

**POST CONSERVATION REPORT ON THE WEST WINDOW BY CHARLES EMBER
KEMPE AT ST JOHN THE EVANGELIST CHURCH WATERBEACH**



Location: ST JOHN THE EVANGELIST CHURCH, WATERBEACH – WEST WINDOW BY CHARLES EMBER KEMPE

Description of Work: Removal, conservation and isothermal framing of the Stained glass West window. The fabrication of the outer layer of leaded lights and the re-fitting of stained glass framed panels and the leaded lights.

Maintenance Manual reference numbers: N/a

Date: April 2019

On arrival at site, the glazing foreman will brief his team on the following issues relating to the project:

1. Health & Safety Regulations within H & S at Work Act 1974 and other relevant legislation and directives.
2. A comprehensive checklist of any risks that may be encountered on site during the execution of the project, outlining intended procedures to be used to counter these risks.
3. Run through sequence of work allocating tasks to individuals most suited to any given part of the operation.
4. The working area and the immediate surrounding area are fully sheeted as a damage prevention measure. Providing these criteria has been satisfied, work will then proceed on the removal of the window.
5. Access and monitor the main contractors access scaffold, podium steps and towers before any work commences and at regular intervals whilst carrying out the works.

The west window was removed by the following sequence:

From main contractor's access scaffold, the mortar was carefully removed from the grooves of the main light panels. The original external bars were carefully removed and ladled before each panel was removed by careful easing out of the groove. This was done ensuring that the panel was kept upright so as to avoid any undue pressure on the glass.

Once a light was removed, the panels were labelled and then safely loaded into our vehicles. This process was repeated until all panels were removed from site. The opening was sealed with twin wall polycarbonate sealed water tight.

Dismantling and Conservation

Upon arrival at Chapel studio all panels were subject to a second assessment on the bench and under the microscope to assess in close detail the condition of the painted pigment, glass and lead. This final assessment assisted us in determining what level of cleaning was undertaken to each panel and therefore each piece of glass.

Once the panels had undergone the final assessment they were photographed before having two rubbings taken of each panel. The first rubbing is a layout copy; so, when all the glass is freed from the lead matrix it can be laid out in the correct position as originally found. The second rubbing is a glazing copy. All important information was annotated onto this copy such as overall sizes as well as details of lead came sizes and profiles.

The painted pigment although very faded and porous in places we decided to undertake a very careful wet method of cleaning. This involved the use of de-ionised water and soft lint free cotton swabs. The swabs were dipped in the water and then gently rolled over the surface of the glass to remove any dirt or dust. This was repeated until the glass is suitably clean. This was undertaken to all panels as the painted pigment although faded and lost in areas was not in an unstable flaking state.

We used a microscope to assist in the cleaning process and we also used our detailed microscope to assist in the very carefully removal of the scale build up on the surface of the glass. This enabled us to very carefully use a scalpel held flat to the glass to carefully lift off the scale without scratching the painted pigment underneath. Please refer to our during conservation photographs which details this method.

We tried to save as much of the original lead work as we could and only replaced the external leads where we had to carry out repairs to the glass and also where the lead was damaged from the removal of the windows. The remaining internal lead work of each panel was also cleaned and repaired by re-soldering joints where necessary. All panels were hand puttied with Hodgeson's lead light cement, where necessary.

Sections of glass that were badly broken with missing fragments; located in the border sections of the main light panels where replaced with new sections of glass that matched the tint and texture of the originals as best as possible. Pieces of glass with cracked glass was repaired one of three ways, the first being a copper foil repair. This entails sticking a copper foil tape along the edges of each crack, taping the glass piece back together before soldering along the front and back. This is a very strong method of repair and leaves a very fine black line. The second method is resin repair, this is used on aesthetically integral areas of the window such as hands, faces, drapery or key elements of the background design. The third method of repair was a strap lead repair. This was undertaken where

the panel was not dismantled and the break or crack is located more centrally; a small gauge lead has its top flange cut off and aligned along the crack. This is then soldered into place and hand puttied underneath. The conservation diagrams details where and what repairs were used for each panel.

Some areas of painted detail were very badly faded and made the sections of glass almost illegible. Due to the fact that the panels are being brought forward into the internal environment of the church and not being exposed to external weathering and being protected from internal damp from poor heating these areas had the painted line repainted with cold paints on the external surface. We used a bistre brown and red iron oxide glass pigment which matched the colour of the original pigment. This was mixed with a small amount of gold size and turpentine before being painted onto the surface of the glass. This helps to bring back the legibility of the design and worked well. This method is also highlighted on our conservation diagrams, this was only undertaken in the worst affected areas where the legibility was fully compromised. Please refer to our before and after photographs which detail the process and finished result.

The inscription at the base of panel 4a was illegible from the amount of paint loss. The decision was taken after discussions with the client and architect to re-enforce the painted detail onto a supporting backplate and seal it to the original. This was undertaken as the piece of glass was easily accessible and due to the amount of paint loss and the level of re-enforcement required it was deemed a painted and fired supporting back plate was the best option. Please refer to the during conservation photographs that detail this technique.

