Why Different Fabrics Have Different Properties

KS3 DESIGN & TECHNOLOGY Ages 11-14 ⏰ 3 min read

What Makes Fabrics Different?

When you touch **cotton**, **silk**, or **polyester**, they feel completely different. That's because fabrics are made from different **fibres**—tiny threads that are spun together to create cloth. The type of fibre you use, and how you arrange it, changes everything about how the fabric behaves.

Natural fibres like cotton, wool, and silk come from plants and animals. **Synthetic fibres** like polyester and nylon are made in factories from chemicals. Each type has its own unique structure, which explains why linen feels crispy while silk feels smooth and slippery.

Think of it like building with different materials—bricks feel rough and hard, while clay is smooth and flexible. The material you choose changes everything about what you can build and how it behaves.

How Structure Changes Properties

Fibres aren't just different materials—they're also arranged in different ways. Some fabrics are **tightly woven**, with fibres packed close together. Others are **loosely knitted**, with bigger gaps between threads. A tightly woven fabric keeps water out and stays warm, while a loosely knitted one lets air flow through and feels cooler.

The thickness of the fibres matters too. **Wool** fibres are thick and crimped (wavy), which traps air and creates warmth. **Silk** fibres are super smooth and thin, which is why silk slides across your skin and feels cool.

Think of it like a sponge versus a brick wall—they're both solid, but a sponge has air gaps that make it soft and absorbent, while a brick wall is dense and hard.

Why This Matters

When you choose what to wear, you're actually choosing fabric properties without realizing it. In summer, you pick **cotton** because it absorbs sweat and lets air pass

through. In winter, you choose **wool** because it traps warm air. For sports, you might pick **polyester** because it's stretchy and dries fast.

Understanding fabric properties helps designers and engineers create clothes for different jobs. A firefighter's suit needs to be flame-resistant, so it's made from special synthetic fibres. A rain coat needs to be waterproof, so it's made from tightly woven fabric or coated with a water-repelling layer.

Every fabric in your wardrobe was chosen because its properties make it perfect for what you need it to do.