

DEPARTMENT OF CONSERVATION AND RESTORATION

The Plastics Heritage Congress 2019 History, Limits and Possibilities May 2019, Lisbon

PMMA: a survey on acrylic sheet in Portuguese art collections

Sara Babo and Joana Lia Ferreira

Department of Conservation and Restoration and LAQV-REQUIMTE, Faculty of Science and Technology, Universidade NOVA de Lisboa, Portugal

sara.sbabo@gmail.com and jlaf@fct.unl.pt

Introduction

Acrylic sheet, *i.e.* poly(methyl methacrylate) or PMMA, is a 20th century plastic that found worldwide applications including Developed during the 1930s, it was commercialized primarily under the trade names Plexiglas[®], Perspex[®], and Lucite transparency, lightweight, strength, and ability to be moulded made it suitable for aircraft canopies during WWII but also attra to artists, like Naum Gabo and other members of the Russian avant-garde. Besides its use by these artists, PMMA and plast general, were practically not seen in artworks until the 1960s, when synthetic materials became accessible to everyone. PMMA has also been used by Portuguese artists but, to our knowledge, no studies have been made about its introduction relevance in Portuguese art, and its presence and condition in national collections. Aiming to fill this gap, the main Portug collections of modern and contemporary art have been surveyed regarding artworks present with elements in PMMA. The goals and preliminary results of this survey have been presented at the Plastics Heritage Conference 2014. We are now sh the final results of the project.

in art.	Survey on:		
e [®] . Its active tics in	Artworks with PMMA	 Overview of PMMA presence in Portuguese collections Contribution to Art History and Material Culture Studies 	
n and			
guese	Conservation issues in PMMA	 Condition audit of PMMA: main conservation problems observed Possible paths for further Conservation Science research 	

Methodology

Collections surveyed

- Museu Nacional de Arte Contemporânea do Chiado \bullet
- Serralves Collection \bullet
- Berardo Collection Museum
- Caixa Geral de Depósitos Collection
- Centro de Arte Manuel de Brito: Coleção Manuel de Brito
- Museu de Arte Contemporânea de Elvas: Coleção António Cachola
- **EDP Foundation's Art Collection**

Number of objects considered: 137 Number of objects observed: 90 Number of PMMA elements observed: 246

nr 19	Date 08-08-2014 Local Storage CAM-FCG (R5)			
tist Lourdes Castro (F	unchal, 1930) Title Sombra Projectada de René Bertholo Museum inv nr 81P566			
bject information	condition previous restoration treatments storage and housing images other comments			
Object type	Object			
Object date	1965			
Provenance	Colecção CAM-FCG			
Dimensions (HxWxD)	71 116,5 5 cm			
Marks & inscriptions	Signed and dated on irc "Lourdes Castro 1965"			
Materials	Two acrylic sheets; glyceroftalic paint (white, blue, black, and silver); metallic elements (screws, etc.)			
Description	On the front sheet is painted the figure in white ink, on the back sheet, the lamp and typewriter. The sheets are separated by a rews (the distance is defined by the nuts). There are 6 screener, 1 in each corner and two in the middle of the top and bottom ages.			
Number of PMMA	2 Go to elements			

author, date, typology and overall condition.

19 Back to object	Element nr 19.1	19 Back to object
photos	element description element c	condition photos
	VISIBLE DEGRADATION	
mation/documentation	darkening 0 🔻	
	fading 0 V	
O Other	yellowing 0	
	change in gloss 0	
3 mm	loss of transparency 0 🔻	
	other colour change 0	
	bloom 0 🔻	Lots of finger and manipulation marks, especially on
	dirt 2 🔻	the margins. Some dust.
e O Translucent	droplet 0 🔻	Some dust.
	dust 1 🔻	
	stain 0 🔻	
	other deposit 0	
e glyceroftalic paint).	abrasion 1 💌	Scratches, especially in the upper part, without ink. Very small chip in the lower right corner.
have holes for the screws.	scratch 2	
	blister 0 V	
	break 0 🔻	
nel or alkyd paint.	chip 1 🔻	
	crack 0 🔻	
	crazing 0 🔻	
	loss 0 V	
	0=none 1=minor and/or limited 2=more impo	ortant but occasional 3=general but minor 4=severe and general damage
	Overall condition assessment	
	O Good	
	 Fair 	
	O Poor	
	O Unacceptable	

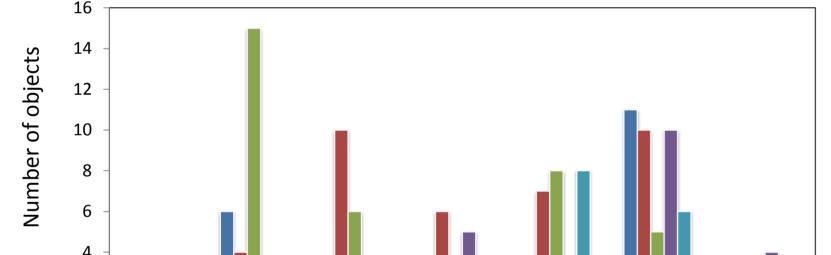
Description of the PMMA elements (left) Evaluation of damage on the PMMA elements (right) Information from each object and PMMA element observed was organized in a database created with FileMaker Pro.

- Types of damage, condition grades, and damage grades were based on the POPART project¹.
- Polymer identification is based on museum/artist information and was not confirmed by molecular analysis.

