







ALLBÄCK LINOLJEPRODUKTER AB

## Windowcraft & Linseed Oil Paint

Swedish Institute Paris, December 3<sup>rd</sup> 2015

....the rediscovery of ancient wisdom

[WWW.ALLBACKPAINT.COM](http://WWW.ALLBACKPAINT.COM)

### ● ● ● OUR VISION 1982

We set out our dream of the good life.

As unemployed self-employed people suffering from illness, we were forced to find a way of life that would ensure sustainable, economic, long-term development. Life-balance. **But how?**



## ● ● ● PROGRESS OR GOING BACKWARDS?



Trelleborg built in 1910  
Windows replaced 1960s

SP-Fönster modern  
windows after 15 years

**SP-Fönster efter 15 år  
Snickarens efter 150 år**



## ● ● ● RESTORATION ALL YEAR ROUND WITH TEMPORARY WINDOWS



- Economic
- Safe work environment
- Excellent durability





## ● ● ● RESTORATION ALL YEAR ROUND



KLINTEHUS YSTAD 1860 – 1910  
Restored winter 1987



## ● ● ● INNOVATIONS – TECHNOLOGY



Developing different methods for removing putty, paint & timber technology



## ● ● ● PUTTY LAMP & SPOT HEATER



The spot heater works with long-wave infra-red light for paint stripping.

The putty lamp work with short-wave infra-red light to soften hard putty.

Linseed Oil Wax will speed up the process.



## ● ● ● SIMPLE TOOLS



Gives flexibility







The flax flowers outside Ystad

**Linseed Oil** for  
Paint  
Putty  
Soap  
Wax

**Linseed cake** for animal feed

**Straw** for fuel

**Protein** for biogas and fertiliser

## ● ● ● 33 YEARS OF WINDOW CRAFTSMANSHIP

6 EARTH TO SPIRIT



Hans and Sonja with students 1994

### **Window craftsmanship Old and new technology hand in hand**

#### **Seeing the window as a whole**

A window craftsman is a carpenter, glazier, painter, blacksmith and builder all in one.

He or she commands knowledge of the interaction between the different materials of the window – wood, glass, paint, putty, fittings and plaster – and takes responsibility for the end result.

We have moved the boundaries of what is technically and financially possible.



## ● ● ● “WARM” OLD WINDOWS

1. INNER SASH SEALED
2. OUTER SASH WITH CONTROLLED VENTILATION
3. LARGE GAP BETWEEN PANEES

### **Action taken:**

Inner sash sealed using a self-adhesive silicone seal in the appropriate model and size.

Outer sash sealed like inner sash but with gaps cut to obtain “controlled ventilation” in harmony with the moisture balance of the house.



## ● ● ● CAUSES OF CONDENSATION

### **Condensation due to**

- Unsealed rebates
- Unsealed inner sash
- Combination of 1 & 2
- Lack of ventilation between the glass - sashes painted over
- Deep set windows
- Poor general ventilation





## “WARM OLD” WINDOWS

### Measurement tolerances between frame and sash:

- Estimate at least half the rebate
- Measurement tolerance at least the thickness of a ruler (approx. 2-3 mm)

### Why?

- The window must be able to be opened
- Room for future maintenance
- Break capillary action
- Avoid condensation problems



## RENOVATING AND UPGRADING WINDOWS

**Research collaboration with**  
Lund University Faculty of Engineering  
Building construction theory,  
prof. Bertil Fredlund.



Hans Allbäck

### Test window No. 1 1880

Separate double windows with removable inner sash



## ● ● ● RESULTS OF U-VALUE MEASUREMENTS

(spring 1998)

Action taken:

Year of manufacture

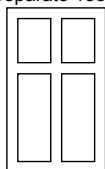
	1880	1930	1982
Current condition	2.44	2.55	1.84
Renovated	2.07	2.28	
New LE-glass	1.60	1.77	

### Relative improvements

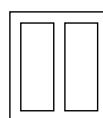
Renovated 15%      11%

Renovated + LE-glass      34%      31%

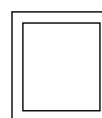
Separate 1880



Joined 1930



3-glazed insulating pane 1982



## ● ● ● ACOUSTICS RESEARCH PROJECT

### “SILENT” OLD WINDOWS

Research project in partnership with  
SP-Borås Report 1998:26 Acoustics  
Christian Simmons

#### Results of measurements

Restored windows from 1880

Best in test compared with special noise  
reduction products on the market!

(separate double windows with removable inner sashes).



