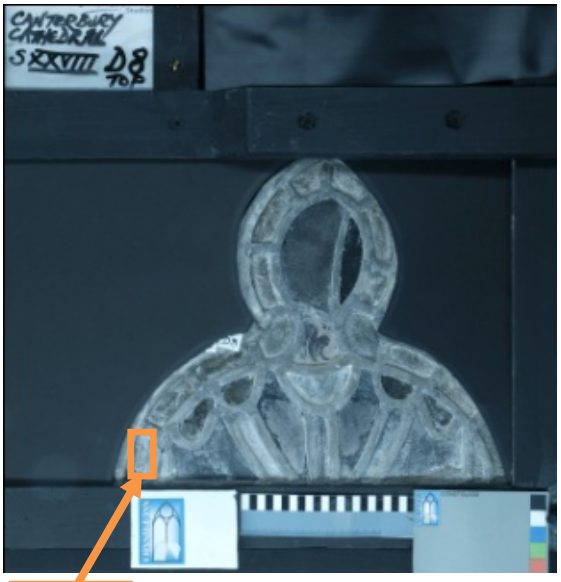
CONSTGLASS

Table of results

1-Pilot object

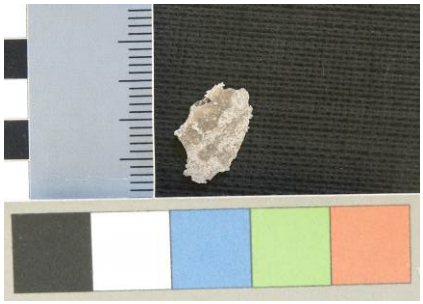
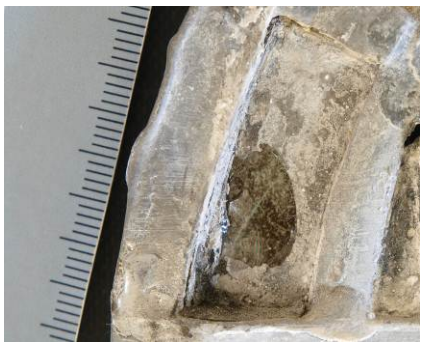
Pilot object:	**Canterbury Cathedral SXXVIII D8**	
Picture	  	**Identification of the panel:** SXXVIII D8 **Treatment:** Product: Polymer coating, possibly Viacryl® Application: Probably applied with a brush after the panel was leaded.

CONSTGLASS

Table of results

2-Results

sample reference:	CAN SXXVIII D8

Questions	Techniques	Answers
Morphology *What is the physical appearance of the coating?* *Is the coating stable?* On both areas the remaining coating was on the rougher textured area of glass. *Has the coating come off the smooth glass surface?*  CAN D8 Fragment sent for analysis to LHRM  CAN D8 Area where fragment was removed for analysis	**Optical Microscope**	The coating was delaminating on the test areas. Unstable surface, non uniform covering. Deterioration of the film: Micro cracks and detachment. Loss of transparency. A higher magnification indicates the coating has not taken off the gel layer.
	SEM	n/a
	Desktop tomography	n/a
	Phase-contrast tomography on Synchrotron	n/a
Chemical Composition	**SEM/EDS**	
Organic component composition *What is the chemical composition of the coating?* *Is it the same coating applied to CAN C1?* *Is it Viacryl®? What is the ratio of Viacryl® and Desmodur®?* *Has the coating degraded or changed in any way?*	**FTIR** *(LRMH)*	The composition does not correspond with LRMH reference spectra. Viacryl® is the closest.
	RAMAN	n/a

Microbiology *Is there microbial activity?*	**Molecular biology** **ATP measurements**	No microbial activity was visible under optical microscope.

Reversibility (A)

How can we remove the coating without damage to the paint layer?

What method and solvent can we use?

Is the coating stable?

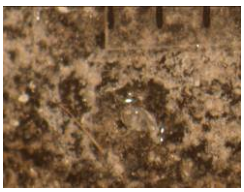
How are the solvents reacting with the glass corrosion, putty and lead?

How do we remove all trace of the solvent?

