for the production of Sunflower oil**
Area	**Refining of crude oil for edible**
Uses	• **Sunflower oil is widely used as an edible oil in the developed countries.** • **The main advantage of sunflower oil is that it is cholesterol free and it has a high Vitamin E content.**
Salient Features	**The free fatty acid (FFA) content of the refined sunflower oil has been found to be around 0.2%, which is within the range of edible grade.**
Scale of Development	**The process is standardized at pilot plant scale (650L)**
	**Major Raw materials** • **The raw materials are sunflower seed, phosphoric acid, caustic soda and decolorizing chemicals.** • **Recently, sunflower seed is being cultivated in Bangladesh.** • **Other chemical constituents are available in the local market.**
Major Plant Equipment/Machinery	• **Mixer (650 lit)** • **Vacuum concentrator (1000 kg)** • **Filter press** • **Neutralizer** • **Steam generator etc.**
Details of specific application	• **It can be used for shallow and deep fat frying.** • **A number of margarine and spreads that are rich in sunflower oil are being manufactured in various countries**
Status of Development	**The process is patented and leased out to Amrita food product for commercialization.**

Liquid Glucose

Process	**Pilot plant for the production of Liquid Glucose**
Area	**Substitute of sugar**
Uses	• **Liquid glucose is mainly used as sweetener in food and pharmaceuticals. It is a high viscous syrup.** • **Liquid glucose is also used as substitute of sugar.** • **It is cheaper than sugar.**
Scale of Development	**The process is standardized at pilot plant scale**
	**Major Raw Materials** • **The main raw material for the production of liquid glucose is starch, which can be obtained from sweet potato, potato, maize, cassava etc.** • **The production also needs a small amount of Hydrochloric acid, which is available in the local market.** • **Sweet potato and potato is abundantly available in Bangladesh.**
Major Plant Equipment/Machinery	• **Reactor (700 Liters)** • **Dehydration kettle** • **Filter press (18"x18")** • **Water de-ionization system** • **Steam generator etc.**
Details of specific application	**Sweetener for medicine and food**

Cotton Stalk Pulp

Process	**Pilot plant study for the production of cotton stalk pulp by Soda- AQ process**
Area	**Pulp and paper**
Uses	**Cotton stalk pulp can be used for the production of writing paper, printing paper, Newsprint, board, bag, packaging paper and for different types of specialty paper.**
	**Salient Features:** **Bamboo is the main fibrous raw material used in Bangladeshi paper industries. The agriculture residues have become important as raw materials for pulp production with the scarcity of bamboo. Cotton stalk is byproduct of the cotton cultivation. It is rich in cellulose. High quality writing grade paper and other types of paper can be made from cotton stalk pulp.**
Scale of Development	**The process is standardized at pilot plant scale**
Major Raw Materials	**The main raw materials are cotton stalk, caustic soda and anthraquinone, which are locally available.**
Major Plant Equipment/Machinery	• **Chipper** • **Digester (500 kg)** • **Refiner** • **Beater** • **Washing vessel** • **Steam generator etc.**
Status of Development	**The process is standardized at pilot plant scale**

Aluminium Block

- Developed from discarded computer hard disk.
- Eco-friendly and commercially viable e-waste management.
- The recovered metal scraps from discarded hard disks were melted and cast in suitable shapes.

Raw Materials: Discarded Computer Hard Disks from local scrap market.

Chemical Composition:

- Aluminium (Al) 85.7 %
- Silicon (Si) 9.3 %
- Copper (Cu) 2.5 %
- A trace amount of Ferrous, Zinc and Magnesium.

Hydroxylapatite (HAP) from Fish Bone

- Hydroxylapatite (HAP) produced from treatments of a locally available biological waste fish bone.
- Biomaterial with biocompatibility, bioactivity, osteoconductivity, non toxicity and non inflammatory .

Raw Material: Fish bone of Rui Fish scientifically known as *Labeo Rohita*

Typical Applications:

1. As implant materials for orthodontics treatments.
2. Coating material for other bio-implants like bone tissue engineering, bone void filler.
3. Curing aid for dental cosmetics (toothpaste) and osteo- drugs.
4. As heavy metal absorbent in ETP treatment plants.

Chemical Composition:

- CaO -57 %,
- P_2O_5 -(%) 42 %
- other impurities of MgO - 0.92% and SO_3 -0.40%

Yield: 40% HAP from fish bone

Hardened and carburized steel for

Bank Vault Door

- Used in bank vault doors for security deposits in burglary protection.
- This Mild Steel Plate has been hardened by Carburizing Heat Treatment.
- High hardness.
- Designed to provide deposits and storage for cash, jewelry and miscellaneous valuables.

Jute-Polymer Composite

Features:

- Environmentally-friendly, fully biodegradable, abundantly available, non-toxic, non-abrasive, renewable, and cheap, and have low density.

- Higher Strength ,Stiffness, Better Thermal Stability.

Raw Materials :

- Treated nonwoven Jute Fiber
- Unsaturated Polyester Resin

Applications:

- Building and construction materials like particle Boards
- Packaging material and storage devices.
- Car interior trim parts such as door and window panels, hat shelves, and roofing, railway coach interiors
- Walls, flooring, louvers, and indoor and outdoor furniture.