

Restore and protect – *the importance of linseed oil and paint.*

By Kevin Davies

Perhaps you are considering purchasing a listed building, or you already own one – and if so, you may be in the midst of a major restoration and modernisation of your much-loved home. There are thousands of decisions to be made on a major project and at some point you will be wondering how to tackle the windows and doors or indeed other elements of joinery and finishes. It is always helpful to understand your options and hopefully this article will help inform you on what could be a suitable approach and importantly what may be best for your property.

UNDERSTANDING YOUR LISTING AND ASSESSING IMPORTANCE.

It is always worth reading and understanding the listing of the property. Buildings are listed for many reasons and it may be due to age, rarity, aesthetic appeal (often important in group listings) or because it was designed by a known architect. Should you study a number of listings you will very often find that windows, doors and other joinery items feature strongly in the wording – individual items may be described in some detail. External openings, their proportions, joinery details and ironmongery can make an important contribution to the architectural language of a building. They can form part of the 'historic fabric' and your conservation officer will quite rightly be concerned and interested in your intentions.



Window restoration uncovering rot - Joel Endersby Restoration.

You can do much of the research yourself and if appointing an architect or other professional they should have experience in conservation work or perhaps further qualifications that enable them to write a 'heritage statement' (sometimes known as a 'statement of significance') that will be required to support a listed building consent application.

ASSESSING CONDITION – REPLACEMENT OR REPAIR & RESTORATION?

Part of the joy (and pain) of undertaking restoration work is uncovering the history of a building. There's often no certainty what is hidden behind a plastered wall or ceiling. Concealed openings can be found, different construction techniques identified, old newspapers or early wall papers and decorative paint uncovered. The

same applies for your windows and doors. You can literally strip back layers of history (often thick paint) to find a beautiful quality soft or hardwood frame protected from the elements for centuries. You may of course uncover very rotten, damp and decaying timber as well.

Should this be the case it is imperative to understand the cause of the problem. It is very possible the existing surface coating has trapped moisture beneath it. Water can enter through cracks in the surface (paint/ putty failure) or may be caused by water tracking from above through render cracks (cementitious render is more likely to crack), failed pointing in masonry or in occasional instances rising damp. All causes of water / damp ingress need rectifying and whilst natural materials can breathe, absorbing and releasing moisture, there are limits to how much the fabric can 'cope' with. Old properties were built and used with significant amounts of uncontrolled ventilation and a lot of 'air changes,' which kept moisture levels acceptable... when the fire was burning brightly!

Today, most of us expect more comfort, adding the extra jumper doesn't cut it with everyone and burning excessive amounts of wood from depleted forestry stock isn't really acceptable. Once you have put measures in place to combat internal and external moisture the building fabric, whatever it is, has every chance of lasting a very long time.

It is very rare for historic windows and doors to have decayed and deteriorated to such an extent that they are beyond repair. Economically yes, it isn't cheap, but neither are the alternatives. By far the most common problem areas are low

down on the jambs, the cills and the horizontal glazing bars and putty. These are the elements that take most of the weather and water can sit on horizontal surfaces. Areas higher up the windows and doors are more protected due to their recess at the head and reveals. Cutting out and splicing in new timber, preferably of a similar quality (if the windows are historic), requires some skill and finding a true craftsman is essential. It is frustrating to observe how workers today seem to rely so much on power tools (which create noise and dust whilst consuming electricity) and products pumped from a plastic tube made with solvents, which ensure they dry and harden quickly. True craftspeople have knowledge of and use hand tools as well as plan in time to create strong timber joints and employ dowels etc.

Most restoration projects can be carried out in situ, but taking out windows and doors to make repairs in a workshop environment can be very advantageous. This decision will depend on many factors including the interior situation, shutters, mouldings and panels, the scale of the project and if the property is heated and occupied.

Arguments for replacement normally focus on speed, cost and thermal improvement.

If you are in a hurry and cost is the primary determinant then a listed building may not actually be for you. It's rare that work can



Paint stripping with infrared heat gun - Joel Endersby Restoration.

be done quickly and costs are not always predictable. As mentioned earlier, you might uncover the unknown on the journey...

Thermal improvement is very much a red herring. Wood is actually a reasonable natural insulant and you can add secondary glazing or use blinds and shutters (subject to obtaining listed building consent) or hang heavy lined curtains. Period properties tend to have narrower and taller windows than modern ones, whilst today a house may have 20% window to floor area an older house typically has around

10%. If you have a limited pot of money to stay warm then it is far more cost effective to spend that adding insulation rather than on new double or triple glazed units.

Should you wish to follow the Scandinavian approach then add wooden casements inside – I understand that King Louis XIV obliged Mary Antoinette to have them fitted in her apartment at Versailles. She wasn't fond of the cold.

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Window restoration preparation for new timber repairs - Joel Endersby Restoration.

