



## Natural Paints and the Environment

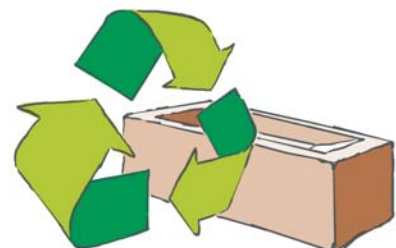
*Phil Brown (CORNISH LIME COMPANY LTD)*

For over thirty years BEECK'S have manufactured AGLAIA decorating products using only **“Natural Ingredients”** which are based on traditional formulations developed through the ages these products, with the benefit of modern science and are proving themselves beyond doubt.



Paint has long been recognised as a medium to protect and beautify architecture and the fittings that adorn its form. Its origins and use have been well recorded throughout history, from prehistoric cave paintings to the works of Michael Angelo and all the other master craftsmen of Europe and beyond. The purpose here, is not to add to the glut of work that has been undertaken to record the history of paint and the complexities of its make up; it is simply our attempt in trying to raise awareness of what has happened to a relatively pure and simple form of architectural decoration, in the context of the health of the planet and the living, breathing occupants that share it, using a product that is both protective and suitable.

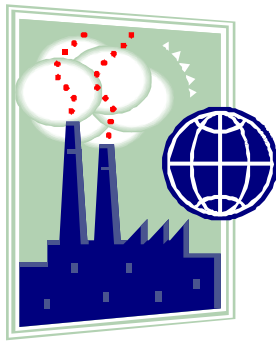
Mankind's lack of respect for the environment has obliged him to make improvements regarding the stewardship of the planet; we are not talking here about going out to hug trees, growing your hair long, or getting all the answers by smoking illegal herbal substances. Things are a little more serious than that, and the time has come for each of us to make some kind of effort in order to do something about it.



As distributors of natural paints this article will focus on that aspect alone; Painting and decorating is one of the cheapest home improvements that you can do yourself and as such the most popular form of DIY we undertake (not necessarily the most agreeable). Nevertheless let's just try and get our heads around the chemistry of the modern paint industry and some of the effects it has on our environment, both personally and globally.

Paint has three major components: a pigment for colour and obliteration; a binder that holds the pigment to the surface to which it is applied; and a carrier to maintain the pigment and binder in liquid form. “So there we have it,” however, it has become a complex issue and one should not lose sight of just how it has evolved in the modern age with the demands placed upon products. The criteria for decorating materials are very demanding and one that were met head on by the chemical industry who have created all manner of cocktails to deal with these demands such as; function, storage, application, drying time, its resistance to mechanical, chemical and biological degradation. It will also have further specific demands requiring further additions concerning such issues as surface compatibility, concrete, plaster, or paper – smooth or rough etc. through to issues such as biocides to provide fungicidal properties, or its visual impact involving pigmentation to name but a few of the demands placed upon it.

The synthetic resin dispersion paints introduced in the fifties during the post-war construction boom are basically a microfine distribution of polymer particles in water. Relatively cheap to produce, the chemical industry embraced these products manufacturing them on a vast scale.



Dispersion paints were also comparatively straightforward to produce and very quickly set the standard for internal and external wall coatings throughout the world.

Some of the Chemicals involved in the pigments, binders, and carriers of modern paint manufacture include: **petrochemicals**, solvents, mercury, formaldehyde, benzene, defoamers, stabilisers, preservatives and other sundry chemicals. Additionally, lead, cadmium and chromium can often be found in the pigments, titanium dioxide for example can account for approximately 25% of the paint by weight, they can also be quite energy intensive to process.

Many of these ingredients are known harmful chemicals which offgas into the atmosphere, affecting the health of people and the planet. These paints release Volatile Organic Compounds (VOC's). The smell of paint for example is produced by dibutyl and diethyl phthalate – two compounds that take time to evaporate, and the cause of countless headaches for many. The impact to our health for many of the others is still unknown to some extent, yet despite the widespread knowledge of the facts the USA alone manufactured in 2001, something in the order of 618 million gallons (2339 million litres) of so called “architectural coatings” (dispersion paints). And this only accounted for 52 percent of their overall production figure, compound that with worldwide figures and it gets scary. Especially when you bear in mind such data as; some petrochemical paints are notoriously wasteful producing up to ten times their own weight in waste i.e. for each 1 litre of paint, 10 litres of toxic waste is created, this can rise to as much as 30 litres for some specialist paints.

Once airborne, many VOC's have the ability to combine with each other, or with other molecules in the air to create new chemical compounds. A report by the American Lung Association states that VOC's can produce a number of physical problems such as: eye and skin irritation, lung and breathing problems, headaches, nausea, muscle weakness and liver and kidney damage.



VOC's are consistently ten times higher indoors than outdoors, with numbers rising to 1,000 times higher after a new coat of paint. Other research in the States has found that VOC's released from paint production and use are hazardous environmental pollutants, responsible for smog amounts, nearly as great as those created by all vehicle exhausts.