Once the main light panels where cleaned and conserved they were then housed in purpose made bronze U channel frames. Each panel had u channel sections cut to size and hand bent with a bar bending benchtop equipment; holes drilled for fixing tabs which were riveted to the channel and then soldered together. Each joint was re-enforced with either a riveted L shape bracket for the square heavier main light panels. The 3 smaller base panels were soldered to each other to form one larger panel and framed including a support bar. Strips of lead flashing was then soldered onto the back side of the frames. This is for two reasons, the first being it stops the sunlight glare from creeping around the frames and also more importantly it allows more control over how much airflow and ventilation is allowed to circulate between the two layers of windows. The head panel had four sections of border glass removed and stainless-steel perforated sheet was inserted to allow for maximal ventilation flow from the base to the top as its such a long window.

Thin $\frac{1}{4}$ x $\frac{3}{8}$ rectangular bars where then cut to size and soldered and tied to the panels to offer extra support and are in line with pre-existing support bars.

All leaded panels from the main light panels underwent the above procedures of restoration and conservation and are highlighted on the conservation diagrams. I have also attached numerous photographs to the report to detail the methods of repair also.

The external protection leaded lights where fabricated from the rubbings of the original panels. We used clear 3mm P1 restoration glass and lead comes to match the width and profile of the original panels. In this instance a mixture of $\frac{3}{16}$ " and $\frac{1}{4}$ " round lead was used for the internal leads and $\frac{1}{2}$ flat was used for the perimeter leads. These panels where fabricated with structural lead lines only. We did not copy every single lead line so we can reduce the effect of a parallax between the two layers of windows as much as possible. Unfortunately, you are never going to completely avoid this from happening but the fewer lead lines the less obtrusive this will be. These panels where then cemented both sides and cleaned off.

The external corroded and rusting support bars were replaced with new square non ferrous cz121 bronze to match the width of the originals.

Re-installing Glass

Working from main contractor's access scaffold; each of the outer protective layer leaded light panels were slotted into the groove starting with base panels and working upwards until all panels were in situ. The base panels sit on a new lead condensation tray which have a layer of aquamarine gravel at the base. This stops any bugs getting in and allows any moisture or condensation to collect and drain away. The external support bars were slotted back into place and some bars positioning moved to align the bars with the glazing lines of the original panels and help to reduce the parallax effect as much as possible. The panels were tied to the saddle bars with copper ties. Once fixed into position the grooves were sealed with the appropriate lime-based mortar mix.

Finally, the framed stained-glass panels were screwed onto the internal mullions approximately 5cm away from the original groove. They panels were offered up to mark of the fixing points, holes were predrilled and raw plugs inserted, then the panels were held in place whilst being screwed into place. Finally, the lead flashing was smoothed down along the mullions and then folded slightly out at isolated areas at the base and at the top of the main lights to allow for a good airflow. A final clean down of the working area affected the completion of works.

CHAPEL STUDIO STAINED GLASS

Laura Perry & Laura Hobson
Conservators

PHILOSOPHY OF REPAIRS

This is a blanket statement for all reports; not all procedures will apply in each case.

Robert Holloway is an Accredited Conservator Restorer of the Institute of Conservation. Their Code of Practice follows the guidelines issued by the Institute, the Corpus Vitrearum Medii Aevi and English Heritage.

Technical Procedures:

1. We aim to retain the appearance of the commission in every respect, keeping original materials wherever possible.
2. Every effort will be made to keep original glass and where feasible the original lead came.
3. Only where glass is missing will it be suggested that a new piece be cut to shape, of antique mouth blown glass of matching colour, painted in style, initialled and dated in small but legible letters and fired for permanence, to form a replacement. Adopting such a suggestion is up to the Client in conjunction with the Architect and Heritage Bodies.
4. All glass will be carefully examined under our microscopes for assessment regarding its condition and the stability of its painted surface if it has grisaille or enamelled pigments.
5. As far as is appropriate and if the painted pigment is in sound enough condition, each piece of glass will be cleaned front and back with de-ionised, soft cotton swabs and suitable tools such as scalpels to carefully remove any stubborn deposits. If the painted pigment is in a fragile condition then a dry form of cleaning will be undertaken. A soft sable haired brush will be carefully used to remove any dust or dirt around the painted pigment, when necessary this will be undertaken with the aid of a microscope.
6. Careful consideration will be given to original painted areas where the grisaille pigment is in poor flaking condition to decide whether a permitted consolidation paraloid agent should be used to prevent further paint loss.
7. Where painted grisaille detail has been lost or the legibility compromised by a degree of paint deterioration, it will be suggested to a client that these line details or a supporting mat could be painted on a backing plate and sealed to the original. This is particularly important with regard to missing detail or indistinctness on the face, hands, feet or drapery of key characters in a design as well as any inscriptions. Adopting such a suggestion is up to the client in conjunction with the Architect and Heritage bodies.
8. All cracks will be edge-bonded with approved resins and supported with a backing plate: a matted piece of 1.5mm float glass, kiln formed to match the contours of the original.
9. All backing plates will be silicone edge-bonded to the original glass to create a seal.
10. If thought appropriate, cracks will be mended with copper-foil (which makes a thinner line than a string lead repair)
11. Unsightly mending leads will be carefully removed where appropriate and feasible and the pieces put together again using whatever method is appropriate: an approved resin bond supported by a backing plate, copper-foil, string lead (a very narrow and unobtrusive) or a narrower lead than previously used.
12. It will be suggested that missing areas of enamel can be replaced by painting new colours onto a backing plate and sealed to the original. Adopting such a suggestion is up to the client in conjunction with the Architect and Heritage bodies.