SURFACE COATINGS & THE HUMBLE FLAX PLANT

Most exterior woodwork needs additional help to protect it from the elements. Some woods self-patinate and these are often used in traditional cladding situations. Good examples include larch, cedar, oak and chestnut. Various oils and clear finishes can either extend or actually reduce lifespan. Products made without some pigments will offer little in the way of UV protection, so timbers tend to change in colour and may deteriorate.

LINSEED OIL PAINT

Linseed oil has been pressed from the flax seed and used to protect timber for thousands of years. The 'chemistry' may not have been understood, as it is today, but its performance as a protective and extremely durable coating is not disputed.

Linseed oil (or flax seed oil) is referred to as a 'drying oil', meaning the initial material is liquid but after a period of exposure to air it hardens to a tough, solid film. The 'drying' process (there is no evaporation) is the result of oxidation, where oxygen attacks the hydrocarbon chain and as a result the oil polymerises, forming long chain-like molecules. As time passes the polymer chains cross-link resulting in a vast polymer network. The result is an aged material that is stable and rigid but remains somewhat elastic. Most applications of linseed oil exploit these drying properties.

Linseed oil molecules are small, and aided by an expansion in volume of around 10% during drying, it offers excellent penetration into wood pores, both visible and microscopic, but without expanding the wood itself. Linseed oil is also hydrophobic - which means its molecules repel water. Droplets of water will form on the linseed oil film much like morning dew on grass. We can therefore begin to appreciate how linseed oil can protect not only our cricket bat but most surfaces exposed to the elements.



Door restoration completed with linseed oil paint - Joel Endersby Restoration

Linseed oil paint penetrates well, dries in approx. 24 hours and lasts around 15 years.

MODERN PAINTS

Since the 1940s the paint industry moved away from traditional (linseed) paint production in favour of chemical, petroleum and solvent based paints (Alkyd & Acrylic). Paint manufacture became a high-tech industrial scale process - think large carbon footprint - which continues to this day. Vast quantities of paint could be made at relatively little expense, thanks to the use of fossil fuels. Post war perhaps one might argue (although I would hesitate) that the low cost and availability of modern chemical oil paint outweighed the negative environmental and health impacts. We are now in a period of 'green enlightenment', so it's unlikely we would have chosen the petrochemical and paint industry giants solutions if they were being proposed today, even with the marketing departments telling us otherwise.

Alkyd paint (artificial oil paint) - linseed oil is replaced with synthetic alkyd resin oil then dissolved in petrochemical solvent. Most of us will have at some time experienced the general narcotic effects of using solvents - headaches, drowsiness, dizziness and nausea. The dangers of long-term exposure to solvents can be much more serious. The World Health Organisation reports a 20% increase of cancers and in Denmark a chronic cerebral syndrome is referred to as 'painters dementia'. Whilst the amount of VOCs emitted may have been reduced to 300 g/l, traditional linseed paint will contain less than 18g/l.

Alkyd oil paint offers no penetration, dries in approx. 16 hours and lasts around 6 years.

Acrylic 'latex' paint (plastic dispersion) - this is a fast-drying paint containing pigment suspended in an acrylic polymer emulsion. A rapid drying time enables a painter to apply two or three coats in a day and move onto the next job, which is very advantageous. These paints are often

Timber bay modern paint failure on Listed Building.



sold as environmentally friendly because the solvent used is water. As the paint dries water evaporates and the acrylic polymers fuse. VOC emissions are low and the painter will suffer no ill-effects. The downside, and it's a big one, is that acrylic polymers are derived from petroleum products - which means that it's plastic! Acrylic paint consists of polymethyl methacrylate (PMMA) suspended in water and you need 2kg of petroleum to make 1kg of PMMA. Clever marketing by the paint industry perhaps, but since when has using non-renewable fossil fuels become 'eco', 'green' or environmentally friendly?

Acrylic paint offers no penetration, dries in approx. 4 hours and last up to 6 years (though often much less).

Modern paint has been unable to successfully replicate the properties of linseed oil. It does not penetrate, breathe or remain elastic as linseed oil paint can, and it has proven to do so for generations. So, our modern paints don't last very long, are rarely green and are expensive. We have paid a high price for paint failure.

Fortunately, there remain a dedicated few that continue to develop and manufacture linseed oil products. Scandinavia has a long history of using linseed oil paint both externally and internally - the cooler northern climate produces a higher quality oil suitable for use in paint. Today, use of linseed oil as a 'green, clean & sustainable' material has had a resurgence and people are enjoying the benefits of its longevity and associated cost savings over time.

Of course, you have a choice, but choose wisely and think to the future - you will be rewarded in the fullness of time.

As they say in Sweden 'we have to look back if we are to see the future' and we must therefore 'rediscover the ancient wisdom.'

Kevin Davies is a Chartered Architect specialising in works to listed buildings and the supplier of Allback Linseed Oil Paint in the UK. 

Swedish Linseed Paint

01769 581765

www.swedishlinseedpaint.co.uk