

## POLYOX (polyethylene oxide polymer)

Polyox can be used to exemplify one of the properties of non-Newtonian fluids; i.e. elasticity. When a solution of a suitable concentration is poured out of a beaker, the liquid will auto-siphon. With care, the fluid can be cut with a scissors. A video clip showing the behaviour of this polymer is featured on *Go with the Flow CD-ROM* published by the Science Enhancement Programme. For details on how to obtain a copy, see the information at the end of this leaflet.

### MAKING THE ELASTIC FLUID

Pour 1 dm<sup>3</sup> of water into a suitable beaker, adding a little fluorescein or food dye to add colour. Weigh 11 g of Polyox into a clean dry 250 cm<sup>3</sup> beaker. Add 70 cm<sup>3</sup> of propan-2-ol (HIGHLY FLAMMABLE, IRRITANT/HARMFUL), to 'dissolve' the polymer. Stir thoroughly (a magnetic stirrer would help).

Again, with vigorous stirring, carefully add the Polyox solution to the water. Wash remaining Polyox solution out of the small beaker into the larger container with a further 30 cm<sup>3</sup> of propan-2-ol.

Continue to stir thoroughly until the solution has a consistency approaching wallpaper paste.

Further stirring with a magnetic stirrer is recommended. If possible, leave the solution to stand for several hours in order for the polymer to hydrate fully.

Video clips using Polyox solution can be found on the *Go with the flow CD-ROM* and more practical details can be seen in the Royal Society of Chemistry's *Classic Chemistry Demonstrations* book.



### HEALTH AND SAFETY

Propan-2-ol is HIGHLY FLAMMABLE (keep well away from naked flames) and IRRITANT/HARMFUL (it is irritating to the eyes, and the vapour may cause drowsiness or dizziness).

### FURTHER INFORMATION

Middlesex  
University



teaching  
resources

Other related practical resources and copies of the SEP publication *Go with the Flow CD-ROM* can be purchased from Middlesex University Teaching Resources.  
[www.mutr.co.uk](http://www.mutr.co.uk)



Science Enhancement Programme

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[www.sep.org.uk](http://www.sep.org.uk)