



CONSTGLASS



Data sheet for pilot objects



Object: Smolensk 9 st. – pilot object

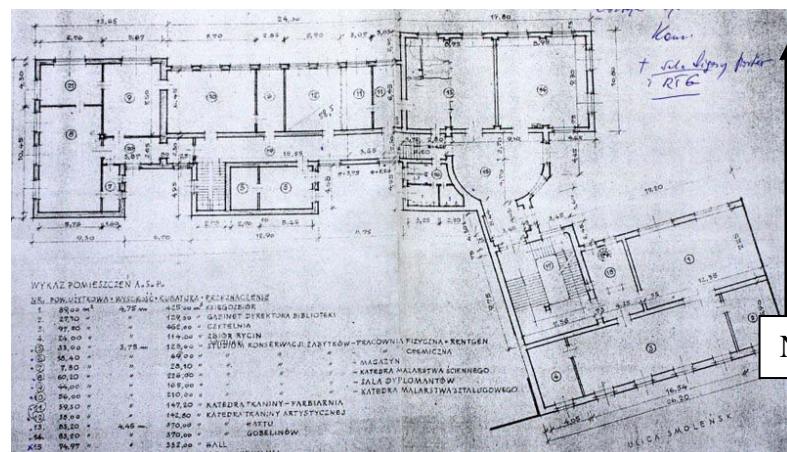
Date: 15.05.2008

OBJECT IDENTIFICATION

Site *Cracow (Poland)*

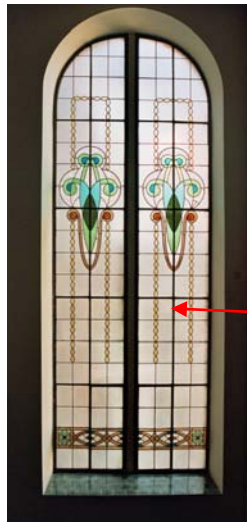
Building *Smolensk 9 (former Industrial Museum)*

Location and orientation of the window
Plan of the building

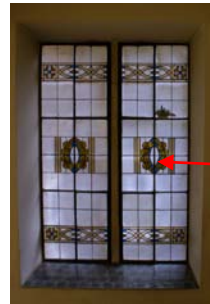
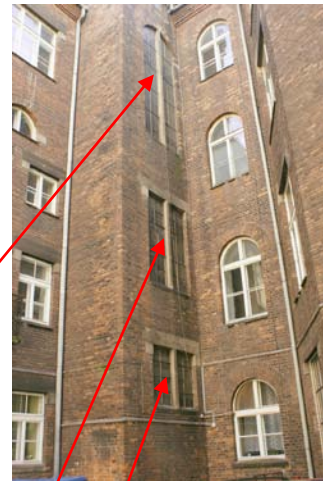




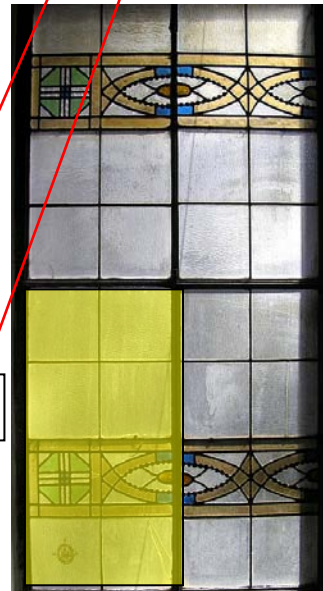
**Description of the window opening
(dimensions,
number of lights;
photo, test panel marked)**



C



B



A




Three separate windows:

A- ground floor (pilot object) dim: x=90 cm; y=160 cm




B - first floor: dim: x=90 cm; y=240 cm

C - third floor: dim: x=90 cm; y=400 cm




Pilot window and pilot panel marked yellow


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Date	<i>1913</i>
Short description of the window (identification of subject, artist, workshop)	The building designed by T.Stryjenski (structure), J. Czajkowski (facade, staircase); W. Jastrzębowski (furnishings), Jan Uziębło: stained glass windows in the staircase. Workshop: Krakow Stained Glass Company S.G. Żeleński (in existence since 1902).
Owner	<i>Academy of Fine Arts, Cracow, Poland</i>
Person(s) in charge	<i>The Rector of the Academy of Fine Arts</i>
Investigated panel (inventory number CVMA number, size)	A1, dim: 44 x 80 cm


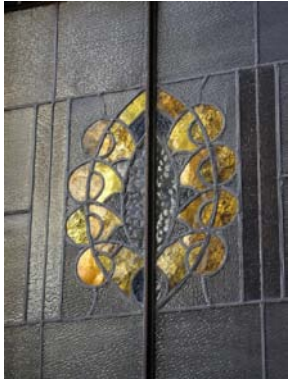
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Manufacturing technique	unpainted glazing	rolled and colored glass	+
	painted glazing		-
		oxide paint / grisaille paint inside	-
		oxide paint / grisaille paint outside	-
		silver stain inside	-
		silver stain outside	+
		transparent enamel inside	-
		transparent enamel outside	-
		gilding outside	+
		special leading	+