Restoration Grönwallska Gården, Ystad, 1990





### Why best in test?

- Large gap/air column between panes
- Asymmetric glazing – different thicknesses of glass in outer and inner sash
- Solid wood construction
- Two panes
- Divided by muntins and rails
- Fitted “flush with façade”
- New linseed putty
- Frame fitted
- Caulking between frame and wall - linseed caulking
- Seals - glued silicone seals



## TIMBER QUALITY, PINE

The resin-rich timber does not suit today's production technology and painting systems

### Impregnation

Resin = water repellent

70% of the tree's resin is in the root stock

### Pinosylvin

Natural fungicide – protection against rot  
Erdman's discovery in 1950s

(Peter Sjömar's thesis

Byggnadsteknik & Timmermanskonst)

### Choose good timber

Harvested in winter

Air dried

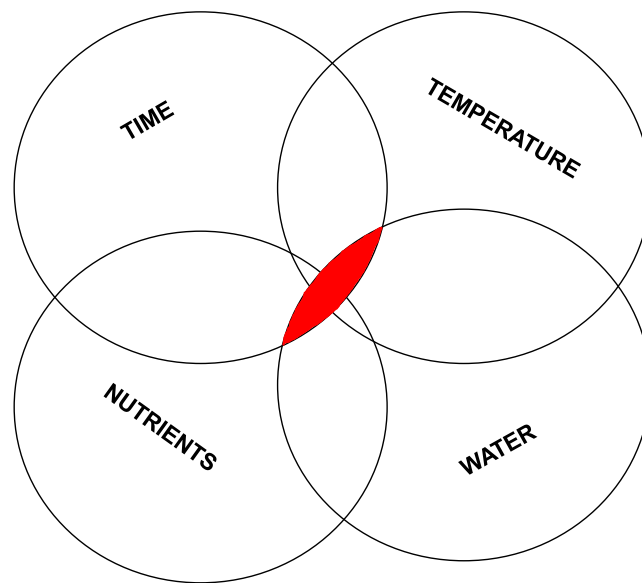
Heartwood at least 50%

High resin content

Paint with linseed oil paint



## ● ● ● CONDITIONS FOR ROT



## ● ● ● TYPES OF MODERN DAMAGE

Wrong surface treatment

Metal coating

Construction damage



Old Construction





## ● ● ● TYPES OF DAMAGE

Don't be fooled!

Due to a lack of knowledge, windows are often condemned as being rotten.

Our experience shows that damage to windows from 1950 and back in time often has a different cause.

### Dry cracks

Use Linseed Oil for impregnation

Linseed putty in large cracks.

Paint immediately

Maintenance with Linseed Oil Wax



25 years later



## ● ● ● RESTORATION IDEOLOGY

### Principle of authenticity according to ICOMOS – Venice 1964

Authentic craftsmanship  
(the technology)

Authenticity of materials

Authenticity of design

Authenticity of context

*Authenticity of function?*



Hand-cranked plane, sixteenth century model



Glue 1920s?



## ● ● ● Krageholm 1726



Examination project for window craftsmen



## ● ● ● DECISION-MAKING MODEL

According to Boris Schönbeck, Chalmers

Historic considerations	
<ul style="list-style-type: none"> <li>• Authentic materials</li> <li>• Blown glass</li> <li>• Original construction</li> <li>• Remaining layers of paint</li> <li>• Location in façade</li> <li>• Type of fittings</li> </ul>	<div data-bbox="1082 1406 1362 1440"><b>Modern requirements</b></div> <ul style="list-style-type: none"> <li>• U-value</li> <li>• Noise reduction</li> <li>• Easy to clean</li> <li>• Silicone beading</li> <li>• Environmental aspects when removing paint</li> </ul>

### ***Questions that must be answered before project start and pricing!***

What has to be done? Why? Level of ambition? When?

Restoration? Renovation? Maintenance?

Simple "delay ageing measures"? New windows?

Rolls? Lada? Push bike?





# Inspection & Diagnosis

## 33 years' experience of practical work

Define the AIM of a test window

Restoration or simple maintenance?

Coordinate with everyone involved

Distribution of responsibilities

Choice of Method, Tools, Materials, Aids?

