

The Truth about PVC-U: Facts... and Fibs!

When it comes to making windows what is better for the environment: PVC-U or wood? In recent years the pro-timber lobby has campaigned aggressively and promoted wood as a “natural” building material.

But natural isn't the same thing as eco-friendly. Indeed illegal deforestation by unscrupulous timber companies is a major environmental problem.

There is a great deal of misunderstanding and misinformation about PVC-U. And it's time to set the record straight. This document is intended to do just that by giving installers and others in the industry the information they need to fight back with facts so that homeowners can make an informed choice.

The BRE Green Guide

The latest version of “The Green Guide” published by the Building Research Establishment (BRE) includes a detailed assessment of the environmental impact of different types of window. It compares windows made from PVC-U with those made from timber, aluminium and steel, and examines the affect they have on 13 different environmental criteria. These include everything from human health and climate change to waste disposal and damage to the ozone layer.

So how did the different materials score?

On four criteria wood is ranked higher than PVC-U.

On FIVE criteria PVC-U is ranked higher than wood

On four criteria, PVC and wood score exactly the same.

FACT:

On eight of the 13 points used by the BRE to assess environmental impact, PVC-U is at least as good as wood - and on five points it is better than timber.

Overall the BRE's Green Guide gives PVC-U an “A” rating for domestic windows and an “A+” rating (the highest awarded) for commercial windows. Only the best wooden windows can boast ratings this good and not all timber windows meet these standards. As for aluminium it gets an “E” rating while steel is only awarded a “B”.

The BRE is completely independent. To view The Green Guide in full, visit www.thegreenguide.org.uk

But that isn't the end of the story. The Green Guide also states:

“The main environmental impact of windows is from the heat loss through them ...the main emphasis <should be> to choose a window which will reduce operational energy usage.”

As you can see from the information on energy-saving below, PVC-U is more thermally efficient than wood and the PVC-U industry is at the forefront of energy saving technology. Consequently, PVC-U is much better positioned than wood to achieve the BRE's goals of reducing energy usage.

RECYCLING

Fib: PVC-U cannot be recycled

FACT:

PVC compounds are 100% recyclable.

Second, there is post-consumer waste - in other words PVC-U products which have reached the end of their useful life. The amount of post-consumer PVC-U waste that is recycled is relatively low. But there is a good reason for this - when it comes to PVC-U building products the vast majority are still in use! PVC-U windows and doors (not to mention other PVC-U products such as gutters, drains and soffits) are exceptionally durable. They don't need replacing so they don't need recycling.

When thinking about recycling you need to look at two different types of PVC-U waste:

First, there is manufacturing waste. Here we're talking about the material which ends up as waste when making PVC-U products such as windows and doors - for example off-cuts of profiles and damaged frames. Virtually all of this waste material is recycled and used to make new PVC-U products. On this front PVC-U's recycling record is second to none.

FACT:

PVC-U can be recycled again and again - and again! PVC-U used to make windows and doors can be recycled and used to make a wide range of PVC-U products (including more doors and windows) which in turn can be recycled again to make more products.

FACT:

In 2007 the UK recycled more than 42,000 tonnes of used PVC-U windows and doors and it's on target to recycle 50,000 tonnes in 2008.

But don't just take our word for it. This is what Dr Patrick Moore, one of the founding members of Greenpeace, has to say on the subject:

"Nearly 100% of the scraps that are produced in the manufacture of vinyl are mixed back in and used. Not a lot of post-consumer vinyl is recycled. Guess why? It's all still in use! So it's kind of unfair to charge the vinyl industry with not recycling its products when, because it's so durable, it is still on the sides of houses."*

*in the USA PVC-U is referred to as "vinyl".

FACT:

The amount of post-consumer PVC-U that gets recycled is increasing and the UK now has 100 collectors and 29 recyclers of post consumer PVC-U.

FACT:

Vinyl 2010 is a European initiative promoting a sustainable approach to the production of PVC-U. Last year 149,463 tonnes of post consumer PVC-U were recycled through Vinyl 2010 projects - an increase of 80% on the previous year.

WHAT IS PVC-U?

Fib: PVC-U is dangerous

FACT:

PVC-U is one of the most thoroughly researched materials in the world. Numerous independent studies undertaken by a wide range of organisations including World Health Organisation and the European Union, have repeatedly shown that PVC-U is safe.

PVC-U consists of 57% chlorine (produced from ordinary salt and used to purify water) and 43% ethylene. Ethylene is the most widely produced organic compound in the world. Most ethylene is produced (like petrol) by refining oil. However, ethylene can also be produced from renewable vegetable oil crops so it isn't dependent on diminishing oil reserves and can be manufactured in a sustainable way with a minimal carbon footprint.

“As far as I am aware, no member of the public has ever been harmed by PVC... It is time we learned to live in peace with a rather wonderful plastic.”

From The Consumers Good Chemicals Guide by John Emsley, science writer in residence, Department of Chemistry, Cambridge University.

PVC stands for “Poly Vinyl Chloride”. The U stand for “Unplasticised”. The difference between PVC and PVC-U is that PVC products (such as cling-film) contains plasticisers which make them stretchy.

