

# Natural paints and finishes

## Today's choice for a healthier tomorrow

### INTRODUCTION

Paints and other decorative finishes made from natural raw materials are a direct replacement for today's conventional paints made from petrochemical derivatives.

They are simple to use and apply. What sets them apart is that they do not use petrochemical ingredients. While precisely formulated for their intended purpose, they also bring a number of environmental and health benefits.

### GENERAL

**Paint technology today** ensures that natural paints offer high standards of protection, longevity and ease of use combined with altogether pleasanter and healthier products.

Over the past decade serious questions have been asked as to the effect that conventional paints have on the human physiology. In 1989 the World Health Organisation's International Agency for Research on Cancer reported that painting as an occupation is carcinogenic.

This, amongst other findings, forced major change in the coatings industry which led to the introduction and development of many of the paints supplied by Construction Resources.

#### The synthetic environment

Up to 90% of the internal surface area of a building may be covered with a synthetic petrochemical covering. Studies have shown that the indoor environment is now up to ten times more polluted than the external environment and yet we can spend up to 80% of our lives inside buildings.

'Sick Building Syndrome' results from a combination of the use of synthetic paints, toxic emissions from furniture and carpets, poor air quality due to defective air conditioning and lighting. Companies occupying afflicted offices note a higher incidence

of sickness resulting in allergies, headaches, lung disorders and the spreading of infection and viral conditions.

#### A natural alternative

By using surface coatings such as wall emulsions, gloss paints and varnishes whose ingredients are more natural many problems such as excessive static and synthetic chemical off-gassing, and the associated noxious smells, can be eliminated leading to healthier, cleaner living.

Paints are principally made from four distinct ingredient types: pigment, binder, solvent and drier. But due to the chemical complexities of modern petrochemical paints they will also include defoamers, stabilisers, preservatives and sundry other chemicals many of whose effect on our health is unknown.

The principal ingredient of natural paints is linseed oil which, in its various forms, acts as a very stable, long lasting alternative to today's plastic binders. It has been used in paint making for centuries, though there is now a highly developed modern industry based on considerable investment and research that now ensures excellent painting properties.

Linseed oil is made by crushing the seeds from the fully renewable crop, flax, it then is blended together with various other natural oils, resins and pigments to

#### Health problems associated with synthetic paints

- Many synthetic solvents are classified as carcinogenic.
  - Level of solvents in the air during application can exceed recommended levels by up to seven times.
  - Painters are prone to suffer from dermatitis, bronchitis and asthma and nervous system illness.
  - Petrochemical paint manufacturers are now promoting water based
- paints as an alternative to their toxic ranges but these actually contain more chemicals than the oil based type they are intended to replace.
- Several components of water based paints evaporate for a long time after painting, and some may affect human physiology.
  - Vinyl resins, such as those found in conventional emulsion wall paints can damage lungs, liver and blood, are skin irritants and possible carcinogens.

produce modern, scientifically designed surface coatings based on natural rather than synthetic ingredients. Tried and tested for years these paints show that surface coatings technology of today has reached new levels.

#### Technical benefits of natural paints

*Microporous* natural paints allow moisture to pass through them, whilst still being waterproof. This has tremendous benefits in terms of reducing paint flaking, as expanding moisture trapped beneath a paint skin (one of the main causes of coating failure) which causes blistering is allowed to escape.

Problems of damp and condensation can also be alleviated by the use of these natural coatings, in a way that is not possible to achieve with conventional plastic emulsion wall-paints.

#### Nature's own wood protective oils

The oils and resins used in natural paints are those same oils and resins which living

trees and plants use to nourish and protect themselves from rot and insect attack. When used in various wood priming products, they penetrate deep within the timber fibres, giving new timber long lasting, deep protection. Old greyed timber will be rejuvenated by replacing oils lost through weathering.

They can also increase the bond between the paint and the substrate by softening and merging with the resins already present in the timber.

By filling the pores in the timber with oil there is also less room for water vapour to accumulate and, in the unlikely event of vapour being trapped, it can diffuse through the microporous coating as it expands.