Check against reference window

Draw up a CARE PLAN

Document and learn from mistakes

### ● ● ● STOCKHOLM'S ROYAL PALACE – 18th CENTURY

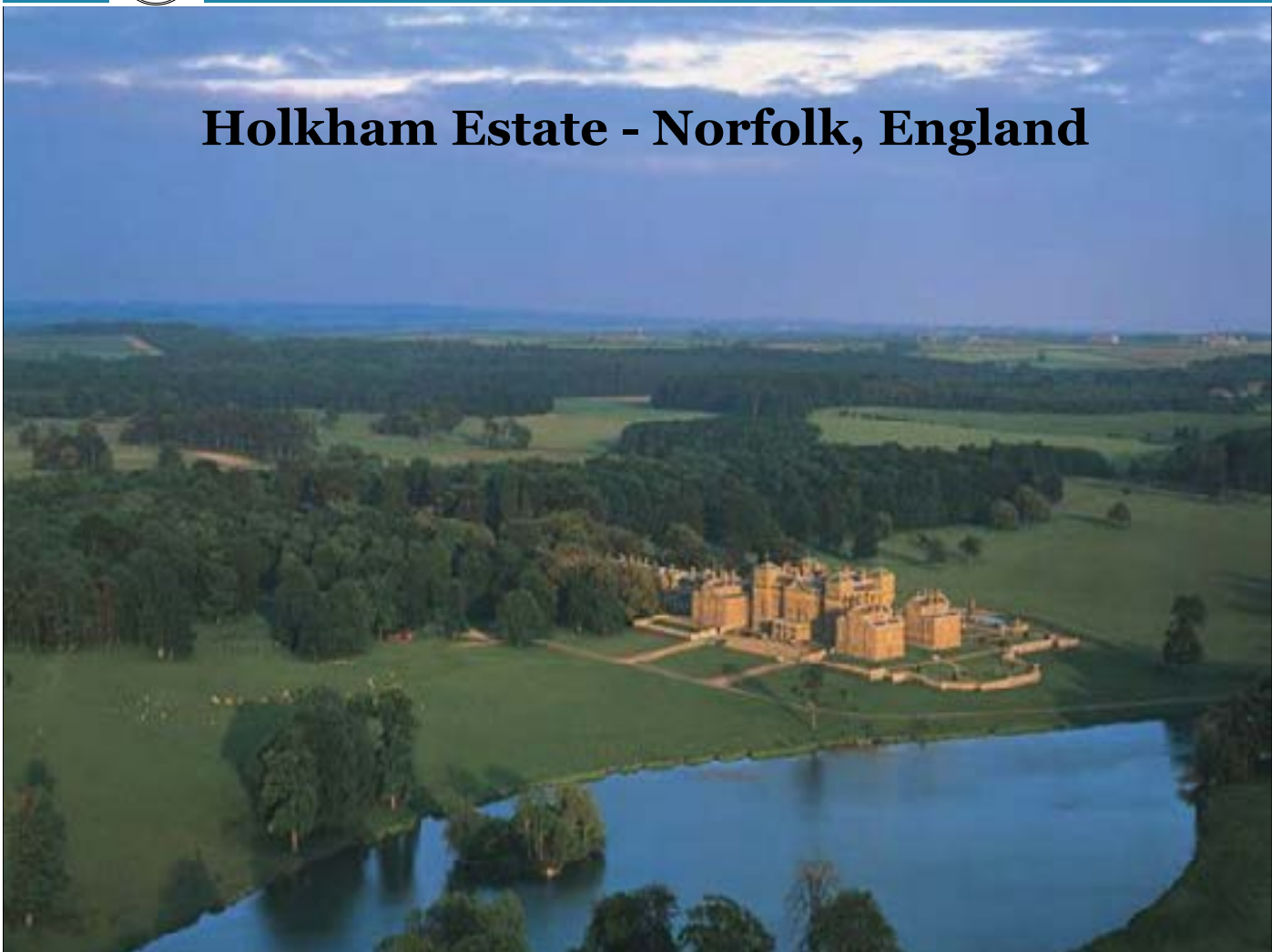
Investigation 1990  
facing inner courtyard

....better to do nothing....

