



BHARATHIDASAN UNIVERSITY

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Programme: M.P.Ed., Physical Education & Yoga

Course Title : Sports Technology

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UNIT-2

Science of sports materials

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Sports Materials

Sports equipment, also called sporting goods, are the tools, materials, apparel, and gear, which varies in shapes, size, and usage in a particular sport.

It includes balls, nets, rackets, protective gears like helmets, goggles, etc.

What is sports materials?

Sports and Materials Sciences is an integrated programme combining a study of human physiology and exercise with the science of materials as applied to sports equipment and facilities.

Adhesive

Adhesive, also known as glue, cement, mucilage, or paste, is any non-metallic substance applied to one or both surfaces of two separate items that binds them together and resists their separation.

Description

- Adhesive-bonding is a joining process whereby materials are held together by the surface attachment of adhesives.
- Anaerobic adhesives cure in the absence of air or oxygen.
- They are designed for fastening and sealing applications in which a tight seal must be formed without light, heat or oxygen.



Types Adhesive

- **Polyurethane adhesives.** Polyurethanes are polymer-based adhesives used for constructions requiring high strength bonding and permanent elasticity.



- **Polyimide adhesives.**

Polytec PT Polyimide Adhesives provide excellent thermal resistance which is superior to any other organic adhesive. These modified polyimides are single **component, solvent-based adhesives and coatings** which are useful in the temperature range from 240°C to 500°C



- **Paste**

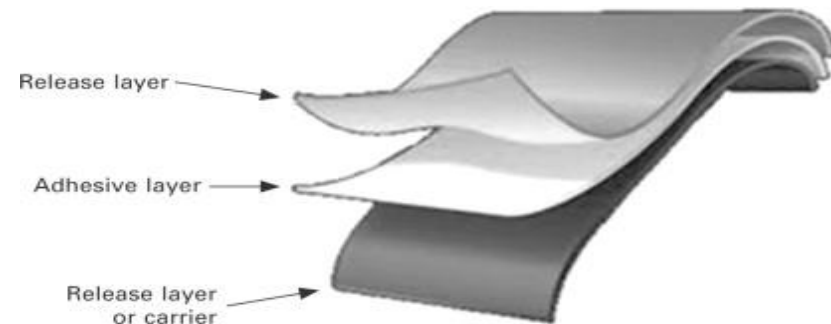
Paste adhesives have **low application on vertical surfaces** with little tendency to sag or drip. These bodied adhesives can serve as gap fillers and sealants.

- **Liquid**

Liquid glues, sometimes referred to as white glues, are **water-based glues** that are used in a wide variety of applications and are popular because they are eco-friendly, non-toxic, easily recyclable and safe to handle

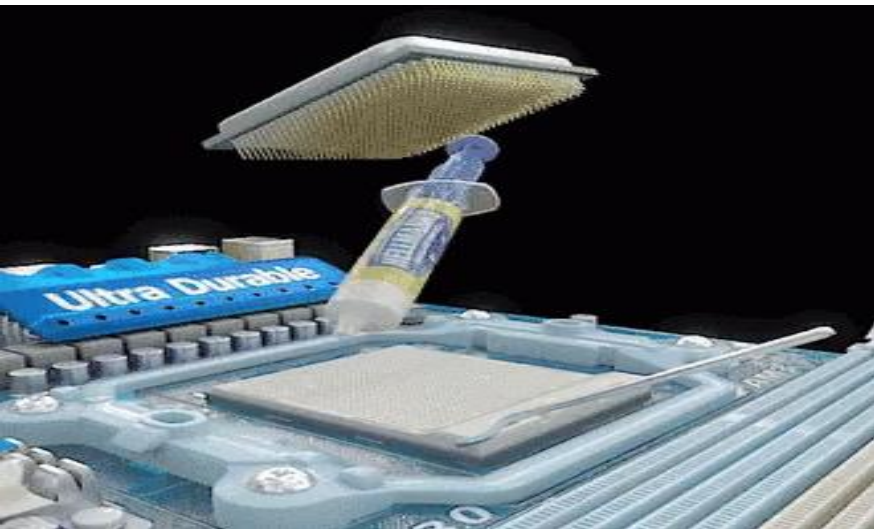
- **Film**

Film adhesives are **solid sheets of thermoplastic or partially cured (B-staged) thermosetting polymers** that can be cut to size and generally used to attach large-area components, substrates, and lids. From: Adhesives Technology for Electronic Applications.



NanoGlue

NanoGlue is an **adhesion promoter** and is formulated to significantly improve the bonding of adhesives and top coats to glass surfaces. When an adhesive or top coat is applied to a glass surface primed with Nanoglue, the durability and life of the top coat will be significantly extended.



The Nano Molding Technology is a **method which makes it possible to directly bond metals and plastics together**. This is done by treating the metal surface and then injection mold the desired plastic components on the surface.

Styrofoam

Styrofoam is a trademarked brand of closed-cell extruded polystyrene foam, commonly called "Blue Board", manufactured as foam continuous building insulation board used in walls, roofs, and foundations as thermal insulation and water barrier.



Neoprene foam

Neoprene(also polychloroprene) is a family of synthetic rubbers that are produced by polymerization of chloroprene. Neoprene exhibits good chemical stability and maintains flexibility over a wide temperature range.



SHAPE MEMORY ALLOYS

Shape memory alloys (SMA) are **materials that “remember” their original shape and can go back to this original shape after deformation under a stimulus.** They are also known as smart alloys or memory metals.