**The benefits of longer drying times** are two fold, firstly most linseed oil based paints are not fully hardened for years with the advantage of staying flexible longer, expanding and contracting with the timber as atmospheric conditions change. This

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## The principal ingredients of natural paints

### Linseed oil

Produced by pressing the oil from the seeds of the flax plant, usually boiled to decrease drying times. Used as the binder in linoleum and many paint and varnish products. Strong, durable and flexible with excellent levelling properties.

### Lime

Used for centuries in traditional wall paints, renders and mortar. Product of heated limestone and is the forerunner of modern cement.

### Turpentine

Natural solvent for paint. Distilled from the pine tree, a renewable and biodegradable source, turpentine is a far better alternative to petrochemical solvents such as white spirit which contain toluene and xylene, both known carcinogens.

### d-limonene

A natural solvent derived from citrus fruits, such as oranges, lemons and grapefruit which gives the paints a wonderfully subtle fragrance when used. Produced by distilling the oil

extracted after pressing the fruit peel.

### Chalk

Natural calcium carbonate, used in various wall paints and lime renders as an extender and filler.

### Natural earth and mineral pigments

These are used to colour paints and lime washes and some renders. Pigments are simply extracted, cleaned and milled, some mineral pigments e.g. Ultramarine Blue is heat treated to produce different colours.

## Environmental benefits of natural paints

- The product ingredients, which are as non-toxic as possible, are declared so allergy sufferers and those sensitive to certain chemicals know exactly what they are using breathing and touching.
- The paint products are, as far as possible, made from renewable natural materials such as linseed oil, balsamic turpentine and various citrus oils and plant and tree resins.
- The other ingredients are in plentiful supply. These can include earth and mineral pigments (such as ochre, umber and sienna) and paint extenders / fillers including types of clays and chalk.
- The processes that ingredients undergo are minimal and ensure their maximum biodegradability using 'soft chemistry' rather than 'hard chemistry'.
- The manufacturing processes involve minimal pollution, waste and energy.
- They have a pleasant smell.
- Modern natural paint formulations produce products which are familiar to the user in terms of appearance and application and yet can claim all the above advantages.

reduces the risk of the coating cracking, which would result in the timber becoming exposed to the elements. Secondly, linseed oil has excellent levelling properties as it is given time to 'settle out', drying to a smooth, enamel like film, free from brush marks, essential for high quality decorative work.

### Paints and health

Professional decorators are, by the very nature of their profession exposed to far greater concentrations of toxic chemicals than the rest of us. Worryingly, the World Health Organisation International Agency for Research Cancer, has deemed painting and decorating, as an occupation, carcinogenic, with **painters facing a 40% increased chance of contracting cancer.**

In Denmark, 'Painter's Dementia' or 'Solvent Dementia', is a recognised industrial disease caused by excessive exposure to solvents and other chemicals. In Britain, allergies and chemical tolerance problems are on the increase and have doubled in the last ten years.

Dust can also be a problem for allergy sufferers; many petrochemical paints, such as vinyl emulsions, use plastic based binders that become statically charged and, much like a vinyl music record, painted surfaces attract dust. Natural paints do not suffer in the same way and so reduce this build up of dust levels within a building.

### Paints and the environment

Natural paints use either fully renewable raw materials such as oil of turpentine, produced by distilling the resinous sap from living pine trees, or materials which are in plentiful supply; such as clay or chalk. This results in products that disrupt the eco-system as little as possible, while not using valuable and finite resources such as crude oil.

Manufacturers of natural paints take all aspects of the environment seriously and they keep all energy use, waste and pollution to a minimum.

By reduced processing of the ingredients, less energy is used and less waste and

pollution results. Since natural raw materials are used both the final products and manufacturing waste are biodegradable. Thought is also given to the packaging used, and naturally, this is also recyclable.

In stark contrast some petrochemical paints are notoriously wasteful producing up to ten times their own weight in waste i.e. for each 1 tonne of paint 10 tonnes of toxic waste is created, this can rise to as high as 30 tonnes of waste for some speciality paints.

All our products are well proven in practice, easy to use, and remain in harmony with both the natural and human environment, by being safe to produce, use and live with. Natural paints are made on a smaller scale and may cost more than their toxic equivalent, however many of the products at Construction Resources closely match prices of petrochemical paints whilst some, especially the wall paints can actually work out cheaper.