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Further information :In Smolensk windows the artistic values were

created by using: special rolled glass (fig.1), carved leading (fig.2), gilding form outside




fig.1 decorative cathedral glass

fig. 2 carved lead came

fig. 3 gilded glass (outside)

ENVIRONMENT IN SITU / IN STORAGE

Protective glazing	no protective glazing		+
	protective glazing		-
		installed in the original position of the ancient panels	-
		mounted to the outside (ancient panels stay in their original position)	-
		no ventilation	-




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	internal ventilation	-
	external ventilation	-
	size of interspace between ancient panel and protective glazing	n.a.
	ventilation slot at the top (size)	n.a.
	ventilation slot at the bottom (size)	n.a.
	date of installation	n.a.
	<i>Further information:</i>	

Material protective glazing	
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Surround materials and construction related materials	Window's surround – sandstone, brick Ferramenta – iron, saddle bars – iron from outside). Protective grilles – NO Sealant: linseed putty Leading – 95 years old. Low strength, local breaks– crumbling Treatment from beginning of window's existence - none
--------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Museal exposition / Storage	Room	<i>n.a.</i>
	Cabinet	<i>n.a.</i>
	Store	<i>n.a.</i>
	<i>Further information:</i>	



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Objects exposed to	partial sunlight	-
	daylight, but no direct sunlight	+
	artificial warmlight	-
	artificial coldlight	-
	mixed warm-/coldlight	-
	<i>Note:</i>	

Climate of the building	<p>No data on climate available. Personal feeling suggest that interior climate is quite favorable for human beings. Central heating installed, also on the staircase, but far from the windows.</p> <p>Outside climate rather humid (mean RH value about 70%).</p> <p>As the window is north oriented and screened by surrounding walls, no direct sunlight reaches it. thus humidity may be higher and more stable than on the open terrain.</p> <p>The test window is situated on the ground floor , thus no direct water or snow reaches it. Some wetting from outside possible from splash water .</p> <p>No condensation observed.</p> <p>The man-made damages possible due to low ledges, possiblity of sitting on them and leaning on lowest panels</p>
	<i>Further information / observations:</i>




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INSPECTION OF THE SITE BEFORE REMOVAL (WITH PICTURES)

<p>Requirements for a safe removal in respect of minimal intervention</p>		<ol style="list-style-type: none"> 1. Dismantling from outside and inside 2. Three persons needed 3. Sealant crumbling and missing 4. Due to panels design do not bend! 5. Since leading is nearly one hundred years old, may be very weak. 6. No scaffolding necessary
<p>Environmental causes for damage</p>	<p>Air pollution – gaseous and solid Splash water from outside Higher humidity - due to orientation and isolation</p>	
<p>Short report of removal</p>		

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	<p>The test panel was removed by three persons. After removing the sealing putty (hard, but crumbling easily) with chisel, the saddle bars were removed and the panel dismantled. No particular problems occurred. The opening was temporary protected with cathedral glass</p>
Short report of transport	<p>As the test site is situated close to the conservation laboratory no special packing was required. It was transported with a car, in a boot. Panel was laid flat on the soft particleboard, protected from the top with another one and secured with a tape. The whole transportation took 5 minutes.</p> <p>The surface of the test panel was neither treated nor touched.</p>

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CONSERVATION MATERIAL

Conservation material (producer, product name, characterization, data, etc.)

According to oral information repairs of broken glass were made without dismantling from inside with Polish epoxide resin: Epidian 53 (or 55).

Other materials has not been found

Below are given basic data on this still produced material.

Z.CH. "Organika-Sarzyna", ul. Chemików 1
37- 310 Nowa Sarzyna, Poland

Epoxide resin: Epidian (probably Epidian 53)

Epidian epoxy resins are the Bisfenol A ((CH₃)₂C(C₆H₄OH)₂) and epichlorohydrin (C₃H₅ClO) based

Resin: Epidian 53: solution of resin **Epidian 5** (molecular mass <700) in non active solvent

Colour: colourless to light yellow

Hardener Z-1

Composition: mixture of isomers of tri-ethylene-tetra-amine
[CH₂NHCH₂CH₂NH₂]₂.

molecular formula: C₆H₁₈N₄

IUPAC name: N,N'-bis(2-aminoethyl)ethane-1,2-diamine

no. CAS: 112-24-3

Harmful

Selected resistance parameters of resins after curing

Data for Epidian 5 were added for comparison as it is the main component of Epidian 53

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IUPAC name: N,N'-bis(2-aminoethyl)ethane-1,2-diamine

no. CAS: 112-24-3




no.WE: 203-950-6

Symbol: C, Xn




Harmful

Epidian 53 was popular in Poland for stone conservation (structural reinforcement), now not in use.




Also as adhesive for stone and other inorganic materials, glass including. To my best knowledge never used as a coating for glass.

