



Table of results



#### 1-Pilot object

Pilot object	Canterbury Cathedral NXVII C2	
Picture	<image/>	<ul> <li>Identification of the panel: NXVII C2 internal face in transmitted and reflected light</li> <li>Treatment: Product: Microcrystalline wax no: 1129 and Polythene A Wax; re-treatment with Paraloid® B72</li> <li>Application: <ul> <li>Wax applied with a brush in dilution with white spirit. Application of wax early to mid-1980s in situ as temporary consolidant of severely flaking painted decoration. No cleaning was carried out prior to application of wax. The wax was not polished (unlike CAN nII 7). Window remained unprotected until 1992.</li> <li>Re-treatment with Paraloid® B72 in 1992.</li> </ul> </li> <li>Fractures bonded with Silicone Rhodia® CAF 3 in 1992.</li> </ul>





Table of results



#### 2-Results

sample reference

CAN NXVII C2

Questions	Techniques	Answers
MorphologyHas the re-treatment coating of Paraloid® B72 changed or deteriorated since application in 1992?Image: Construction of the silicone since application in 1992?	Optical Microscope	<ul> <li>Observations during conservation in 1992 (window unprotected to that date): Wax coating delaminating and flaking with little or no adhesion to substrate in many places. Good adhesion on other places. Surface deposits of dust on wax. Corrosion processes had continued since wax application, both in the painted decoration and in the glass surface. More corrosion products had developed in existing damage areas underneath the wax coating, adding to its delamination.</li> <li>Observations during examination in 2009 (window protected by internally ventilated protective glazing since 1992): Remains of wax coating stable, no new delamination observed.</li> <li>1992 Paraloid®-B72 application appears sound and unaltered; no delamination observed. Surface appears clean with no new deposits. No deterioration to the silicone repairs made in 1992, they remain stable.</li> </ul>
	SEM	
Silicone repair and Paraloid® B72 treatment	Desktop tomography	





Table of results



Phase-contrast tomography on Synchrotron	Dummy samples were made to replicate the glass and consolidation methods used using Microcrystalline wax and polythene A wax with a coating of Paraloid® B72. The thickness of the wax coating (made in 3 layers) and Paraloid® B72 were increased and coloured with raw umber powder pigment for 2 samples. Sample CAN 1a: Paraloid® B72 mixed with pigment
	Paraloid B72
	Sample CAN 1b: Wax mixed with pigment Paraloid B72 Results found that the Paraloid® B72 had merged with the surface of the wax, therefore there is no risk of delamination of the Paraloid® from the wax.





### Table of results



Chemical Composition	SEM/EDX	Wax shavings were carefully removed under
If there is wax present that is significantly different from the microcrystalline wax or polythene A? To determine if the same mixture was used on all windows.		the microscope and sent to the Fraunhofer institute. Results found that Microcrystalline wax no: 1129 and Polythene A wax are present in the wax shavings taken from this panel (unknown ratio).
Sample area		
Sample area wax shaving		
Organic component composition	FTIR	
	RAMAN	
Microbiology	Metabolic activity and taxonomical description of microorganisms	<ul> <li>CAN NXVII D2 (in situ):</li> <li>low metabolic activity (ATP 190 RLU/25 cm<sup>2</sup>);</li> <li>isolated microorganisms: <i>Engyodontium album</i> (fungus) and bacteria (medium contamination).</li> <li>CAN NXVII 3 (in storage):</li> <li>low metabolic activity (ATP 200 RLU/25 cm<sup>2</sup>);</li> <li>isolated microorganisms: <i>Aspergillus fumigatus</i> (fungus) and bacteria (medium contamination).</li> </ul>
Reversibility	Test studies Elimination	The wax coating was removed mechanically with scalpels under optical microscope in 1992. Where adhesion was good the wax coating was thinned down mechanically, but not completely removed. No new reversibility test was carried out in 2009, as the unstable condition of the painted decoration was of concern.
<b>Re-treatability</b>	Test studies Re- treatability	Paraloid®-B72 in acetone dilution was applied in 1992 to consolidate flaking paint. This was often applied onto remaining wax coatings. Application of Paraloid®-B72 with brush. Easy application and good immediate adhesion.