- 13.** All necessary new leads will be of the same size and profile as the original unless in some instances its agreed with the clients and Architects to reduce or increase sizes for aesthetic or structural reasoning. This does not apply to repair leads.
- 14.** The leaded light cement will be applied by hand on projects where the painted detail is in a fragile condition. If the pigment is sound then the cement is applied with the use of a soft brush to push the cement underneath the lead comes to both sides. The cement is allowed to dry for a few hours before being carefully picked and cleaned off and the panels polished clean. The panels are allowed to set for 2 days before being transported.
- 15.** All original ironwork will be kept unless unfeasible due to rust corrosion or inadequate structural sizing.
- 16.** All ironwork will be assessed, cleaned, primed and repainted as required using approved substances. If necessary, the ironwork such as ferramenta bars will be re-tipped with stainless steel to prevent further rust jacking of the stonework surround. This decision will be in conjunction with Clients and Architects approval.
- 17.** All works in the studio is documented before, during and after with photography.
- 18.** Rubbings are made before any disassembly of panels and all-important information such as over dimensions and lead came sizes and profiles as well as tie positions are annotated onto them.
- 19.** Detailed notes are taken during all procedures which support the writing of the post conservation reports.
- 20.** All procedures are reversible.

MATERIAL DATA SHEETS

Materials used during the restoration where the same as previously used on phase one also:

All the following products are supplied by Pearsons Glass Ltd, 32 Wellington Park, Dunes Way, Liverpool, L5 9RJ Tel: 0151 2071 47:

Heaps Lead comes

Hodgesons Lead light Cement

Lamberts antique various green tinted glass stock sheets shipped in from Germany.

Tatra Various green tinted glass from Poland.

Tallow; sheeps fat - used as a flux

Reusche Glass Paint pigments - Shipped in from America

Solder , Grade K from Summit Solder Products, Rail Works, Biggleswade, Bedfordshire, SG18 8BD, Tel; 01767 319625

1/16" Gauge copper wire, Arenastock Tel 01462 481184

12 mm & 6mm U channel Manganese bronze Bar; Lincoln cathedral workshops

Copper rivets

Brass L brackets

Brass 3/8" strip for tabs and re-enforcing plates.

Mortar Mix; Soft Builders sand, NHL 3.5 lime and water ratio of 3 parts sand to 1 part lime.

Stainless steel screws and raw plugs for fixing the framed 15th Century glass – Screwfix.

Heaps
LEAD.

DATA HAZARD SHEET

MATERIAL

Lead (including low level alloys of Antimony, Tin, Arsenic, Tellurium, Copper and Silver).

CHEMICAL COMPONENTS

Lead with some Antimony, Tin, Arsenic, Tellurium, Copper and Silver.

PHYSICAL DATA

A Heavy soft grey metal of low melting point (327 Deg .C.).

FIRE OR EXPLOSION

None known.

REACTIVITY DATA

Lead Oxidises slowly at normal temperatures and damp conditions to a grey/white carbonate form and rapidly above its melting point, vapourising at red heat. The oxidisation rate at normal temperature is much reduced when alloyed with antimony or tin.

TOXICITY

Toxic if ingested, especially in the vapour, oxide or carbonate form, into the stomach or lungs. In such an event medical assistance must be urgently obtained.

HEALTH HAZARD

Under normal use the metal presents only a small health hazard. If handled, gloves must be worn to avoid hand contamination from the soft metal that could be transferred to the mouth. If left stored in damp conditions the metal surfaces will slowly oxidise to the white powdery carbonate form which, if rubbed off or disturbed, becomes a toxic atmospheric pollutant.

If oxidised to the carbonate form, or at elevated temperatures, to the oxide dust or vapour for the environmental O.E.L. is 15 mg of lead per cubic metre of air.

PRECAUTIONARY INFORMATION

If the metal surface is mechanically abraded with a wire brush or wire wool, or used at a elevated temperature likely to raise the O.E.L. above the limit, local exhaust ventilatic equipment and respiratory protection must be used in accordance with the advice given in th Control of Lead at Work Regulations.