Test studies
Elimination

Area selected for reversibility test on panel SXXVIII D8

D8 Coating



D8 Coating under optical microscope before reversibility test

Dichloromethane CH_2Cl_2 + Klucel G solvent gel in compress / poultice

Duration	Result
1 minute	Coating is lifting off in flakes that can easily be removed with a scalpel or bristle brush.
5 minutes	Coating has lifted and turned white and flaky. The solvent has evaporated and a lot of the flakes can be removed with a bristle brush. Remaining coating is mostly on the textured corroded glass surface.
Reapplied fresh gel. Then observed 5 minutes later	Most of the remaining coating has flaked and lifted and can be brushed off. The last remains could be removed with a swab moistened with dichloromethane

Dichloromethane gel compress: Stages

1. Japanese paper application

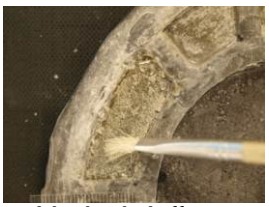
2. Solvent gel application

3. Absorbant pad application

4. Melinex sheet application

5. Compress removal

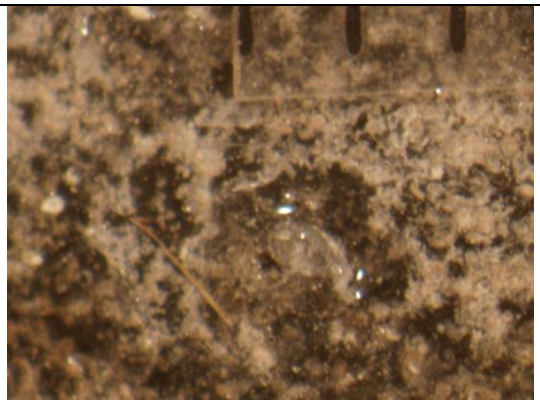
6. Dry, flakes of coating remain



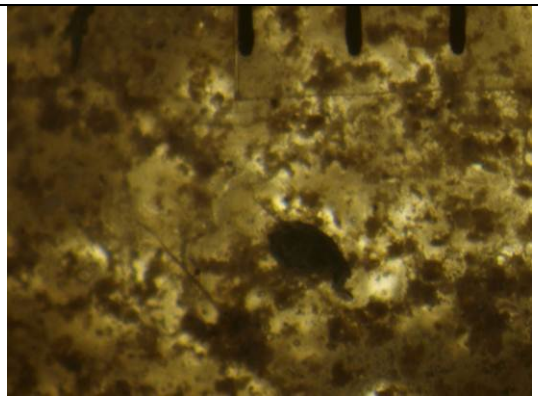
7. Flakes brushed off

8. Final swab clean with Dichloromethane

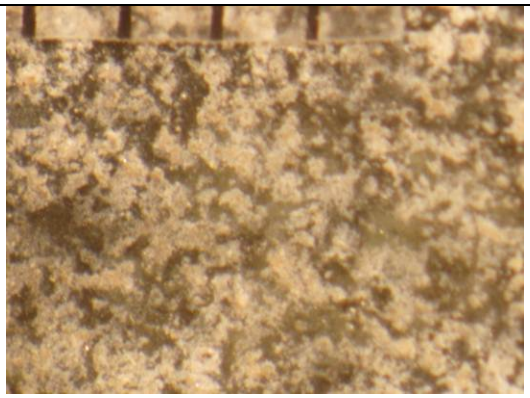
Re-treatability *Do we need to re-treat the glass?*	**Test studies Re-treatability**	No need. No treatment recommended



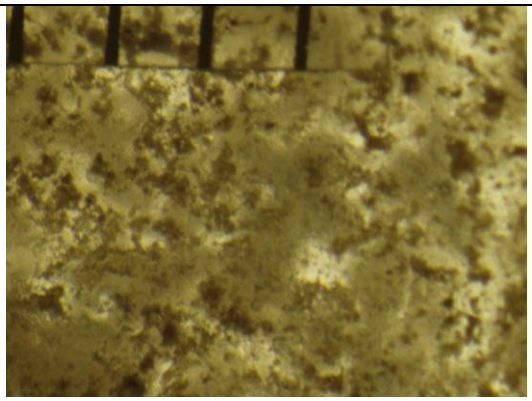
Before reversibility test in reflected light



Before reversibility test in transmitted light



After reversibility test in reflected light



After reversibility test in transmitted light

Reversibility (B)

How can we remove the coating without damage to the paint layer?

What method and solvent can we use?

Is the coating stable?

