

# protector 3D wilkinson sword



The Protector 3D Wilkinson Sword is a wet razor.

It is used with shaving soap or shaving foam. The twin blades are held in a cartridge but can move to stay close to the skin. The cartridge fits onto a handle but this too can move to keep the blades close to the skin. These movements give a very close shave.



## 3

### how the razor is sold

The Protector 3D comes with 2 cartridges, a protective cap and a black razor stand for easy and compact storage.

Protector 3D is sold in many retail outlets including high street chains and supermarkets. The packaging for both razor and blades is blister-pack with slots for suspending on display hooks. The Protector and stand are inexpensive but replacement blades, as with all non-disposable wet razors, are needed. A pack of four cartridges costs almost as much as a razor plus stand and two cartridges.

The product is promoted through TV and magazine campaigns which project an image of 'sensitivity' (for example by including a young child) and 'scientific' (for example through close-ups of how the blades work). There are also toiletries in the product range - these are aimed at 'sensitive skin' use.

### question

Discuss with others in your class what happens to the blade cartridges after use.

You can find out more about Millennium Products by visiting this Design Council website [www.sharinginnovation.org.uk](http://www.sharinginnovation.org.uk)

### research

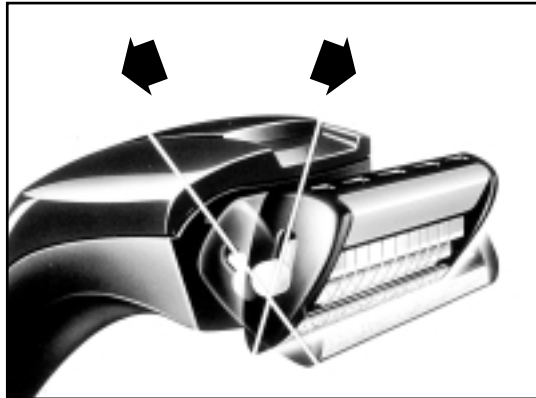
- Do they use disposable razors or cartridge blades?
  - How often do they have to change their razor or blades?
  - What other shaving products do they buy?
  - How much does shaving cost them each year?
- Survey some people who shave to find out what sorts of shaving products they buy. Here are some starter questions.

- Protector Shaving Gel £2.89
- Protector Shaving Foam £2.19
- Protector Deodorant Body Spray £2.49
- Protector After Care Creme £2.49



## 1 how it works

- The double blades are very thin and sharp.
- The blade cartridge pivots.
- The twin blades move independently of the cartridge.
- The cartridge swings both right and left.
- Thin guard wires, wrapped around the blades protect against nicks, cuts and skin irritation.
- An Aquaglide strip ensures a smooth shave, whilst a porous foam blade stretches the skin prior to the shave. This ensures the shave is extra close.
- The handle is ergonomically designed and incorporates a rubber grip for precision handling and control.



## research

Use a flow chart plus small diagrams to describe the way the blades and cartridge of the Protector 3D razor are produced. You can look at this website for more information: [www.wilkinson.de/en/html/video-d.html](http://www.wilkinson.de/en/html/video-d.html)

## 2 how the blades are made

- Stainless steel ribbons, 1 kilometre long, are delivered in coils.
- The steel ribbon is fed into an oven at 1000° C. The ribbon travels through the oven at 10 metres per minute. It is then cooled in an ice box to -70° C. This process makes the steel hard and is called tempering.
- The hardness of the tempered steel is checked. A machine presses a diamond onto the blade with a force of 10 newtons for 15 seconds. The size of the mark left in the steel indicates its hardness.
- The cutting edge of the steel ribbon is ground for maximum sharpness. Six grinding processes are used - three on each side, each one from a different grinding angle.
- The sharpened steel ribbon is coated in polytetrafluoroethene (PTFE). This is similar to the Teflon used in non-stick frying pans. It reduces friction between the blade and the skin so the blade moves more smoothly. The coating is sprayed on and the ribbon is baked to make the PTFE stick to the steel.
- The steel ribbon is chopped into the short blades.
- The Protector has twin blades and these are fitted into the cartridge automatically. The first blade is placed on a basic form, then a spacing piece is added, then the second blade is added. The machinery does this very accurately.
- Each piece is held in position by small amounts of adhesive applied as tiny dots. The blue strip is fixed to the top of the cartridge.
- When the adhesive is dry, a machine wraps fine wires round the blades.
- A machine feeds the finished cartridges into a small plastic dispenser.