PVC is perfectly safe and this is why it is used for bottles for mineral water, bags for blood transfusions, and fine bore tubing that is inserted into premature babies. PVC can be crystal clear or as black as coal, it can be as rigid or as flexible as we choose. It will stand up to extreme conditions and so is greatly used for windows, water pipes and insulation for electric wiring. Britain with its natural gas resources and ready supply of salt is an obvious place to manufacture this versatile plastic. These words are not ours. They are taken from a leaflet published by the UK government's Department of Trade and Industry.

FACT:

PVC has numerous medical applications. For instance it's the only plastic considered to be safe enough to use to make blood-bags.

“Ministers have made clear that independent evidence, such as that from Professor Rappe, the independent scientific advisor to the EU and the World Health Organisation, demonstrated that PVC is a safe material”

John Battle MP former Minister of State for Science Energy and Industry.

ENVIRONMENTAL IMPACT

Fib: manufacturing PVC-U harms the environment

FACT:

A typical European PVC production plant would have to operate for 30,000 years to produce the same amount of dioxins released into the atmosphere during bonfire night!

Some environmental groups have expressed concern about how PVC-U is made. In particular they are worried about the release of chemical compounds known as dioxins into the atmosphere. They are right to be worried (in significant quantities dioxins can be dangerous) but wrong to be worried about PVC-U.

Manufacturing PVC-U produces only very small quantities of dioxins. Moreover most of the dioxins produced by PVC-U plants are captured. They are not released into the atmosphere.

According to the World Health Organisation the biggest producers of dioxins (excluding natural events such as volcanoes and forest fires) are solid waste incinerators. It also identifies a number of other industrial processes (including smelting, paper bleaching and the manufacture of pesticides) which are to blame. However, it makes no mention of PVC-U production at all.

“The balance of evidence suggests that there is no alternative material to PVC in its major product applications that has less overall effect on the environment.”

Commonwealth Scientific and Industrial Research Organisation.

FACT:

The highest concentration of dioxins which can be legally emitted by any industrial process is 0.1ng/cubic metre of emissions. You are exposing yourself to SEVEN times this concentration of dioxins simply by standing near a burning barbeque.

SAVING MONEY (AND ENERGY)

Fib: alternative materials are just as good as PVC-U when it comes to energy-saving and durability.

FACT:

PVC-U is far more thermally efficient than alternative materials and the PVC-U industry is at the forefront of the development of energy efficient window frames.

More than 120 PVC-U manufacturers now offer energy efficient windows with a British Fenestration Ratings Council (BFRC) rating of C or above. Fewer than 15 timber manufacturers have so far achieved this standard. Installing energy rated windows can significantly reduce heating bills saving homeowners money as well as reducing their carbon emissions.

Numerous independent studies have consistently shown that whole-life costs of windows made from PVC-U are significantly lower than for windows made from alternative materials. Recent German research, for instance, shows PVC-U delivers typical savings of 20% over 25 years compared to hardwood and 50% compared to aluminium.

FACT:

Fitting C-rated windows in a typical property will reduce its carbon footprint by more than 850kg of CO² per year.

Alternative building materials simply cannot compete with PVC-U when it comes to durability. Without regular re-painting and on-going maintenance, the projected lifespan of wooden windows is dramatically reduced. The environmental impact of all the solvents, chemicals and paints required to preserve timber products in order to stop them rotting away is all too easily overlooked by those who mistakenly believe wood is a more environmentally-friendly choice.

FACT:

The Building Research Establishment estimates a typical PVC-U window will have a lifespan of 35 years.

HOW GOOD IS WOOD IN REALITY?

Timber is often presented as an eco-friendly building material. But wood isn't nearly as green as it appears.

FACT:

According to Friends of the Earth UK timber imports were responsible for illegally logging 130,000 hectares of tropical forest.

According to a report commissioned by the UK Government more dioxins are released into the atmosphere as a result of burning wood than are produced by the entire PVC-U manufacturing industry.

An independent group of Housing Authorities in the UK conducts regular surveys to compare the cost of PVC-U windows with windows made from alternative materials. The results show PVC-U to be typically 30% cheaper (both in terms of installation and maintenance) than softwood alternatives.

According to the latest audited figures from 2003, two billion tons of CO² enters the atmosphere every year as a result of legal and illegal deforestation. That destruction amounts to 50 million acres - or an area the size of England, Wales and Scotland felled annually.

"In the next 24 hours, deforestation will release as much CO² into the atmosphere as 8 million people flying from

London to New York. Stopping the loggers is the fastest and cheapest solution to climate change."

Daniel Howden, *The Independent*.

FACT:

PVC-U is the UK's most popular material for new and replacement windows. More than 85% of all building and refurbishment projects now use PVC-U windows. And it's not hard to see why!

PVC-U has nothing to hide. This document was put together using information from the sites listed below - all of which can be accessed for free by anyone.

www.recovinyl.com/pvc
www.vinyl2010.org
www.pvcawareness.com

www.bpf.co.uk
www.pvcaware.org
www.publicsectornewsline.co.uk

www.foe.co.uk
www.independent.co.uk
www.pauljervis.net