A high degree of personal hygiene regarding hand washing, smoking and eating must b practiced when working with lead in any of its forms.

STORAGE

Under cover and, if possiible, in a dry atmosphere to reduce the rate of carbonate formation.

FIRST AID

Eye contact - Dust or fume in the eye should be removed by flushing with running water fo about 15 minutes; if irritation persists seek medical attention.

Skin Contact - wash hands and face after any exposure to metallic lead.

Ingestion \ Inhalation - Absorption of lead following ingestion or inhalation is variable. It is no acutely toxic but medical attention should be sought.

ENVIRONMENTAL INFORMATION

The O.E.L. must not be exceeded in environmental air conditions surrounding any work with this material.

PRODUCT DATA SHEET



PHOENIX® LEADED LIGHT CEMENT

Version No. 2

Revision Date: 02/02/09

Page 1 of 2

DESCRIPTION

A traditionally made cement for making stained glass and leaded light windows.

KEY FEATURES

Forms a weatherproof seal between glass and lead came in leaded lights.

Ready mixed - no preparation or mixing required.

Made to a traditional formula.

Ensures a secure, hardwearing and professional finish.

A proven 30 year history of sound weatherproofing.

USES

For weatherproofing stained glass and leaded light windows.

APPLICATION

PROPERTIES

Application temperature range: +5°C to +30°C

Shelf life: In excess of three months

Service Temperature range: -20°C to +70°C

Setting Time: 16 hours

Storage: Store in cool, dry conditions.

INSTRUCTIONS

The cement is produced at a consistency which is ready for use, but if a thinner consistency is required it can be thinned further with about 1-2% of white spirit substitute.

All surfaces should be clean, dry and free from grease and loose material.

Work the cement into the small gap between the glass and lead using a stiff brush or knife. Then using a pointed dowel run around the edge of the leads, cleaning off excess cement, to make a neat finish.

Spread whitening over the first side of the panel with a soft brush. The edge of the lead can be rolled if necessary.

Repeat the procedure for the second side of the panel. Leave the panel, either overnight or for a minimum of 5 hours until the cement is firm.

When the cement is firm, using the dowel run around the edge of the leads cleaning off any loose cement. Finally, with a brush or cloth remove any traces of whitening or cement, leaving the glass and lead polished.

Leave until the cement is set and the panel firm, approximately 12 hours depending on conditions.

Hodgson Sealants Limited

Belprin Road, Beverley, East Yorkshire,
HU17 0LN, United Kingdom

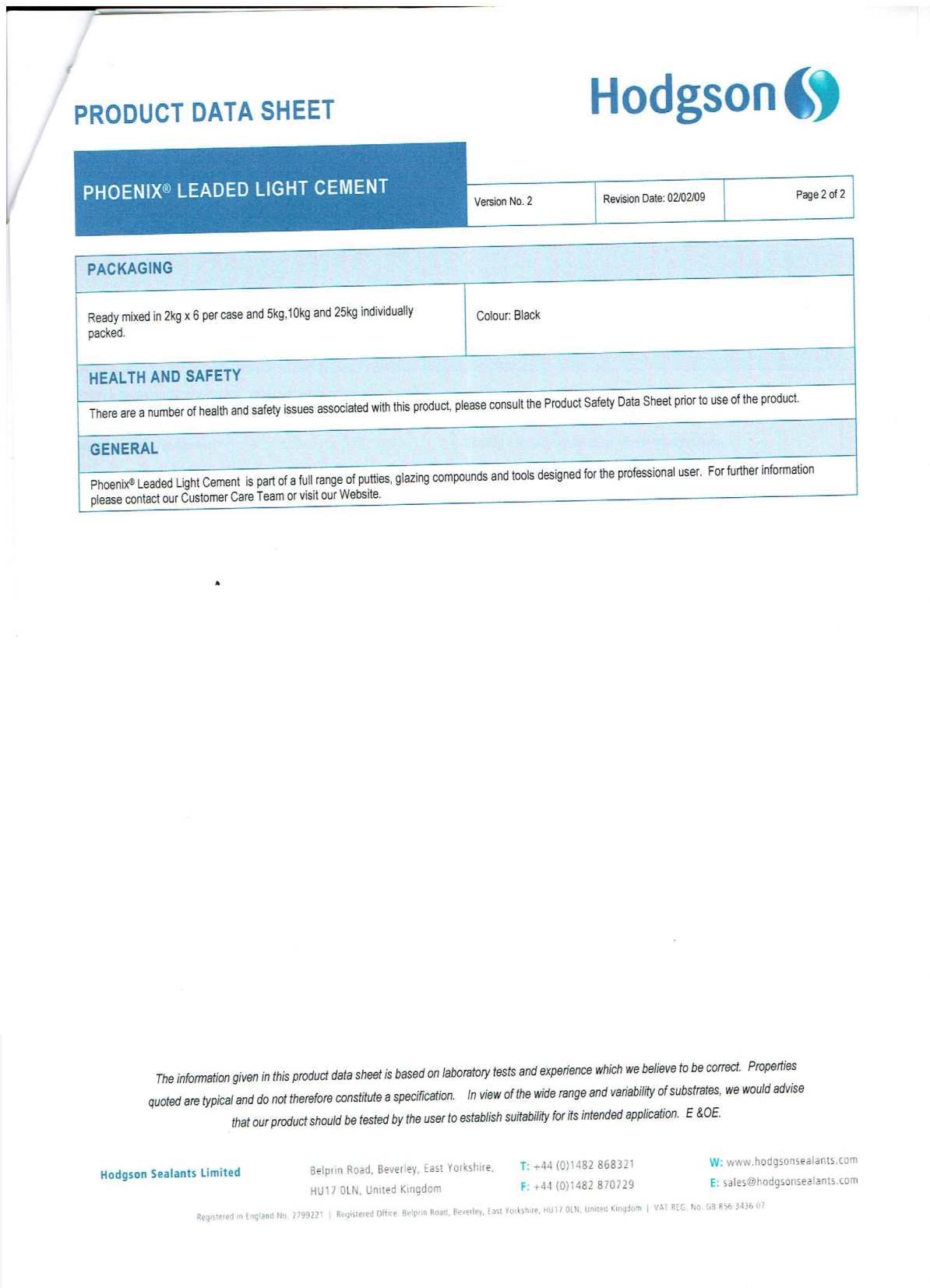
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PRODUCT DATA SHEET



