

REVISION CARDS - SMART MATERIALS - PHOSPHORESCENT PIGMENTS

V.Ryan © 2000 - 2015

On behalf of The World Association of Technology Teachers

W.A.T.T.



World Association of Technology Teachers

This exercise can be printed and used by teachers and students. It is recommended that you view the website (www.technologystudent.com) before attempting the design sheet .

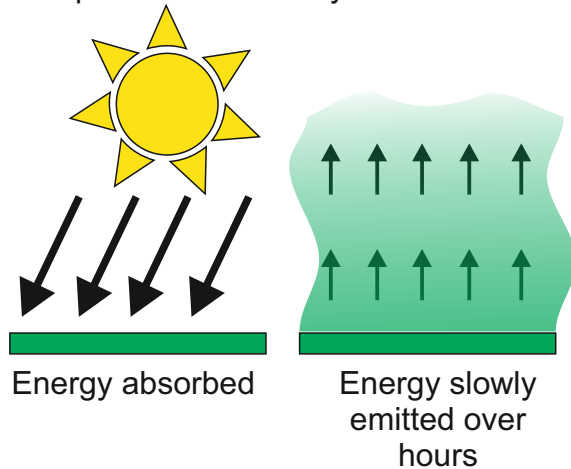
THESE MATERIALS CAN BE PRINTED AND USED BY TEACHERS AND STUDENTS.
THEY MUST NOT BE EDITED IN ANY WAY OR PLACED ON ANY OTHER MEDIA INCLUDING WEB SITES AND INTRANETS.
NOT FOR COMMERCIAL USE.
THIS WORK IS PROTECTED BY COPYRIGHT LAW.
IT IS ILLEGAL TO DISPLAY THIS WORK ON ANY WEBSITE/MEDIA STORAGE OTHER THAN www.technologystudent.com

REVISION CARDS - SMART MATERIALS - PHOSPHORESCENT PIGMENTS

V.Ryan © 2015 World Association of Technology Teachers

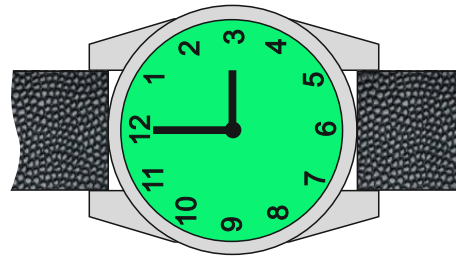
PHOSPHORESCENCE

Phosphorescence is a process whereby energy from the sun is absorbed by a 'material' and it is released slowly over a long time, in the form of light. The energy / light emitted is at a low intensity and the time period can be many hours.



PRACTICAL EXAMPLE - THE USE OF PHOSPHORESCENT PIGMENTS

A good example is a 'luminous' watch. Even the most basic 'luminous' watch will absorb the sun's energy, during daylight hours and also artificial light. At night, the stored energy is slowly released. In fact, the stored light is released even during daylight hours, although we do not notice it in daylight conditions.



WHAT IS A PHOSPHORESCENT PIGMENT ?

Phosphorescent pigments are manufactured from phosphors. A good example is copper-activated zinc sulfide, called 'GS phosphor'. Copper is added to zinc sulphide crystals, enabling the crystals to adsorb light and slowly emit it. This type of pigment is often used in the manufacture of novelty toys.

Another good example is strontium aluminate, which is 10 times more luminous than zinc sulphide. This has more serious applications such as safety signs, which must be visible in murky / dark environments (e.g. a sign pointing towards a fire escape / exit)

1. What is phosphorescence ? 3 marks

2. Describe a practical application of phosphorescent pigments. 3 marks

3. Name a phosphorescent pigment. 1 mark