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Purpose of use	consolidation of paint layer / paint pigments	-
	coating / lamination	-
	edge bonding	+
	<input type="checkbox"/>
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Application technique	application with brush	+
	application with spray	-
	single application	+
	repeated application	<i>times</i>
	concentration	<i>95%</i>
	mixing ration	<i>100:10</i>
	
	
	<i>Further information :</i> resin was applied from inside only, without dismantling either panels nor glass. The resin has not penetrated into to the break well , leaving it opened from outside.	
Date of application	seventies - eighties of 20 th c. (?). No written records.	




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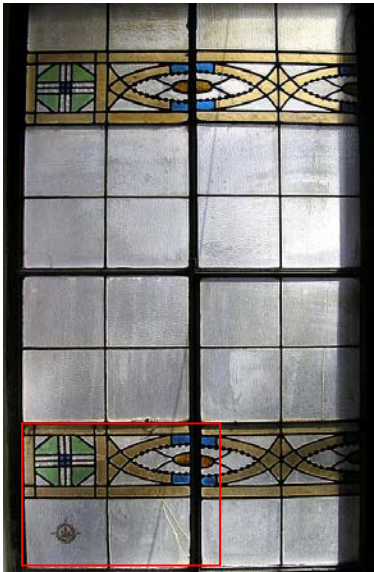
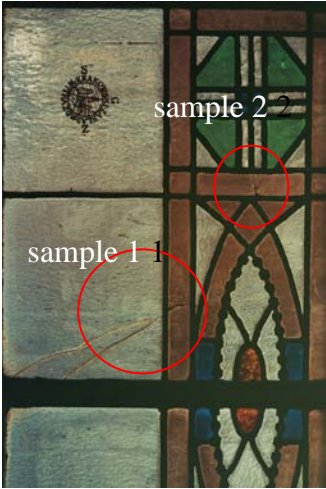
Documentation of this treatment	photographs (colour transparencies, b&w prints, colour prints, digital images)	-
	written records	-
	diagrams	-
	data-files	-
	-
	-
	<i>Further information:</i>	
Do you think this documentation is	exact	n.a
	more or less reliable	n.a
	hearsay	<input type="checkbox"/>




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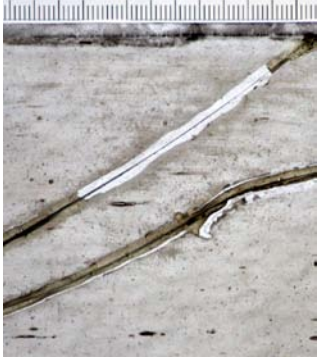



Previous restorations (data, treatments, material)	<i>e.g. releading, surface cleaning, edge-bonding, consolidation of painted decoration, puttying, etc. Give date and treatment method, available records; possibly interview retired staff.</i>						
	No restorations performed. Perhaps washing from inside by cleaning ladies						
	Do you think the information is	<table border="1"> <tr> <td>exact</td> <td style="text-align: center;">-</td> </tr> <tr> <td>more or less reliable</td> <td style="text-align: center;">-</td> </tr> <tr> <td>hearsay</td> <td style="text-align: center;">+</td> </tr> </table>	exact	-	more or less reliable	-	hearsay
exact	-						
more or less reliable	-						
hearsay	+						

CONDITION REPORT / DOCUMENTATION IN THE WORKSHOP	
Pictures of panel / glass in transmitted light	  <p>Daylight. Due to weak leading part of the test panel had to be dismantled.</p>
Pictures of panel / glass in reflecting and raking light, internal and external surface	 <p>Fluorescent- daylight external surface</p>
Examination of the object (if possible with microscope)	<p>Glass not visually corroded on neither side. Dark deposits (soot, industrial dust) outside. Dirt (domestic dust) from inside. Traces of its cleaning with wet rag.</p> <p>Sealing putty partly missing, crumbling.</p> <p>Leading too thin for such a panel. Locally broken. Very weak.</p>

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<p>Selected damages</p>	 <p>dirt accumulation from the outside</p>  <p>broken lead came and crumbling putty</p>	 <p>panel bending</p>  <p>broken glass repaired with epoxide putty</p>
<p>Selection and documentation of samples to be analysed</p> <p>Questions to the scientists</p>	 <p>Sample 1</p>	 <p>sample 1</p> <p>sample 2</p>

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<p style="background-color: #cccccc; padding: 10px;">Selection and documentation of areas for reversibility tests or reactivation tests</p>	<div style="display: flex; justify-content: space-around;">   </div> <p>Glass bonded with epoxide resin – Epidian 53. Strongly yellow, bonding completely lost .</p> <p>Questions:</p> <ol style="list-style-type: none"> a. recent composition (as compared to modern resin, still available) b. reversibility tests <p>2</p> <div style="display: flex; justify-content: space-around;">    </div> <p>test glass transmitted light adhesive transmitted adhesive reflected</p> <ol style="list-style-type: none"> a . delamination phenomena b. dirt accumulation
	<p>sample 2</p> 