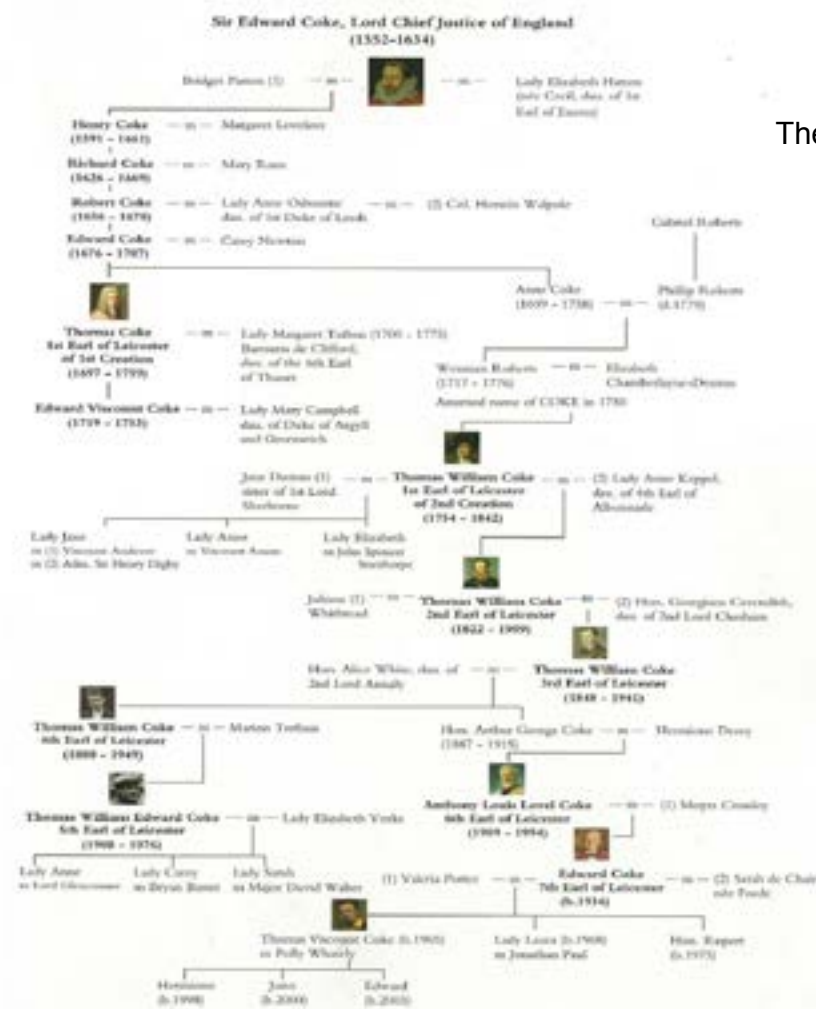




## Holkham Estate - Norfolk, England







The Coke family at Holkham 1552 – 2000



Conservation Officer Michael Knights,  
Norfolk County Council and Tom Coke,  
Holkham Estate, England

Windowcraft and Allbäck Linseed Paint to  
Norfolk, England 2000

## ● ● ● FROM OUR DOCUMENTATION 1982



**Alkyd paint** inside after 2 years  
Repaired under guarantee



**Linseed oil paint** inside after 9 years  
First maintenance 2010



## ● ● ● PÅLSSONHUSET MALMÖ RESTORED 1987



**After 23 years – south side.**  
Topping up the putty on one window.

One coat of paint on all sides.



## ● ● ● MAINTENANCE WITH LINSEED OIL OR LINSEED OIL WAX





## ● ● ● AMALIENBORG PALACE – COPENHAGEN 2002



Copenhagen 1760s  
Training project  
Working only from the outside on  
outer sashes and outer frame.



Client and craftspeople agree on the  
status, action and the end result



## ● ● ● AMALIENBORG PALACE, COPENHAGEN

Utmost historical priority – Renovation – Re-putty with linseed putty



Window craftsperson Malin Allbäck Andersson



Removal of glass with the putty lamp

## ● ● ● AMALIENBORG PALACE – COPENHAGEN 2004

Work on sashes in Ystad,  
Sweden and in Copenhagen



Work on the sashes in the winter from  
lift.

Specially built, insulated temporary  
windows.



## ● ● ● HOUSING ASSOCIATION BRF MALMÖ 1944



Flats from 1942  
1,460 windows  
140 balcony doors

TECHNICAL MAINTENANCE  
1990 - MALMÖ

- Define the problems
- Make test windows
- Decision
- Action
- 1.4 million or 7 million





## ● ● ● IMPREGNATE WITH LINSEED OIL

Impregnate with  
raw or boiled  
warmed cleaned  
linseed oil



The oil must be well absorbed by the timber.  
Use hot air or heat the linseed oil to about 60  
degrees. The linseed oil will become as thin as water.  
Paint immediately with Linseed Oil Paint



Allbäck Linseed Paint  
for Chateau de Versailles

## ● ● ● CHATEAU DE VERSAILLES – FRANCE 2014

Plastic paint creates problems



Original eighteenth century oak window  
Better to do nothing



## ● ● ● CHATEAU DE VERSAILLES – FRANCE MAY 2012

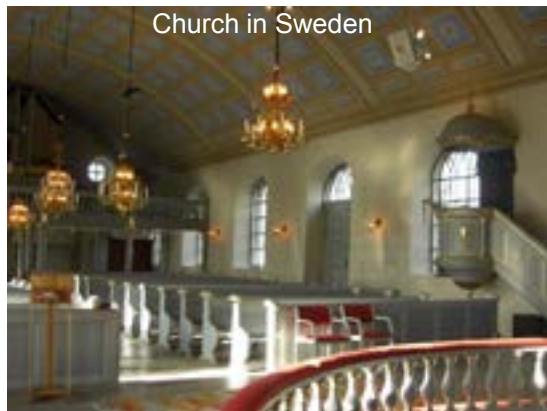


Original oak window  
painted with yellow linseed  
oil paint on a base of hare  
glue from 1680.