In 1989 the World Health Organisation's International Agency for Research on Cancer, reported that painting as an occupation is carcinogenic. In Denmark 'Painters Dementia' caused by excessive exposure to the solvents and other chemicals that constitute paint, is now recognised as an industrial disease with money paid out in compensation.

In Britain, allergies and chemical tolerance problems are on the increase and have doubled in the last ten years. 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, where up to 90% of the internal surface area can be covered with some type of synthetic petrochemical covering. The evidence shows that modern paint production can pose serious questions for the health of those exposed to them, equally for the planet alike. Compound these elements and you can begin to understand a little better the phenomenon referred to as sick building syndrome which is the result of a combination of the use of synthetic paints, toxic emissions from its fittings and contents such as furniture and carpets, poor air quality from defective air conditioning and lighting. Companies occupying afflicted offices note a greater frequency of sickness including allergies, headaches, lung disorders and infectious viral conditions.

*All of this begs the question as to why cancers and other "modern" diseases and ailments are on the increase. Coincidence is a word that no longer seems to fit to our simple way of thinking, especially when one considers just how long the modern production methods have been in use.*



## THE NATURAL ALTERNATIVES

"Green" paints do not refer to the colour, but to the manufacturing ethics or process of the paint itself. Using plant and animal (renewable) or mineral extracts the individual components will if ever, be only slightly modified thus maintaining their natural character. Using AGLAIA you are reassured that the product you are applying will contain no man made chemicals whatsoever. Given the broader picture of "time" the manmade damage to the planet has taken place in much less than 100 years, virtually all of it during the twentieth century, which is simply no time at all.

Ecology having joined forces with Chemistry and Science has created a small number of companies that have strived to 'push' the boundaries of traditional paint manufacturing to attain a completely green product.

Made from biodegradable, natural ingredients these "greener" decorating products are competing on performance alongside those using modern chemically blended formulations, proving that it can be achieved in a manner far more agreeable to the planet and the health of its occupants.

## Natural Ingredients

Modern green paints use active ingredients from renewable plants and trees to create the three necessary elements of paint; binder, carrier and pigment. Binders in the form of drying oils



**AGLAIA**<sup>®</sup> NATURAL PAINTS

can be obtained from linseed oil, soybean oil, safflower oil, dehydrated castor oil, and wood oil (from the fruits of the Chinese tung oil tree). Recovered through pressing, extraction etc. they are then purified, de-slimes, using simple physical processes. The Carrier or solvent element used in natural paints, will almost exclusively be plant terpenes such as balsamic terpenes, citrus terpenes or orange peel oil, once again recovered from renewable resources. The pigments are derived from various sources such as earth pigments which are inorganic (metal oxides) and have been used since prehistoric times. Often found as regional deposits they will be characterized in the local architectural decoration, the most common being the umbers and ochre's found throughout the world. Other pigments could be the mineral pigments including titanium dioxide, chrome oxide green, iron oxide yellow, red, brown, black and ultramarine blue to name but a few. Produced using various methods including precipitation and liberation they could be won as pigments in their own right or as a by-product, they will be toxicologically safe. However, these could sometimes be regarded as ecologically unsound owing to the industrial level by which some are recovered, or from the excessive mineral extraction methods used to obtain them, or even the energy used to obtain them. Other pigments that are used far less, owing to their poor colour and light fastness, are the plant derived pigments.



The manufacture of Natural paint is far from straight forward; unlike contemporary paint manufacturing which is more a case of blending a range of ingredients developed by the Chemical giants. The secret to the success of Natural Paints is the occupation of an intimate knowledge of the chemist, required to blend the main ingredients and other additives in order to make a product to the quality of AGLAIA. Some of these additives could be in the form of chalk, talcum or quartz, introduced as fillers to provide body and improve durability. Or thickeners such as the mineral bentonite or renewable polysaccharides such as xanthan (also used in food). Ingredients such as Turkey red oil (sulphated castor oil), Olein, the oleic acid of a plant, shellac and Soya extracts, are used as dispersion agents for the pigments. The list continues with each ingredient being carefully chosen to meet a given criteria, in a process where the entire manufacturing waste goes to the local composting facility.

All of this knowledge and experience has been taken to levels the Alchemists of the past would be astounded by. Producing a range of paints and other decorative finishes made entirely from sustainable, natural raw materials, and a worthy contender to the Petro-Chemical based substitutes that proliferated during the 20<sup>th</sup> Century.

Despite the positive objectives of companies like AGLAIA the Environmental bandwagon has been hijacked by some companies who market their sometimes “suspect” (natural) paints, often supported by spurious tests that have been conducted in order to tell you everything except ‘that’, which you need, or ‘should be’ entitled to know. Exactly what many of them contain, or if the manufacturer is prepared to offer a complete and honest declaration of ingredients is any ones guess.

