

# CLASS CLIPS

SCIENCE

Chemistry

Polymers and Hydrogels

TEACHERS NOTES

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This is a set of video clips which has been specifically designed for the new Science National Curriculum. The first clip is about hydrogels and shows aspects of how science works.

## POLYMERS

### Clip 1 - Hydrogels

Duration: 6:35



#### Key ideas

- Modern polymers
- Hydrogel

#### KEY FEATURES OF CLIP

This video clip outlines the uses of modern polymers. It illustrates how different types of polymers are used to make the various parts of a trainer. It explains how the same type of polymer (hydrogels) can be used in widely different situations e.g. contact lens, nappies and fire fighting.

It features descriptions of a hydrogel and illustrates how hydrogel granules can absorb large quantities of liquid without being 'wet'.

This clip can be used to illustrate how ideas in science often have several, originally un-thought of, applications.



### Linked Activities

Before (or after) showing the clip get the students to think of all the different types of polymer they are wearing. What happens to them when they wear out? Discuss the disposal of polymers: land fill, recycling, combustion, problems with each type. Explore the advantages and disadvantages of disposable nappies. Ask students to discuss whether disposable nappies are good for the environment. Why are they so popular if they cause disposal problems?

**Key ideas**

- Uses of Polymers
- Antibacterial agents
- Life cycle assessments

**KEY FEATURES OF CLIP**

This clip focuses on the problem of bacterial growth on clothing causing nasty odours. The immediate benefit to us of using the antibacterial agent is the reduction in smell but other advantages are outlined.

The first part concentrates on:-

- How the odours occur.
- The development of an antibacterial polymer.
- How the anti bacterial polymer sticks to the cloth fibres.
- The application of a polymer to the cloth.

The second part

- Discusses the life cycle of a sock.
- Suggests why these anti bacterial agents might be 'green' because they reduce the amount of energy used in the washing of the socks.

It also highlights a possible problem if any antibacterial agents get into the water supply and stop 'good' bacteria in sewage farms doing their work.

## Linked Activities

Students to make notes while watching the dvd, and to discuss in pairs the following questions afterwards. Provide a copy of the questions in advance if appropriate.

- What makes our socks smell?
- What charge is there on the polymer? And the cotton?
- Why does the antibacterial polymer attach itself to the cloth?
- How do you apply the polymer to socks?
- What is a life cycle assessment?
- Where is most of the energy used?
- How did the Purista improve the life cycle?
- What problem could antibacterial agents cause through getting into waste water?
- Why don't they think this will happen with Purista?
- Would you buy and wear Purista treated socks?