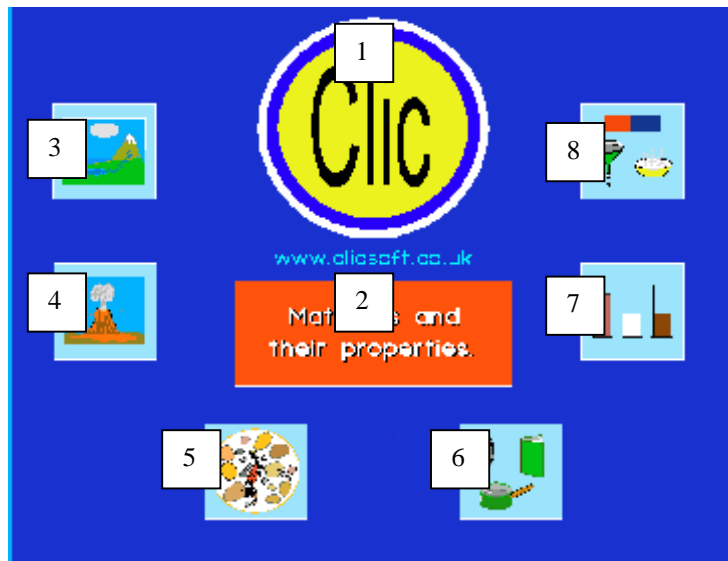


## MATERIALS AND THEIR PROPERTIES:

This pack consists of a collection of 25 screens giving a range of activities on grouping materials, separating materials and changing materials.

Although this pack supports most of the requirements for KS2 Materials and their properties (see 'The pack and the curriculum' below), it should be used in conjunction with other elements and lead to practical work and / or further research using IT wherever possible.

## THE OPENING SCREEN:



The opening screen provides a choice of buttons. The buttons link to the main topic areas, which may be opened in any order.

1. Click on this button for an activity on solids, liquids and gases.
2. Click on this button for information about the buttons used on the screens.
3. Click on this button for an activity on the water cycle.
4. Click on this button for an activity on rocks.
5. Click on this button for an activity on soil under the microscope.
6. Click on this button for an activity on grouping materials.
7. Click on this button for an activity on soluble and insoluble solids.
8. Click on this button for an activity on separating materials.

## CONTENTS:

Children should be encouraged to click the mouse on the various buttons and on text and graphics with speech support.

1. Grouping materials - sorting the materials into gases liquids and solids.
2. Grouping materials - sorting the materials according to shape and volume.
3. The water cycle - completing the diagram and adding text or free writing.
4. What is the temperature? - measuring the temperature.
5. Soil profiles - completing the diagram, adding text or free writing.
6. Soil under the microscope - sorting the particles.
7. Classifying soil particles - estimating the particle size and adding text.
8. Investigating soil drainage - predicting the result and free writing.
9. Results of the investigation - completing the table and writing a report.
10. How rocks formed - making a series of fact sheets or free writing
11. Identifying rocks and stones - adding text and free writing.
12. Grouping materials - listing and free writing.
13. Thermal conductors and insulators - completing the table and free writing.
14. Electrical conductors and insulating - completing the table and free writing.
15. Properties of materials - completing the table.
16. Materials and their uses - completing the table.
- 17 - 20. Separating materials - prediction plus free writing.
21. Sort the sentences out - more practice with separating materials.
22. Dissolving materials - adding text
23. Soluble and insoluble - adding text and completing the table.
24. Changing materials – sorting the sentences.
25. Changes that cannot be reversed - adding text and completing the table.

## THE SCREENS:

The screens provide a variety of activities including dragging, labelling, sorting and investigative activities. Many may lead to related classroom activities e.g. 'hands on' practical work.

The screens are deliberately basic and uncluttered where appropriate with hidden popups / panels providing additional information, graphics and support.

All the screens have word or picture panels or both which are accessed via buttons. They also have task, answer and research panels, the latter being an additional feature for the KS2 titles.

Children may add to the screens by using the word banks and resource (picture) panels. They may follow the instructions provided on clicking the task button or modify the screens according to their needs. They may check the answer using the answer button and use the arrows to move back and forth between screens.

Software speech is used in the Textease format. Click on the text, speech icons or hot spots where appropriate to hear it spoken.

### MY WORLD AND TEXTEASE FORMATS:

This pack requires My World for Windows, My World 3 or Textease to run. Both formats are provided on the CD leaving the choice to the teacher.

The My World format of the software self installs - the Textease format must be copied onto the hard disk manually. The My World installer installs the Welsh font Ysgol 2. - Textease users should install 'Ysgol 2' by double clicking on the fonts folder and following the instructions on the screen.

