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#### 1-Pilot object

Pilot object:	Canterbury Cathedral CAN SXXVIII C1		
Picture	Identification of the panel: CAN SXXVIII C1		
	Sample       Freatment:         Product: Polymer coating, possibly Viacryl® + Desmodur®.         Application: Probably applied with a brush.		





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#### 2-Results

#### sample reference:

CAN SXXVIII C1 External side

Questions	Techniques	Answers
Morphology	Optical Microscope	Smooth, glossy, transparent surface. Fills all the pits and / or texture on the glass.
What is the physical appearance of the coating?		It is very stable and solid.
Is the coating stable?		No visible deterioration of the film. It is uniform and smooth. There is no visible discolouration or loss of transparency. The
		support is a post-medieval glass with an irregular surface but not altered. Microscope observations reveal some little bubbles, but only on the glass interface. The adherence of the coating is good.
Sample sent for analysis to LHRM (external surface) CAN C1	Desktop tomography	n/a
5-6-6-	Phase-contrast tomography on Synchrotrop	n/a
Coating under optical microscope (external) CAN C1	Synchrotron	
Chemical Composition	SEM	Not interesting for this investigation
Organic component composition What is the chemical composition of the coating? Is it Viacryl®?	FTIR (LRMH)	No conclusion on the composition of the polymer. It is close to Viacryl <sup>®</sup> . It was compared to other possible consolidants (Paraloid <sup>®</sup> , Motena <sup>®</sup> , Sinmast <sup>®</sup> , Primal <sup>®</sup> , Mastic <sup>®</sup> and Silicon spectra <sup>®</sup> ) but none correspond to LRMH spectrum. The composition corresponds to an aliphatic amide. No visible deterioration of the coating. It is uniform and smooth
Is it Viacryl®? What is the ratio of Viacryl® and Desmodur®?		
Has the coating degraded or changed in any way?	Molecular biology ATP measurements	No microbial infestation visible.





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Mionobiology	Tost studies		
wiicrodiology	Test studies	Dichlonomether	- Kluppel C selvent cel in commence / no li
	Elimination		e + Kiucei G solvent gei in compress / poultice
	Area selected for	Duration 1 minute	Result Softened removable with a
	reversibility test with	1 minute	solucional col has already become
	similar coating on		firmer
	CAN C1	5 minutos	The coating has gone white and
	Chitter	5 minutes	started lifting from the glass
		10 minutes	Lifting off further _ easily
		10 minutes	removable with a scalpel
		Reapplied	Softer and lifting off further
		fresh gel.	Sorter and many on further.
		reated	
		area ed 10	
		minutes later	
	C1 full panel reverse	30 minutes	Flakier, could be removed with
			cotton wool swabs moistened
			with dichloromethane.
	1000 A	60 minutes	Gel had dried out, and flaky
			coating could be brushed away
			with a bristle brush. Some
	Contraction of the Contraction o		coating remaining in pits could
	C1 Coating		be removed with a cotton wool
	-		swab moistened with
			dichloromethane.
		D: 11 /1	1 04
	Carry Carry	Dichloromethan	e gel compress: Stages
	Carl Carl March 19		
	C1 Coating under	11	
	optical microscope	Samounine and	a standard and a standard and a standard a st
	before reversibility	all a start	
	test	1.1	liestien 2. Schenterlennliestien
		I Japanese paper app	2. Solvent gel application
		18	
		3. Absorbent pad app	plication 4. Melinex® sheet application
		Offer and	- Billione
			en internet en transmission
		States and	
		5. Removal of comp	ress 6. Remaining flakes of coating brushed off
	1	1	





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Reversibility (A)	Test studies Re-	No need. No treatment recommended.
How can we remove the coating without damage to the paint layer?	treatability	
What method and solvent can we use?		
Is the coating stable?		
How are the solvents reacting with the glass corrosion, putty or lead?		
How do we remove all trace of the solvent?		
<b>Re-treatability</b>		The piece of sample glass separated into two parts
Do we need to re-treat the glass?		along the previously bonded break line, when it was under observation in the LHRM laboratory.



After reversibility test in transmitted light





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Dovorgibility (D)	Test studies	Ethanol   Vluos	C solvent gal in compress /
Keversidinity (B)	Test studies	Eulanoi + Kiuce	a G solvent ger in compress /
How can we remove the coating without damage to	Emmation	pounce.	
the paint layer?	Area selected for	Duration	Result
	reversibility test with	1 minute	Softened – removable with a
What method and solvent can we use?	similar coating on	1 minute	scalpel
	CAN C1	5 minutes	Further softened
Is the coating stable?		10 minutes	Softer but still in place Ethanol
		10 minutes	had been absorbed into pad or
How are the solvents reacting with the glass			evanorated
corrosion, putty and lead?	A standard A	Reapplied	Ethanol had all been absorbed
		fresh gel	into pad or evaporated so fresh
How do we remove all trace of the solvent?		Then	gel was applied using a thinner
		observed 10	absorbent material.
	C1 Coating	minutes later	
		30 minutes	Soft but still in place
	and an interpretation	60 minutes	Soft but still in place. Gel still
			moist
		4hrs	Fresh gel re-applied
	State of the second second	6hrs	Coating on surface removed.
			coating remaining in etched pits
	C1 Coating under	Ethanol gel com	press: Stages
	ontical microscope	C. Contraction	
	before reversibility	Real States	The second secon
	test	Marchael	1 a contraction of the
	test		
		the second	
		1. Japanese paper an	plication 2. Solvent gel application
		and the second	
		Con States	- An - An
		Contraction of the second	
		3. Absorbent pad ap	plication 4. Melinex® sheet application
		State of the second	A Real Provention of
		Contraction of the second	- 18
		A Start House to	
			A Participation of the second se
		5. Removal of comp	oress 6. Flake of coating remaining
		and the second second	
		Sec. Sugar	
		and the second second	A. Carlos A.
		A CONTRACTOR	
		7. Flakes brushed of	f 8. Final swab clean with







#### Table of results



#### sample reference:

CAN C1 (inside)

Questions	Techniques	Answers
<b>Morphology</b> <i>What is the physical appearance of the coating? Is the coating stable?</i>	Optical Microscope	Smooth, glossy, transparent surface. It is very stable and solid.
	SEM	No visible deterioration of the film. It is uniform and smooth. There is no visible discolouration or loss of transparency. The support is a glass with black trace line paint and recovered by a brown matt. Glass paint is cracked or missing, with deposits between cracks.
	Desktop tomography	n/a
Fragment for Sample sent for analysis to LHRM (internal surface) CAN C1 Coating Coating under ontical microscope in reflected light (internal)	Phase-contrast tomography on Synchrotron	n/a
CAN C1 CAN C1 Coating under optical microscope in transmitted light (internal) CAN C1		





## Table of results



Chemical Composition What is the chemical composition of the coating? Is it Viacryl®? Is it Viacryl®? What is the ratio of Viacryl® and Desmodur®? Is it the same coating on both the external and internal surface?	FTIR (LRMH)	The coating could be a mixture of Primal®, Viacryl® and the component in the polymer on the external surface.
<b>Organic component composition</b> <i>Has the coating degraded or changed in any way?</i>	Results from LHRM SEM	No visible deterioration, discolouration or loss of transparency of the coating.
	RAMAN	n/a
Microbiology	Molecular biology ATP measurements	No microbial activity was visible under optical microscope.
Reversibility	Test studies Elimination	
<b>Retreatability</b> <i>Do we need to re-treat the glass?</i>	Test studies Re- treatability	No need. No treatment recommended.