## Open and Honest Declaration

AGLAIA is happy to and provides their customers with just that, a complete and honest declaration of all the ingredients used in all of their products. Therefore you can avoid the normal cocktail of pollutants from contemporary paints and create a far more harmonious living space for you and your family, and still have beautiful walls through a wide spectrum of colour. AGLAIA products do not use petrochemical ingredients and surprise surprise, are simple to use and apply. While precisely formulated for their intended purpose, they also bring a number of benefits to the environment and ones health. One analogy of this being that natural ingredients create less static; think back to the way in which a vinyl music record would collect dust, modern painted surfaces are similar. Natural paints do not suffer in the same way, resulting in a lower build up of dusts on surfaces thus reducing the suffering of those afflicted by various allergies. Paint technology today also ensures that these natural paints offer high standards of protection, longevity and ease of use combined with altogether pleasanter and healthier products bringing a fragrant smell of nature to an operation most would regard as unpleasant.

## DAMPNESS

The UK distributors for AGLAIA are specialists in the care and repair of old buildings, where dampness is an issue that is often regarded as something to be expected, even accepted, by many who ‘pretend’ to know old buildings. Dampness is a scourge within any building, old or new, and one that can often be eliminated by using relatively cheap and easy to use products that simply manage the moisture within a wall. “Relatively cheap” that is; compared to the costly answer all too often prescribed by many of the remedial companies, wanting to sell you ‘yet’ another, ‘cocktail of chemicals’. Older masonry buildings are constructed from composite walls of a thickness great enough to shut out the weather and keep water ‘out.’



Walls of any thickness must be allowed to breathe, in order to prevent them adsorbing the vast quantities of water they are often capable of holding within the composition of the structure itself. Traditional materials such as lime were used ‘first;’ these simply allowed any moisture within the wall to be given up as vapour, as and when weather conditions allowed. The interventions that have taken place in the last fifty years or so using modern materials, such as cement and modern paints, have simply served to hold moisture captive within these walls.



The traditional formula, having been tried and tested over hundreds of years, is still being questioned by many? Having been brought up in the modern ways, unaware of the benefits of these more suitable, ‘traditional materials,’ that have been rapidly displaced by materials that don’t work, and have taken too long to value just how poor they are.

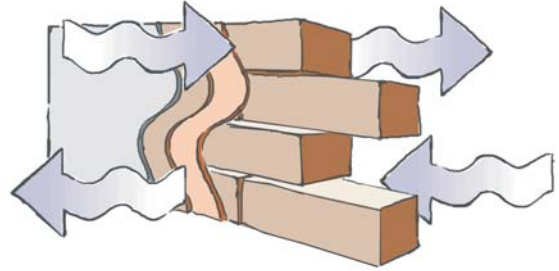
This relatively short testing period for cement and modern paints has been masked by clever marketing during the post war building boom that continues now into the twenty first century. In today’s global economy there are huge corporations with vast appetites and enormous budgets, who are practically capable of convincing us that black is in “fact” white. It is

therefore not in their interest to revert back to the “bad” old ways of simple materials that have been around since man lived in caves, but haven’t proven themselves in a laboratory. Having only been around for fifty years or so, cement and the other modern replacements, simply haven’t done all that they said it would on the tin? often adding to the misery and leaving one to seek further advice regarding guarantees or other such questionable promises.

There will often be other factors that need to be taken into account, but experience has proven that these simple and straight forward materials will allow this transfer of moisture to take place in a manner that once again prove their suitability of purpose. Materials that are not “old fashioned,” having earned their place, with a pedigree that the chemically produced pretenders will never be able to achieve.

### **Natural Paint and Dampness**

Dampness must be the primary cause of coating failure; given its many guises any type of dampness can be destructive to most wall surfaces. Condensation (often diagnosed as dampness) can also be alleviated by the use of these natural coatings, in a way that is not possible for conventional plastic emulsion wall-paints. A significant benefit of natural paints is their permeability; they allow walls to breathe, microporous natural paint allows moisture to pass through, thus reducing the amount of trapped moisture in a wall. This can have tremendous benefits in terms of reducing paint flaking, as it is the moisture trapped beneath a paint skin that sets up the mould and blistering often associated with painted damp walls, a permeable paint simply allows this exchange of vapour to take place, resulting in a coating that stays on the wall much longer.



### **Timber Protection**

The oils and resins used in natural paints are those same oils and resins that have served well to protect them from the rot and infestation that is motivated by nature, within the biodegradable circle of botanical life itself; one of a number of nature’s cycles where the circle can be squared. Very useful for a range of wood coating functions as they penetrate deep within the timbers fibre, providing the timber with deep, long lasting protection. Replacing the oils lost through time and weathering ageing timber will be revived with a durable coating that will fill the pores within the matrix of fibres that wood is, reducing the amount of moisture within and releasing it as it expands as vapour, in a truly microporous manner, arresting the onset of decay.

**For further information on the AGLAIA range please contact**

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