PHOENIX® LEADED LIGHT CEMENT

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Page 2 of 2

PACKAGING

Ready mixed in 2kg x 6 per case and 5kg, 10kg and 25kg individually packed.

Colour: Black

HEALTH AND SAFETY

There are a number of health and safety issues associated with this product, please consult the Product Safety Data Sheet prior to use of the product.

GENERAL

Phoenix® Leaded Light Cement is part of a full range of putties, glazing compounds and tools designed for the professional user. For further information please contact our Customer Care Team or visit our Website.

The information given in this product data sheet is based on laboratory tests and experience which we believe to be correct. Properties quoted are typical and do not therefore constitute a specification. In view of the wide range and variability of substrates, we would advise that our product should be tested by the user to establish suitability for its intended application. E & OE.

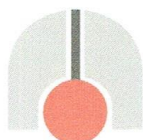
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Product Specification

MOUTH-BLOWN WINDOW-GLASS AND
WALDGLAS FROM GLASHÜTTE LAMBERTS

restauro®

The Glassworks

Our manufacture in Waldsassen produces mouthblown cylinder-glass, also known as Antique-Glass or New-Antique-Glass. LambertsGlas restauro® is the first choice for the replacement of broken or missing antique window glass in historic restoration and reconstruction projects. The quality of LambertsGlas restauro® is comparable to the original glass, found in historic windows. Its production is in many respects identical with that of the original glazing units.

Restoration Glass

Especially for the requirements of high-quality renovation of old buildings, monument preservation and furniture restoration, Glashütte Lamberts GmbH manufactures mouthblown window glass according to historic examples in five variations:

- restauro® Light 2 mm
- restauro® Light 3 mm
- restauro® Classic 3 mm
- restauro® Waldglas/Goethe
- restauro® Extra

In general these products are available at short notice from stock. Variations, like restauro® Waldglas in e.g. yellowish-green, or even matching your original sample, are available on special request.

restauro® Light 2 mm

Without any mold our craftsmen form the glass cylinder by blowing in the blow pit. This gives restauro® Light its smooth surface. Slight distortions and subtle, occasional reams are its prominent feature. Beside the use as window-glass, we recommend restauro® Light 2 mm for furniture restoration and -glazing.



Sizes: ca. 85 x 100 cm
Thickness: ca. 2 mm

References: Ludwigsburg Palace
(Germany)

restauro® Light 3 mm

restauro® Light 3 mm has similar optical properties to restauro® Light 2 mm. Its thickness of 3 mm is suitable for insulating glasses with sizes up to 80 x 85 cm.

Sizes: ca. 80 x 85 cm
Thickness: ca. 3 mm

References: Munich Residenz

restauro® Classic 3 mm

Manufactured in old tradition, restauro® Classic 3 mm resembles the authentic look of window glasses from the 17th and 18th century. The distortions in its appearance are pronounced and especially suited for glazings of colonial-style windows and as part of insulation glass for better thermal insulation.



Sizes: ca. 60 x 90 cm
Thickness: ca. 3 mm

References: Frauenkirche (Dresden), Parochial Church (Berlin), Bergen Museum (Norway)

restauro® Waldglas

Waldglas is the German term for mouthblown window glass with a slight greenish coloring that is typically found in original, ancient window glass. restauro® Waldglas can be produced on request as both, restauro® Light and restauro® Classic.