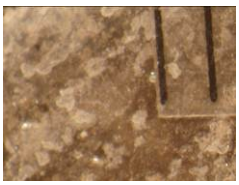
How are the solvents reacting with the glass corrosion, putty and lead?

How do we remove all trace of the solvent?

Test studies
Elimination

Area selected for reversibility test from panel SXXVIII D8

D8 Coating



D8 Coating under optical microscope before reversibility test

Ethanol + Klucel G solvent gel in compress / poultice.

Duration	Result
1 minute	No visible difference to the surface of the coating
5 minutes	The coating has softened and it was removable with a scalpel.
10 minutes	Softened further, removable with a scalpel
Reapplied fresh gel. Then observed 10 minutes later	Some coating could be removed with a swab moistened with ethanol. Once the ethanol had evaporated the coating was hard to detect without strong light
Reapplied fresh gel. Then observed 10 minutes later	Much of the coating has been removed, what remains is in the textured surface.

Ethanol gel compress: Stages

1.Japanese paper application

2. Solvent gel application

3. Absorbant pad application

4. Melinex sheet application

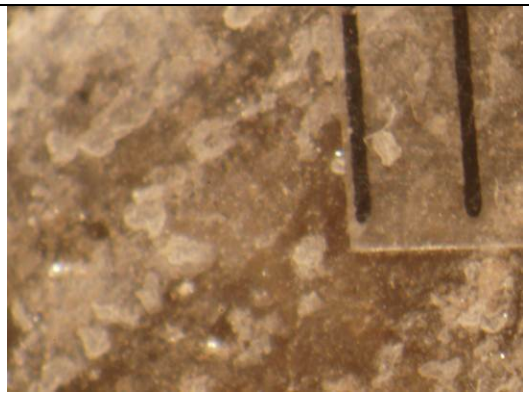
5. Compress removal

6. Dry coating flakes remaining

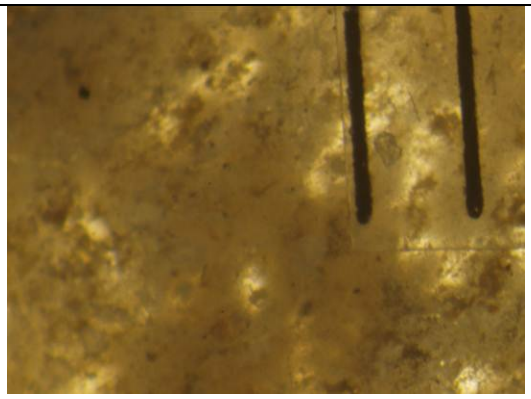
7. Flakes brushed off

8. Final swab clean with ethanol

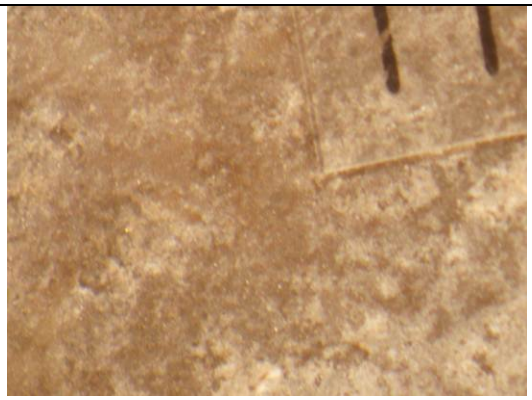
Re-treatability *Do we need to re-treat the glass?*	**Test studies Re-treatability**	No need. No treatment recommended



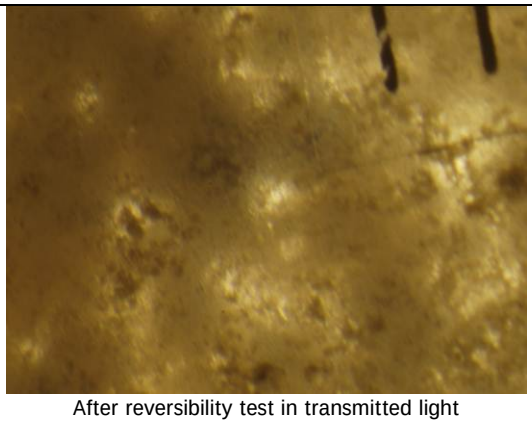
Before reversibility test in reflected light



Before reversibility test in transmitted light



After reversibility test in reflected light



After reversibility test in transmitted light