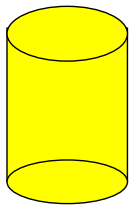




## LINSEED OIL PAINT AROUND THE WORLD AGAIN



## WHAT IS PAINT?



- BINDING AGENT (LINSEED OIL, PLASTIC, ALKYD RESIN)
- PIGMENT
- FILLER
- ADDITIVES

GLAZE = THIN PAINT:

EMULSION = LINSEED OIL PAINT + WATER  
(Interiors and plastered exteriors)

**What is to be painted and why?  
Paint as a decoration, or as a wear  
layer/for protection?**

**Outdoors or In?**





According to an old recipe: “Linseed oil must not be used to serve man before it has been **cleaned**”. (*Gutle 1790s*)



## GOVERNMENT COMMITTEE FOR BUILDINGS RESEARCH

No. 24

*Reports*

1951

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### EXTERIOR PAINTING OF WOOD

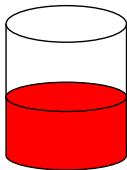
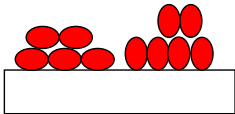
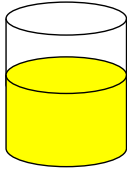
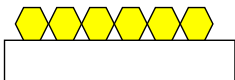
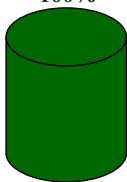

Discussion at conference held  
26 February 1951

*Quote page 59*

“...If the gentlemen do not believe me, I can recommend that you take the most high-class linseed oil you can obtain, for example **degummed**, bleached, cold-pressed linseed oil, that has undergone a number of procedures to remove all traces of pollutants”.

Stockholm



PAINT GROUPS	SOLVENT	DRY MATTER CONTENT	DRYING TIME	SURFACE
PLASTIC-ACRYLIC LATEX	<ul style="list-style-type: none"> <li>• WATER</li> <li>• SPIRITS</li> <li>• PLASTICISERS</li> <li>• FORMALIN</li> <li>• MILDEW PROTECTION</li> </ul>	About 40% 	1 TO 8 HOURS	NO PENETRATION 
ALKYD PAINT ARTIFICIAL OIL PAINT	PETROLEUM SPIRITS = PARAFFIN OIL + TOLUENE	About 55% 	24 HOURS 24 DEGREES	NO PENETRATION 
LINSEED PAINT	NONE	100% 	24 HOURS 24 DEGREES	PENETRATION 

## Re. turpentine in linseed oil paint

Extract from

Book of Crafts – Painting in 1930

page 138

Under normal conditions, adding turpentine to oil paint is **not necessary** and in some cases **damaging**.

The habit that some have of mixing all oil paints with turpentine is **condemnable**. If this is done for reasons of comfort, so that the paint is easier to apply, it can in many cases be **judged to be bad workmanship**.



## ● ● ● OIL PENETRATION INTO SURFACE

Raw linseed oil 0.000005 mm

Boiled linseed oil 0.0001 mm

(Jon Bojer Godal, Norway)

