

MATERIALS RESEARCH

WATERGATE KE2FWKCH

SPACE AND MATERIALITY

✦ METAL

✦ FABRICS

✦ CERAMIC

METAL

A metal is a material that, when freshly prepared, polished, or fractured, shows a lustrous appearance, and conducts electricity and heat relatively well. Metals are typically malleable or ductile.

Metals come in a variety of forms and shapes that differ in their appearance and properties. The different forms and shapes of metals have found to be suitable for different industrial uses and requirements. Some of the most common forms of metals are -

- Metal Sheet
- Metal Plate
- Metal Rod
- Metal Bar
- Metal Shot
- Metal Grain
- Metal Powder
- Clad Metal
- Bonded Metal

The main metals we plan to use are aluminum and steel.

FABRICS

➤ LYCRA

Lycra is a type of synthetic fabric that is very elastic. It is also called Spandex or elastane. Lycra was invented in 1958 , United States. It was invented by JOSEPH SHIVERS, a chemist. It

is made from a combination of polyester and polyurethane.

LYCRA can be stretched four to seven times its initial length, yet springs back to it's original length once tension is released.

Properties of Lycra Yarn:

- ❑ Heat: Sticks at 350-390F. Melts above 500F.
- ❑ Bleaches & Solvents: Good resistance to oxidizing agents. Poor resistance to bleaches.
- ❑ Acids & Alkalis: Good
- ❑ Abrasion: Good in diluted (weak), but degrades in strong acids & bases.
- ❑ Mildew, Aging & Sunlight: Excellent aging and mildew resistance. Good resistance to sunlight.

Attributes of Lycra

- ❑ Made from premium quality materials
- ❑ Long life and strong structure
- ❑ Unique weave pattern
- ❑ Ideally suited for industrial as well as household

Lycra is never used alone; it is always combined with another fibre (or fibres), natural

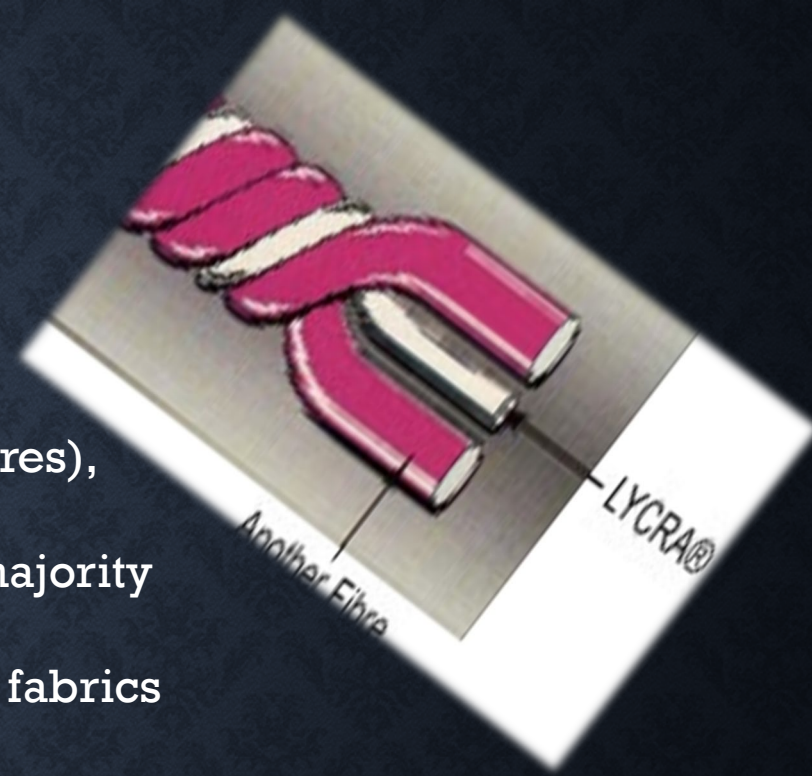
or man-made. Fabrics enhanced with Lycra retain the appearance of the majority applications. As little as 2 percent Lycra is enough to improve a fabric's movement, drape and shape retention, while fabrics for

high-performance garments such as swimwear and active sportswear may contain as

much as 20-30 percent Lycra. Spandex fibers are produced in four different ways including melt extrusion, reaction spinning, solution dry spinning, and solution wet spinning.

5 The fibers are then treated with a finishing agent. This may be magnesium stearate or another polymer such as poly(dimethyl-siloxane). These finishing materials prevent the fibers from sticking together and aid in textile manufacture.

****LIFESPAN:** lycra is a non biodegradable fabric, one of the synthetic fabric, they eventually break down but this process takes 20 to 200 years. **



Environmental impacts

Also like polyester, the process of making spandex takes raw materials, toxic chemicals, and a lot of energy.

Five types of lycra we researched for:

- Cotton jersey
- Power net
- Cotton spandex
- Satin lycra
- Cotton Lycra

➤ MESH NET

☐ Transparency

☐ Breathable

☐ Flexibility

☐ Stretch

☐ Pattern

CERAMICS

❑ A ceramic is an inorganic non-metallic solid made up of either metal or non-metal compounds that have been shaped and then hardened by heating to high temperatures. In general, they are hard, corrosion-resistant and brittle. 'Ceramic' comes from the Greek word meaning 'pottery'.

❑ Ceramics are generally made by taking mixtures of clay, earthen elements, powders, and water and shaping them into desired forms. Once the ceramic has been shaped, it is fired in a high temperature oven known as a kiln. Often, ceramics are covered in decorative, waterproof, paint-like substances known as glazes.

3 forms of ceramic are :

- Tile
- Clay
- Powder

Types at pottery are:

- **Earthenware** is used extensively for pottery tableware and decorative objects. It is one of the oldest materials used in pottery. The clay is fired at relatively low temperatures (1,000–1,150°C), producing a slightly porous, coarse product. To overcome its porosity, the fired object is covered with finely ground glass powder suspended in water (glaze) and is then fired a second time. Faience, Delft and majolica are examples of earthenware.
- **Stoneware** clay is fired at a high temperature (about 1,200°C) until made glass-like (vitrified). Because stoneware is non-porous, glaze is applied only for decoration. It is a sturdy, chip-resistant and durable material suitable for use in the kitchen for cooking, baking, storing liquids and as serving dishes.
- **Porcelain** is a very hard, translucent white ceramic. The earliest forms of porcelain originated in China around 1600BC, and by 600AD, Chinese porcelain was a prized commodity with Arabian traders. Because porcelain was associated with China and often used to make plates, cups, vases and other works of fine art, it often goes by the name of 'fine china'.