THE CHEMISTRY OF A FOOTBALL SHIRT

**POLYESTER**

Polyesters are a group of polymers commonly used in textile applications. The polymer is a very large molecule built up from smaller molecules. The basic synthesis of polyesters involves a condensation reaction between an alcohol and a carboxylic acid; there are several methods through which this can be accomplished.

Polyester is durable, lightweight, resistant to creasing, and only absorbs 0.4% of its weight of water. For this reason, it has a good ‘wicking’ effect - most sweat is carried along the fibres, rather than absorbed, and can evaporate.

**ELASTANE**

Also known as spandex or lycra, elastane is another polymer often incorporated into football shirts. It can resist approximately 600% elongation before rupturing, so it is useful for adding strength and elasticity to football shirts. However, it is not as ‘breathable’ as other materials.

**POLYURETHANE**

The name, number, and sponsor logo on the shirt are often made of polyurethane, though materials can vary. These can be thermally bonded to the shirt using a heat-press.