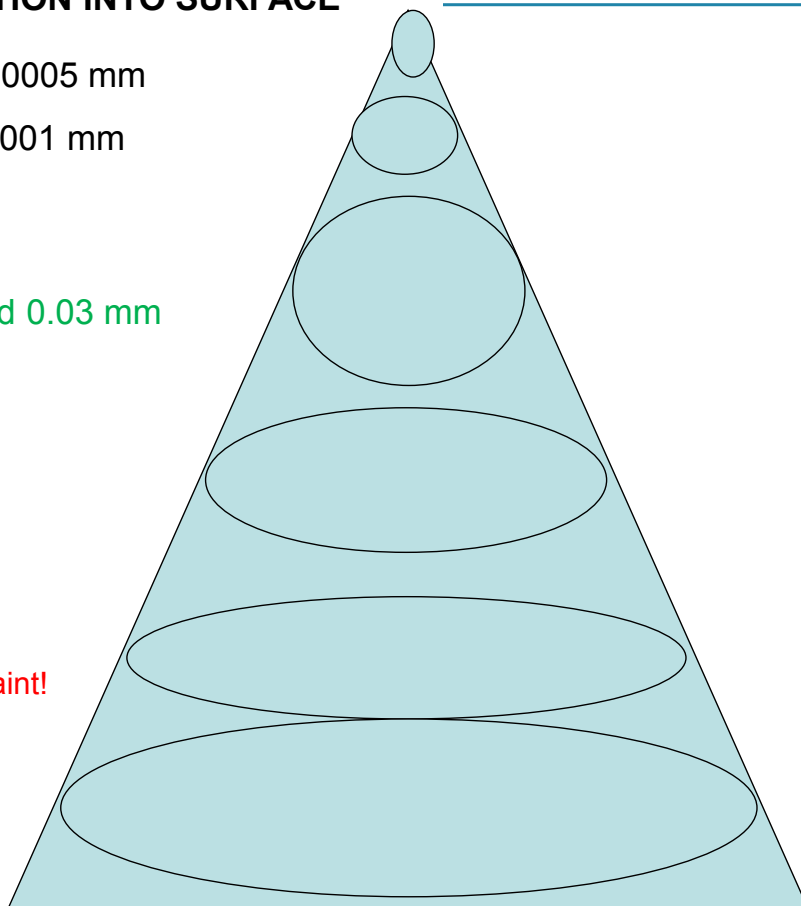
Pore opening in wood 0.03 mm

Linseed stand oil

Alkyd - solvents

Modern oil paint!

Plastic





## ● ● ● COMPARISON LINSEED OIL PAINTS 2011



	<b>Alcro 0.94 L</b>	<b>Allbäck 1 L</b>
Price	SEK 330	SEK 310
Drying time	48 hours	24 hours
Coverage	5-7 sq. m/litre	15-20 sq. m/litre
VOC	over 300 g/litre	less than 1.1 g/litre
Labelling	Dangerous for environment	Environmentally friendly
Dilution	Aliphatic naphtha	No solvents
<b>Price/sq. m.</b>	<b>SEK 52</b>	<b>SEK 16</b>
	<b>Red Arrow</b>	<b>Green Arrow</b>



## ● ● ● LINSEED OIL PAINT ON DEGUMMED LINSEED OIL

### Linseed oil paint from before 1938 - Exterior

Solvent-free  
Natural pigment  
Natural signals  
Single pot system  
Long life time  
Storage friendly

Penetrates into the surface  
Attaches to most surfaces  
Paint in sunshine  
Good rust-protection effect on metal  
Easy maintenance

Low cost – Coverage 15 – 25 sq.m/litre  
Drying time approx. 24 hours

**User friendly - Paint full coverage layer**



### Emission tests 1999 - 2000

All products give off very low emissions and are completely free of poisons. Long-term tests and working hygiene tests are carried out at the SP Technical Research Institute of Sweden in Borås and by Tekomo, Eva Nyman.

#### Extract from examination of emissions Allbäck Linseed Oil Paint

Exposure in professional use		
	Hygienic limit values Short term value SVEFF	Measured value
Acetone/Acroleine	1 200 000	42
Formaldehyde	1 200	12

Report 1 in pdf format in Architectural Conservation Journal - website

Emission tests long-term tests		
	Air threshold value (SVEFF)	Measured value
Nonanal	13	0.14
Formaldehyde	150	0.28

Report 2 in pdf Architectural Conservation Journal - website

## ● ● ● CONSTRUCTION MATERIALS ASSESSMENT

*A common system for environmental assessment of construction materials*

- **GREEN ARROW** **Recommended**
- **YELLOW ARROW** **Accepted**
- **RED ARROW** **Avoided**

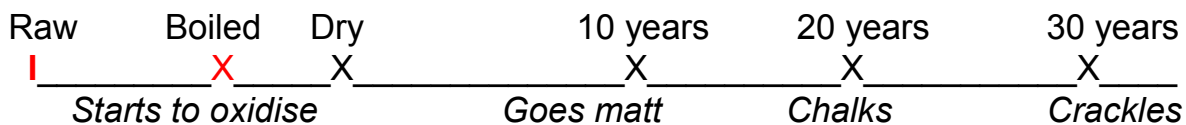
- [www.byggvarubedomningen.se](http://www.byggvarubedomningen.se)
- [www.allbackpaint.com](http://www.allbackpaint.com)





## ● ● ● PROCESSING LINSEED OIL

### LIFE TRAJECTORY



**Boiled linseed oil =  
Oxygenated**  
(Oxidised) Raw linseed oil

**Factors affecting  
oxidation/drying time**

Heat approx. 18 – 20 degrees  
Light  
Ventilation  
Air humidity  
(use dehumidifier)



## ● ● ● CLEANING AND PAINTING WITH LINSEED OIL PAINT



Clean with Linseed Soap or ammonia.

Rinse and leave to dry.  
Fill cracks with Linseed Putty.

Paint wood and metal to full coverage with at least **three** coats out onto the glass.

Use a stiff natural brush or Micro Syntet Brush.

Don't paint over invisible condensation



## ● ● ● MAINTENANCE WITH THINNED PUTTY



Simple "delay ageing" measure for unsealed rebates and cracks. Brush on, wait until it goes sticky. Wipe off the excess and paint immediately with Linseed Oil Paint.