References: Hof Palace (Austria)

restauro® Extra

For customers that set a stronger value on authenticity we ask our glass-blowers to pay special attention to creating that special look that is typical for original glazings. Distortions are stronger and reams more frequent. Features that mimic glass being produced under much harder conditions, as it was a 100 years ago.



Sizes: ca. 85 x 100 cm
Thickness: ca. 2 mm - 3 mm

References: Litteraturhuset Hardanger
(Norway)

	Character	Sizes	Thickness
Restauro® Classic 3 mm	pronounced	ca. 60 x 90 cm	ca. 3 mm
Restauro® Light 2 mm	subtle	ca. 85 x 100 cm	ca. 2 mm
Restauro® Light 3 mm	subtle	ca. 80 x 85 cm	ca. 3 mm
Restauro® Waldglas	to customer request	Dimensions on request	ca. 2 - 3 mm
Restauro® Extra	pronounced (see description)	Dimensions on request	ca. 2 - 3 mm

Glashütte Lamberts Waldsassen GmbH | Schützenstrasse 1 | 95652 Waldsassen
Tel.: +49 (0)9632 / 9251-0 | Fax: +49 (0)9632 / 9251-100 | www.lamberts.de/restauro

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20-JAN-2010 10:35 FROM:MMC SOLDER 01757 318912

TO:901923269707

P:1/8



SUMMIT
SOLDER PRODUCTS

'where people and business matter'

MATERIAL SAFETY DATA SHEET (CHIP REGULATIONS) Issued/ Revised: June 2006

Product Identification: SOLDER BS219 GRADE K

Trade Name: 219 GRADE K

1. Supplier.

<p>Head Office Mountstar Metal Corporation Ltd. Rail Works, Railway Sidings, Biggleswade, Bedfordshire, SG18 8BD England. Tel No. +44 (0) 1767 319600 Fax No. +44 (0) 1767 317764 Email bob.holt@mountstar.com Contact Mr. R H Holt</p>	<p>Sales Office Summit Solder Products Rail Works, Railway Sidings, Biggleswade, Bedfordshire, SG 18 8BD England. Tel No. + 44 (0) 1767 319625 Fax No. + 44 (0) 1767 318912 Email chris.burton@mountstar.com Contact Mr. C Burton</p>
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2. Composition / Information on Ingredients.

Ingredients	%	CAS-NO	Hazard
Lead-Pb	BAL.	7439-92-1	R61. May cause harm to an unborn child. R20/22. Harmful by inhalation and if swallowed. R33. Danger of cumulative effects. R62 Possible risk of impaired fertility.
Tin-Sn	60	7440-31-5	
Antimony-Sb	0.5 Max	7440-36-0	R20/22. Harmful by inhalation and if swallowed. R51/53(2) Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Health Hazards Identification.

LEAD.

Lead is considered moderate to high toxicity. In the Ingot or stick form as sold it is unlikely to be considered a health hazard. However, lead fumes may be produced when the material is melted and lead will be present in any gross dust. Lead can lead to possible systemic effects and long-term effects as it is considered a cumulative poison.

3.1 Inhalation:

Constipation, abdominal pain nausea.

3.2 Ingestion:

Unlikely to cause a problem.

3.3 Skin contact:

Unlikely to cause a problem.

3.4 Eye contact:

Unlikely to cause a problem.

ONGOING MAINTENANCE:

The restored window and metal works post conservation now pose a minimal risk to the public. There should be a rolling program of maintenance to the windows to keep them in good working order. They should be very gently cleaned/dusted once every two years to help prevent any build-up of dirt onto the painted pigment of the glass. This should be undertaken with the use of No chemical cleaners. The windows should only be cleaned with soft cotton swabs and de-ionised water. The water should be gently sprayed onto the surface with spray containers with a gentle flow and then the water very carefully swabbed off with cotton swabs, no scrubbing or excessive wiping should be undertaken. This should be carried out by Specialist conservators only. We would also recommend that the external bars be redecorated every 5-10 years with a matt black finish metal paint such as hammerite. A photographic record of the windows should also be undertaken every 10 years for the church's records encase of any vandal damage and reference material requirements for any repairs in such an instance.

Robert Holloway A.C.R

Director



Chapel Studio

Stained glass

Tel: 01923 266 386

customer@chapelstudio.co.uk

BEFORE CONSERVATION PHOTOGRAPHS

Panel 1a:



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Panel 2a



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Chapel Studio is a trading name of M. C. Lead Glaziers Ltd. Registered Office: 251 Holt Road, Horsford, Norfolk NR10 3EB. Company No: 4834491

Panel 4a



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Panel 5a



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Panel 6a



During conservation



Figure 1: Example of the paint loss and fading which is typical across the entire window and also a single crack running through the head of the angel.



Figure 2: Detail of the extent of lost painted detail affecting the legibility of the inscription.