My World and Textease screens do not self correct. Some teachers may see this as a disadvantage. The advantages however is that children are given an opportunity to make their own minds up or discuss their ideas with others. Their outcome may be printed allowing My World and Textease screens to be used for assessment where appropriate.

### THE BUTTONS ON THE SCREENS:

The buttons on the My World and Textease formats of two different screens are shown below.



1 2 3 4 5 6 7 8 9 10 11 12  
MY WORLD FORMAT



1 2 6 5 11 12  
TEXTEASE FORMAT

The buttons are listed from left to right. See the Textease handbook for the functions of the buttons on the top bar of the Textease format screens.

1. The back button - click on this to go to the previous screen.
2. The task button - click on this for a suggested task.
3. The text button - click on this to create new text.
4. The word button - click on this for a word list or for beginnings and endings of sentences.
5. The research button – click on this for further information.
6. The help button - click on this and on the hot spots within the help panel for support.
7. The resource button - click on this for some useful pictures.
8. The scaling down button - click text or graphics on this to reduce their size.
9. The scaling up button - click text or graphics on this to increase their size
10. The bin - click text or graphics on this to delete them.
11. The home button- click on this to return to the opening screen.
12. The forward button - click on this to advance to the next screen.

**THE PACK AND THE CURRICULUM:** The pack supports many of the National Curriculum requirements for Key Stage 2 relating to Materials and their properties and some aspects of the KS3 syllabus to enable gifted and talented pupils to make further progress.

**KEY STAGE 2 – SC3 Materials and their properties:**

**Grouping and classifying materials:**

- 1a) To compare everyday materials and objects on the basis of their properties and to relate these properties to everyday uses of the materials.
- 1b) that some materials are better thermal insulators than others.
- 1c) that some materials are better electrical conductors than others.
- 1d) to describe and group rocks and soils on the basis of their characteristics, including appearance, texture and permeability.
- 1e) to recognise differences between solids, liquids and gases, in terms of ease of flow and maintenance of shape and volume.

**Changing materials:**

- 2a) to describe changes that occur when materials are mixed.
- 2b) to describe changes that occur when materials are heated or cooled.
- 2c) that temperature is a measure of how hot or cold things are.
- 2d) about reversible changes including dissolving, melting, boiling, condensing, freezing and evaporating.
- 2e) the part played by evaporation and condensation in the water cycle.
- 2f) that nonreversible changes result in the formation of new materials.
- 2g) that burning materials results in the formation of new materials.

**Separating mixtures of materials:**

- 3a) how to separate particles of different sizes by sieving.
- 3b) that some solids dissolve in water to give solutions but some do not.
- 3c) how to separate insoluble solids from water by filtering.
- 3d) how to recover dissolved solids by evaporating the liquid from the solution.
- 3e) to use knowledge of solids, liquids and gases to decide how mixtures might be separated.

**KEY STAGE 3 - SC3 Materials and their properties:****Geological changes:**

- 2e) about the formation of rocks and that the mode of formation determined their texture.
- 2f) how igneous rocks are formed by the cooling of magma, sedimentary rocks by the deposition of sediments and metamorphic rocks by the action of heat or pressure on existing rocks.

**THE GRAPHICS:**

The graphics used are simple purpose made vector drawings for three reasons:

- a) most are basic enough for children to copy them on paper where appropriate.
- b) they support the program without being a distraction in themselves.
- c) they require less memory than more sophisticated graphics / illustrations.

**INCLUSION:**

The screens are deliberately basic and uncluttered with hidden popups / panels providing additional information, graphics and support. Teachers / pupils are able to customize and save the screens if required.

Generally speaking, there is little visible text other than the headings on the screens. This reduces the amount of initial explanation / signing required on introducing a new topic to pupils with hearing problems.

Visually impaired pupils may resize moveable text or graphics using the maximize / minimize buttons in the My World format or by selecting then dragging one of the corners' in the Textease format.

The Textease format of the software has software speech support on all the text panels to help children who find the written word difficult. Text on the screens may be selected and heard if necessary using the 'lips' icon on the toolbar.

The research panels may be shortened and scrolled to reduce the amount of text visible at any time to help children who find a large block of text daunting.

## ABILITY RANGE / DIFFERENTIATION:

The screens have been designed for use by children of different abilities. Buttons allow them to seek help or further information, so the older / more able pupils may work independently.

Many of the screens have text frames. The provision of text buttons, word banks, support panels and research books provide the requirements for **differentiation by outcome**. The text button (pencil in the My World version or the 'I band' in the Textease version) allow teachers / pupils to write their own text. The research books provide a source of information for those pupils who can cope with free writing. The beginnings and endings of sentences or labels provided in the word banks are for those who cannot cope with free writing.