## ● ● ● RE-PUTTY WITH LINSEED PUTTY



First seal rebates with shellac. Paint out onto the glass





## ● ● ● PAINTING WITH LINSEED OIL PAINT



Stir the paint well.  
Paint out on the glass at least three coats



## ● ● ● CUTTING THE EDGES OF THE PUTTY

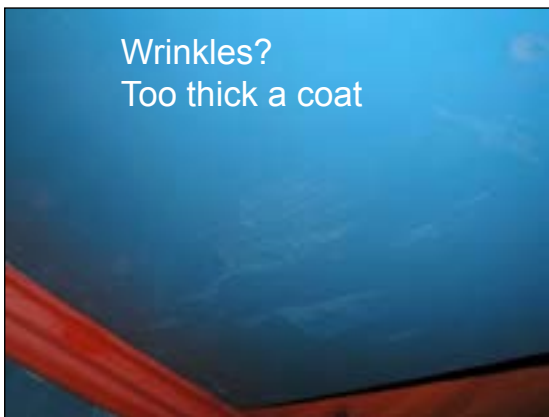


Moisten the glass with a weak solution of Linseed Soap and water.  
Cut the rebates to 2 mm over the glass with a scraper and filler.



## ● ● ● TROUBLESHOOTING

Wrinkles?  
Too thick a coat



Silicone showing through?  
Too greasy a surface?  
Chemical paint stripper?  
Wrong brush?  
Chemicals?  
Cold surface?  
Damp surface?

Who forgot to **stir the paint**?



Finish the  
painting!



## ● ● ● PAINTING METAL AND STORAGE



Paint new zinc-coated window sill or any metal.  
Clean with Linseed Soap or ethanol.  
Paint immediately with Linseed Oil Paint  
on a dry surface.  
Surface temperature minimum 14 degrees C



Store brushes hanging in raw  
linseed oil. Use the oil for  
impregnation.

Dry the brush and carefully paint  
out the oil before the next coat.  
Use the residue for undercoat.





## ● ● ● LINSEED OIL WAX



National Property Board – floor treatment

Lund University – window maintenance with  
Linseed oil paint and window cleaner

Water-resistant treatment



## ● ● ● FULLY MATT EMULSION LINSEED PAINT



For interior wallpaper,  
brick/plaster,  
ceilings and wood

GREEN ARROW



Linus Wall Paint



## ● ● ● LINSEED SOAP



Linseed soap is a saponified linseed oil that can be used for all cleaning apart from in dishwashers.

### **Rusty fittings:**

- Boil in an approx 50/50 soap-water solution
- Leave to stand overnight
- Rinse and brush clean in water.
- Leave to dry
- Paint with linseed oil paint



## ● ● ● SAND & PLASTER



**Priming** for high finish:  
Dilute Chalk with a little Primer.  
Brush primed surface.  
Leave to dry for a few minutes.  
Sand and paint immediately.



**Plaster with Linus + Pumice flour**



**Wet polish**  
With Primer and a sanding sponge.





## ● ● ● HOW HAVE WE SUCCEEDED?

### The power of the vision

**Trust** in life and each other  
**Documented** practical work  
**Eco-friendly** linseed oil products  
**New inventions**  
**Old tools and methods**

**Respect** and **cooperation** across boundaries  
between clients, craftspeople, academics,  
bureaucrats, entrepreneurs and agencies.

Together we can formulate a **shared vision** for  
**sustainable development** in harmony with the  
earth's resources and sound economics.

### *Circular economy*

Read more at [www.allbackpaint.com](http://www.allbackpaint.com)

Journal of Architectural Conservation Issue 1 & 2, 2004.



## ● ● ● THE ALLBÄCK RESIDENCE YSTAD - SWEDEN



Thank you for listening – Do come and visit us







# INSPECTION TO MAKE A DIAGNOSIS - 2013

## Background

Date

Owner/contact

Address

Tel:

Class/Type

Year of construction

Existing construction

Number of windows

Doors

Storeys

Size of windows

Doors

N/S/E/W-facing/sketch

Quality

Condition

Working time available/stages

Financing – state or private

Insurance and responsibility

Authority

Historic building – Overseer

Distance from workshop

Sub-contractor

Fire safety

Other craftsmen working

## General condition

Water damage, leaking balconies, guttering

General ventilation in building

Insect damage – insurance against house longhorn beetle

Fittings

Absent

Standard of glazing

Standard of glass

Wall attachment

Positioning of frames. Outwards or inwards

Wood quality

## Accessibility

Fit balcony

Construction windows – special manufacture

Furniture and curtains

Access

Keys

Cleaning – protective covering

Electricity/lighting

Stores for tools/equipment

Car parking

## Notes

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- 4 Lehman, O., *Physikalische Technik*, G. Wilhelm Engelmann, Leipzig (1885).
- 5 Schönbeck, B., *Stad i Förvandling* (City in Change), Byggforskningsrådet, Stockholm (1994).
- 6 Becker AB, *Nyckel för Målningsbehandlingsen enligt Hus AMA 83 kodbeteckning* (Key for Painting According to House AMA 83 Codes) (1997).
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- 10 Lindberg, B.O., *Cennino Cennini – Den okände målaren* (Cennino Cennini – The Unknown Decorator), Institutionen för konstvetenskap, Lund (1989).
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- 15 Andersson, B. and Nylén, P., *Färger för inllning av trä utomhus* (Exterior House Paints), The National Committee for Building Research, Stockholm (1950).
- 16 Andés, L.E., *Nyaste handbok för Målare och Lackerare* (The Newest Manual for Decorators and Varnishers), 9th ed., Albert Bonniers Förlag, Stockholm (1946).
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- 19 Nymän, E., *Emissioner från linoljebaserad färg* (Study of Emissions from Linseed-Oil Paints), TEKOMO Byggnadskvalitet AB (Sweden's Research and Test Institute), Borås (2000).
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## ALLBÄCK LINSEED OIL PAINT – QUALITY CONTROL FOR HANDLING, USE AND MAINTENANCE

Allbäck Linoljeprodukter AB  
Balkåkravägen 18  
271 91 Ystad, Sweden

Product name: Allbäck Linseed Oil Paint  
Binder: Cleaned, boiled and matured linseed oil  
Thinner: Cleaned boiled linseed oil max 5%

### Areas of use:

The Linseed Oil Paint contains only cleaned boiled linseed oil, titanium dioxide and chalk. Where required, add max 20% Allbäck pure zinc paint to all colours. The paint is solvent-free and must never be thinned with solvent.

Surface	The paint may be used on <b>all</b> clean, dry surfaces, exterior and interior. Max. moisture content 15%. Temperature approx. 5–35°C. May be applied in direct sunlight.
Application	Stir the paint thoroughly. Brush (stiff natural bristles) or spray (high pressure, small nozzle).
Cleaning	Ammonia, Chlorine or Allbäck Linseed Soap. Wash hands and brushes with Linseed Soap and water.
Storage	Store <b>brushes</b> suspended in raw linseed oil (never in water).
Keeping	May be kept indefinitely even below freezing.
Coverage	15–20 m <sup>2</sup> per litre. Each coat should <u>cover the surface completely</u> and be painted in <u>even</u> layers. Apply the same paint in <b>at least three</b> coats on exterior surfaces. Apply four coats to particularly exposed surfaces.
Dry matter	100%
Transport	No restrictions – <b>not</b> hazardous goods
<u>Risk of self-ignition – always soak rags in water and discard!</u>	

### Waste management

No specific restrictions. Paint remnants can be used down to the last drop. Combine any remaining paint and use as primer or mix with about 30% water to make an emulsion for concrete floors and brick walls. Tins can be discarded as normal metal waste. In Sweden, we have an agreement with REPA on recycling packaging.

### Technical specifications, safety data sheet and emission tests

These are available on our website [www.allbackpaint.com](http://www.allbackpaint.com)

VOC – Allbäck Linseed Oil Paint contains <1.1% VOC

### Cleaning & Maintenance

Linseed Oil Paint is elastic and thus absorbs more dirt in the initial phase. After a few years, the pigment grains start to fall out and the paint becomes “self-cleaning”.

Assuming that the surface has been given three full coats of paint, dirt and mould can be cleaned off using Allbäck Linseed Soap. Avoid too high a pH. Mix the Linseed Soap with water until it foams. Clean the surface using a sponge or a brush. Rinse thoroughly and allow to dry. When the surface turns matt and starts to become chalky, treat with Linseed Oil or Linseed Oil Wax or a coat of Linseed Oil Paint. The need for maintenance varies considerably depending on the original treatment, exposure to the elements and other stresses. Interior surfaces have much longer maintenance intervals and retain their shine for many years. Touch-up work will have a different shine initially.

### Comments:

The results of applying Allbäck Linseed Oil Paint depend on the structure, surface, preparation, temperature, humidity, light and method of application. **Detailed instructions** can be found in the **Little Handbook** on our website [www.allbackpaint.com](http://www.allbackpaint.com).

**Always paint a test area first.** In the event of a complaint, please include your documentation and quality control details.

Treated surface.....

With paint type..... Date.....

I/We have read the instructions, carried out the preparatory work and painted.....



[www.allbackpaint.com](http://www.allbackpaint.com)

## ORGANIC LINSEED OIL PAINT

*Solventfree. Made in Sweden*

Paint on clean and dry surface

Clean with linseed oil soap

Dryingtime 24 hours

215 square foot/quart

Covers 20 m<sup>2</sup>/l

