Thermoplastics

Thermoplastic	Strengths and weaknesses	Working properties
Acrylic - used in car headlights and as a glass alternative	Durable, water-resistant and available in many colours - but is easily scratched and not easily recycled	Stiff, hard but scratches easily, durable, brittle in small sections, good electrical insulator, machines and polishes well
Low density polythene - used in plastic bags, toys and gas pipes	Lightweight, resistant to chemicals, cheap to produce and translucent - but has low stiffness	Tough, good resistance to chemicals, flexible, fairly soft, good electrical insulator
High density polythene - used in bulletproof vest inserts and containers	Very strong, easy to clean and very stiff - but expensive to produce	Hard, stiff, able to be sterilised
Polyvinyl-chloride (PVC) - used in flexible hoses and as a cable insulator	Flexible, can be coloured and is chemical resistant - but it is soft and there is high pollution from its manufacture	Flexible, fairly soft, brittle
Polypropylene - used in rope and reusable food boxes	Does not absorb water, easy to colour, lightweight and food safe - but is stiff and not very flexible	Light, hard but scratches easily, tough, good resistance to chemicals, resists work fatigue
Polycarbonate - used in electronic components	Strong, tough, easily worked and transparent - but has low scratch resistance	Strong, hard but scratches easily, durable
Styrofoam - used for building insulation	Cheap to produce, lightweight, floats and insulates sound and heat - but not very strong and only blue or white in colour	Light, good insulator to heat and water
High impact polystyrene (HIPS) - used in toys, packaging and fridge linings	Available in many colours, lightweight and strong - but not as durable as other polymers	Light, hard, stiff, transparent, brittle, with good water resistance

Nylon - used in clothing and for mechanical parts, eg gears	Durable, self-lubricating and chemical resistant - but not easily recycled	Creamy colour, tough, fairly hard, resists wear, self-lubricating, good resistance to chemicals and machines

Name of Material	1 Strength	1 Weakness	Property that is good for my design

Summary

The material I am going to choose for my design is _____ . The main strength of _____ is _____. This strength will be useful in my design because_____. A weakness that will not be good for my design is _____ because _____.