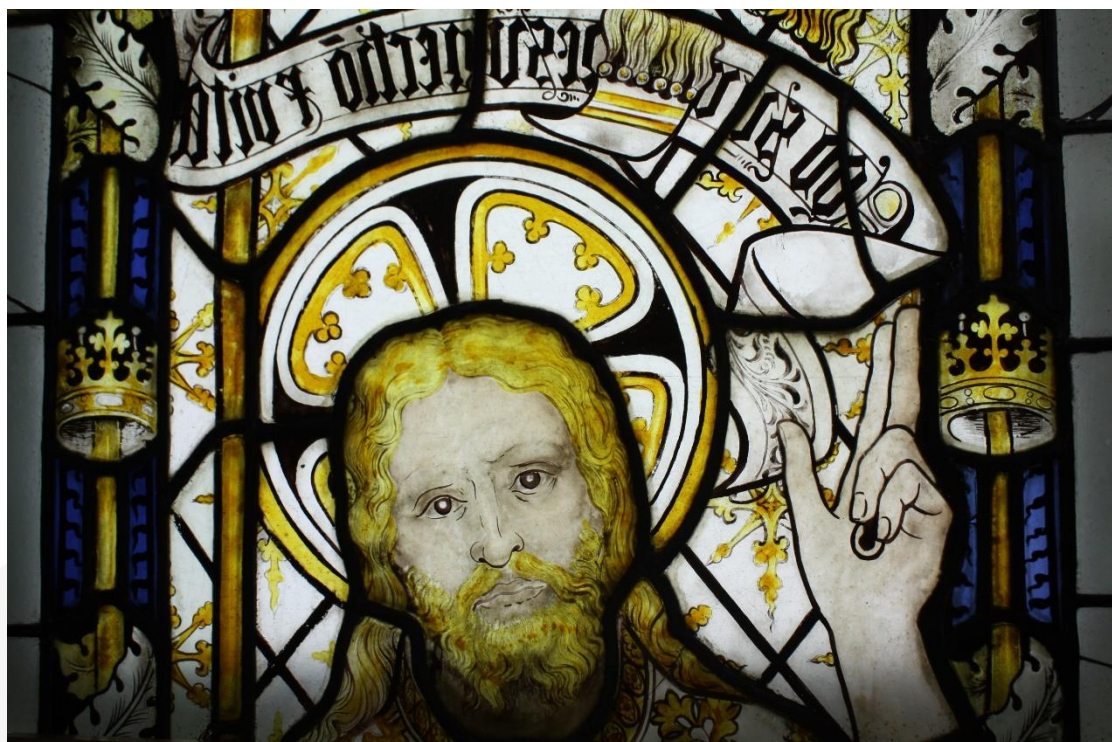
Figure 3:Details of the careful cleaning of each of the panels with cotton swabs and de-ionised water and soft bristle brushes and the use of the microscope to assist in the areas of faded and lost pigment..



Figure 4: the careful removal of surface dust and dirt before a wet method of cleaning is undertaken



Figure 5: Re-enforced painted detail backing plate before being siliconed to the original piece of glass.



6: Before and after detail where the faded painted detail has been re-introduced with cold pints on the external surface of the glass.



Figure 7: Details of the panels being housed in U channel frames with lead flashing soldered onto the edges.






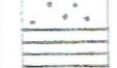



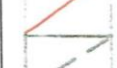


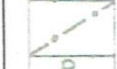
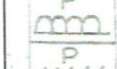
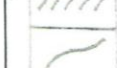
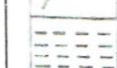


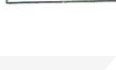


8: The outer protective layer having copper ties soldered onto the joints to align with support bars.

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Conservation Diagrams

Symbol Key for the Conservation Record Sheet

	Plated
	Reversed or Inverted
	Pre 19 th Century Replacement
	Over painted
	19 th Century replacement
	Stop-Gap from Same Series
	Repainted in Recent Restoration
	Stop-Gap (Arbitrary Infill)
	Copper Foil Repair
	Resin Edge Bond
	20 th Century Restoration
	Our Replacement
	Silicon Edge Bond
	Backing Glass with Paint
	Backing Glass with stain
	Original Lead
	Re-arranged
	Crack Left
	New Lead

LIST OF ABBREVIATIONS TO BE USED ON STAINED GLASS CONSERVATION DIAGRAMS

Ⓒ	Cleaned - written record will specify methods used
Ea	Edge joined by adhesive - specify in written record
Eb	Edge joined by copper foil
Es	Edge joined using strap lead
F	Artificial filling
Lc	New linework in cold colour
Lf	New linework in fired colour
Ac	Newly painted area in cold colour
Af	Newly painted area in fired colour
Mg	Modern clear glass newly inserted
Mt	Modern coloured or tinted glass newly inserted

Lc, Lf, Ac or Af may be used in conjunction with Mg or Mt to denote new painted colour on newly inserted glass







Pi	Plated on the front (inside)
Ⓓ	Plated on the back (outside)
Ps	Plated on both sides

If plating is tinted 't' may be added. Lc, Lf, Ac or Af may be used in addition to denote new painted colour or plating glass.

n	May be used with abbreviations for plating or modern glass to indicate stippling
S	Sheet lead placed over modern glass - use after above symbols where appropriate

Please add other symbols if necessary for individual projects

In addition to the letters above we will use the following symbols:

-  = Ea
-  = Eb
-  = Es
-  = New lead
-  = Reversed glass
-  = Our replacement

Note The purpose of the diagram is to provide factual information on work included in the current programme of conservation, rather than an assessment of the date of every piece of glass in the window.