Children may drag labels and other information to the screens or write their own text. They may use their imagination and customise existing screens or use the self-design screens (see 'Teacher Control' below).

**SUPPORT:** The help button opens a support panel, which may be shared by several screens within the same topic area. The support may be in diagram or text form and clicking on hot spots within the help panel may open text windows or further help panels.

## NEW SCREENS:

Each topic area has one or more 'New screens' (often blank), which are accessed by clicking on the 'new screen' button within the relevant 'task panel'. These new screens are particularly useful when used with related screens having fixed graphics / text and share the same buttons as the latter.

Some of the new screens in this pack are listed under 'Teacher control' below together with some suggestions on their use

## TEACHER CONTROL:

At first sight, the screens may not appear to have a great deal of teacher control. However, any moveable object on a screen, be it text or graphic may be deleted or enlarged, and new text may be added. The customized screen may be renamed and saved for future use.

The 'self-design option provided by the new screens allows teachers to adapt screens for pupils with special needs (see overleaf), to carry out group activities or to extend topic areas further. The new screens may be customised then saved for use as labelling exercises for assessment.

The example overleaf shows three variations of the ‘Separating materials New Screen’ and serves to illustrate the point that the degree of teacher control is only limited by the imagination of the teacher.



Other New Screen topics in this pack include:

- a) **Grouping materials as solids, liquids and gases** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could be used in conjunction with a whole class activity on naming materials then putting them into groups.
- b) **What is the temperature?** – this screen could be used to make a fact sheet on how the state of water changes according to the temperature.
- c) **Soil under the microscope** – this screen could be used as a starting point for a practical activity on different soil particles. Children could use sieves of different mesh size, or mix soil samples with water and allow them to settle to investigate if soil is made up of particles of different sizes. The new screen could be used to plan the experiment, then record the prediction and outcome.
- d) **Types of rocks** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could be used as a group activity with groups studying different types of rocks and creating fact sheets for use during a whole class discussion on how rocks formed.
- e) **Recognising rocks and stones** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. It could be used to create keys to help identify different types of stones found on a beach (or even in a garden centre!).
- f) **Grouping materials** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. There is tremendous

scope here for recording the results of practical work and group or whole class discussion using this screen. Objects made of similar materials e.g. metal objects may be grouped together; objects used for similar jobs e.g. things that keep us warm, things that conduct electricity, or things that conduct heat may be grouped together.

- g) **Dissolving materials** – this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. Again there is tremendous scope for practical work and group discussions involving prediction, planning and recording skills here.
- h) **Changing materials** - this screen could be used to create assessment exercises / make fact sheets or promote group / whole class discussion. Again there is tremendous scope for practical work and group discussions involving prediction, planning and recording skills here.

#### INTERACTIVE WHITEBOARDS:

The screens in this pack have been redesigned for more efficient use with Interactive Whiteboards and are ideal for individual or group work and whole class teaching.

#### FORMATS:

The pack includes the screens in MY WORLD format and TEXTEASE format plus the Welsh font 'YSGOL 2'.

The MY WORLD format requires My World for Windows or My World 3.  
The TEXTEASE format requires Textease.

#### INSTALLATION:

The My World format self installs. Textease users must copy the MaterialsTex folder to the hard drive, then create a shortcut on the desktop to the opening file – 1Matter.

#### FONTS:

The Welsh font Ysgol 2 has been used on the screens by kind permission of the 'Micro-electronics in Education Unit for Wales' (MEU). [www.meu.cymru.co.uk](http://www.meu.cymru.co.uk)

The My World installer should install 'Ysgol 2. Textease users should click on the exe. file within the Fonts folder and follow the instructions to install 'Ysgol 2.

#### TECHNICAL SUPPORT:

Please contact Clic if you have any problems with the content of this program. Consult the My World help files for problems in running My World. Consult the Textease manual / help files for problems in running Textease.

#### PRICE AND LICENCE:

Prices and licences are subject to change without warning. Please check the details on our web site before ordering.

#### RELATED PRODUCTS:

Materials and their properties is part of the 10 pack **Clic Science Series**.

Other titles in the series are

KS1 Life processes and living things.

KS1 Physical processes.

KS1 Homes and houses (materials and scientific enquiry).

KS2 Green plants as organisms.

KS2 Humans as organisms.

KS2 Living things in their environment.

KS2 Forces and motion.

KS2 Light, sound & the Earth and beyond.

KS2 Electricity and power.

These packs are available individually or as two collections:

KS1 Starting science.

KS2 More science

#### FURTHER INFORMATION:

Screens and graphics by GAYNOR PERRY.

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SOURCE OF INFORMATION GAYNOR PERRY. (from over 30 years teaching Secondary School Science in most of its subject areas and Biology to A level, including 20 years as a Biology A level Examiner).

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