Revised 3/86

Conservation Diagram – Panel 1a

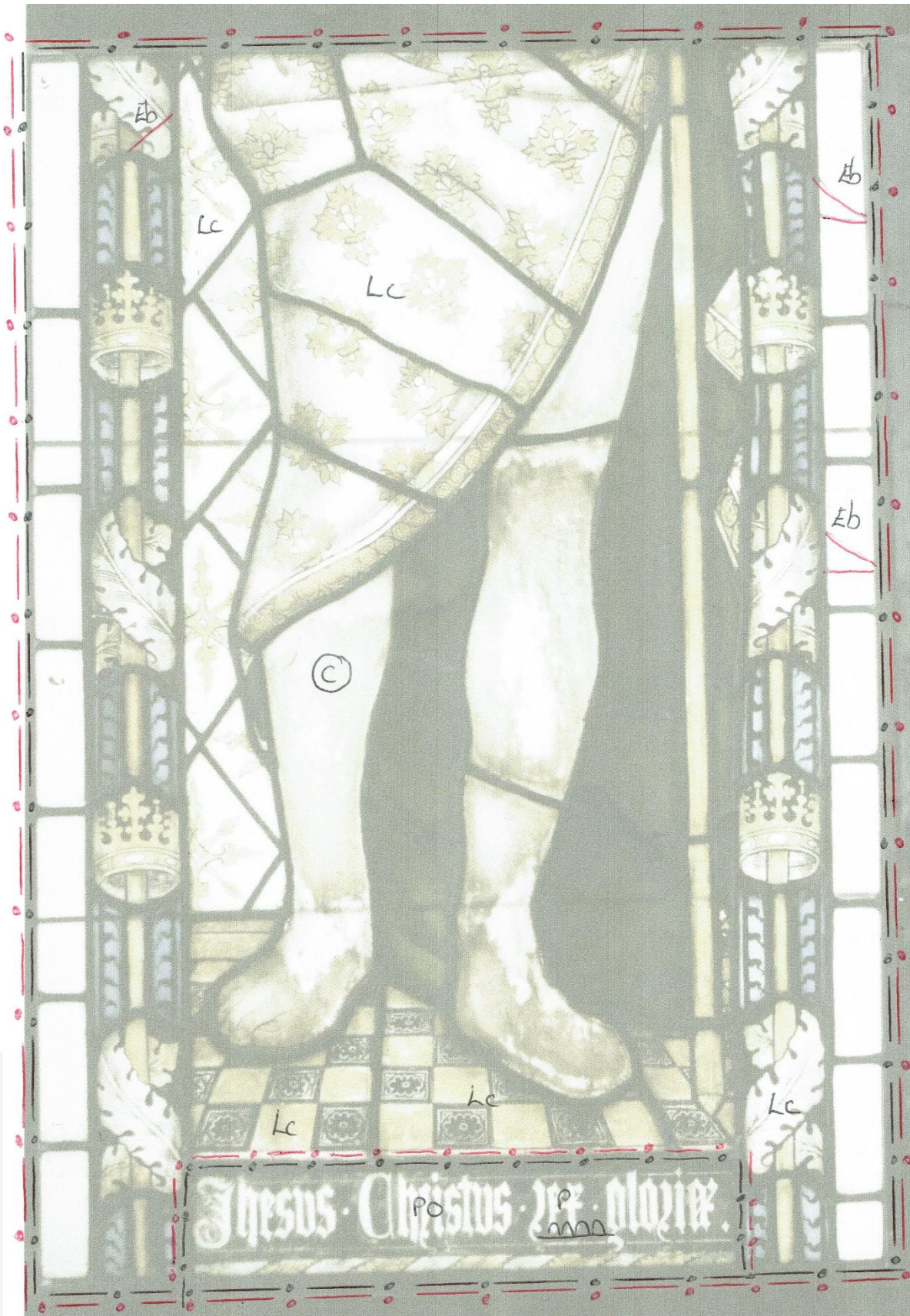


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Conservation diagram panel 2a



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Conservation diagram – Panel 3a



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Conservation Diagram - Panel 4a



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Post conservation - Panel 1a



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Post conservation – Panel 2a



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Post conservation – Panel 3a



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Post conservation - Panel 4a



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