¹ http://popart-highlights.mnhn.fr/

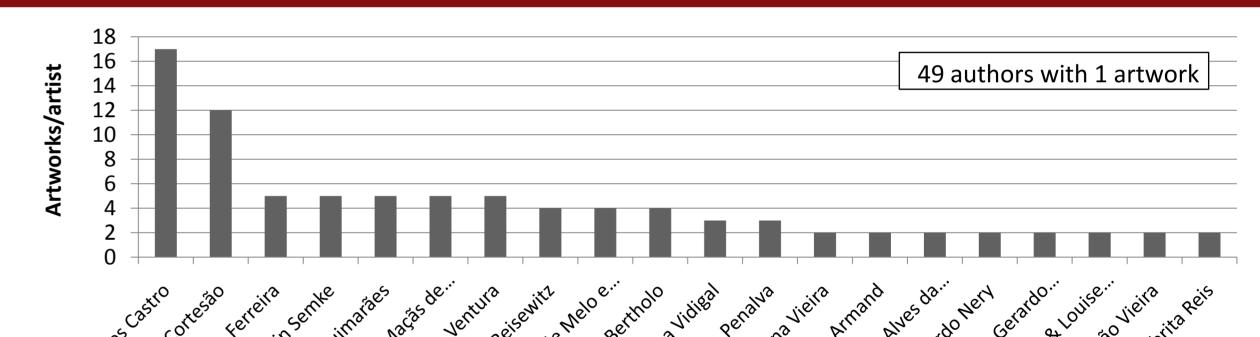
What type of artworks have been made using PMMA?

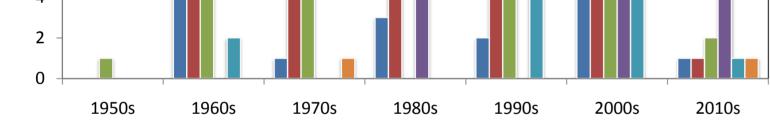
Typology of artwork per decade





Which authors have worked with PMMA?





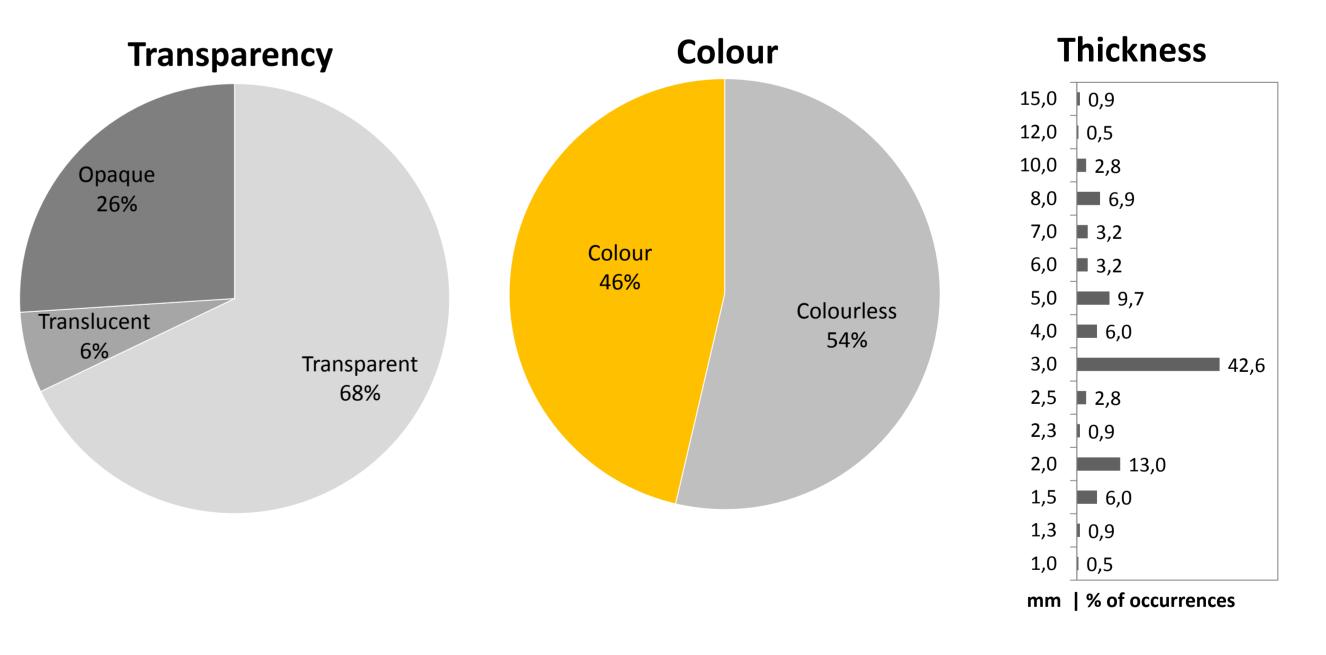
Sculpture Object/Relief Photography Instalation 📕 Book Painting

Left: number of surveyed artworks distributed by typology per each decade. Right: examples of artworks representing each typology: a) Painting by Gil Heitor Cortesão, untitled (Manifestação), 2004, Calouste Gulbenkian Museum - Modern Collection. b) Sculpture by René Bertholo, *Arco-íris*, 1971, Coleção Manuel de Brito. c) Object/relief by João Vieira, Elo (Assemblage), 1971, Calouste Gulbenkian Museum -Modern Collection. d) Installation by Miguel Leal, Atlas, 2001, Museu Naciona de Arte Contemporânea do Chiado; e) Faced-mounted photographs by Augusto Alves da Silva, 3.16, 2003, Museu de Arte Contemporânea de Elvas – Coleção António Cachola. f) Book by Lourdes Castro, Os Lusíadas, 1971, Serralves Collection.

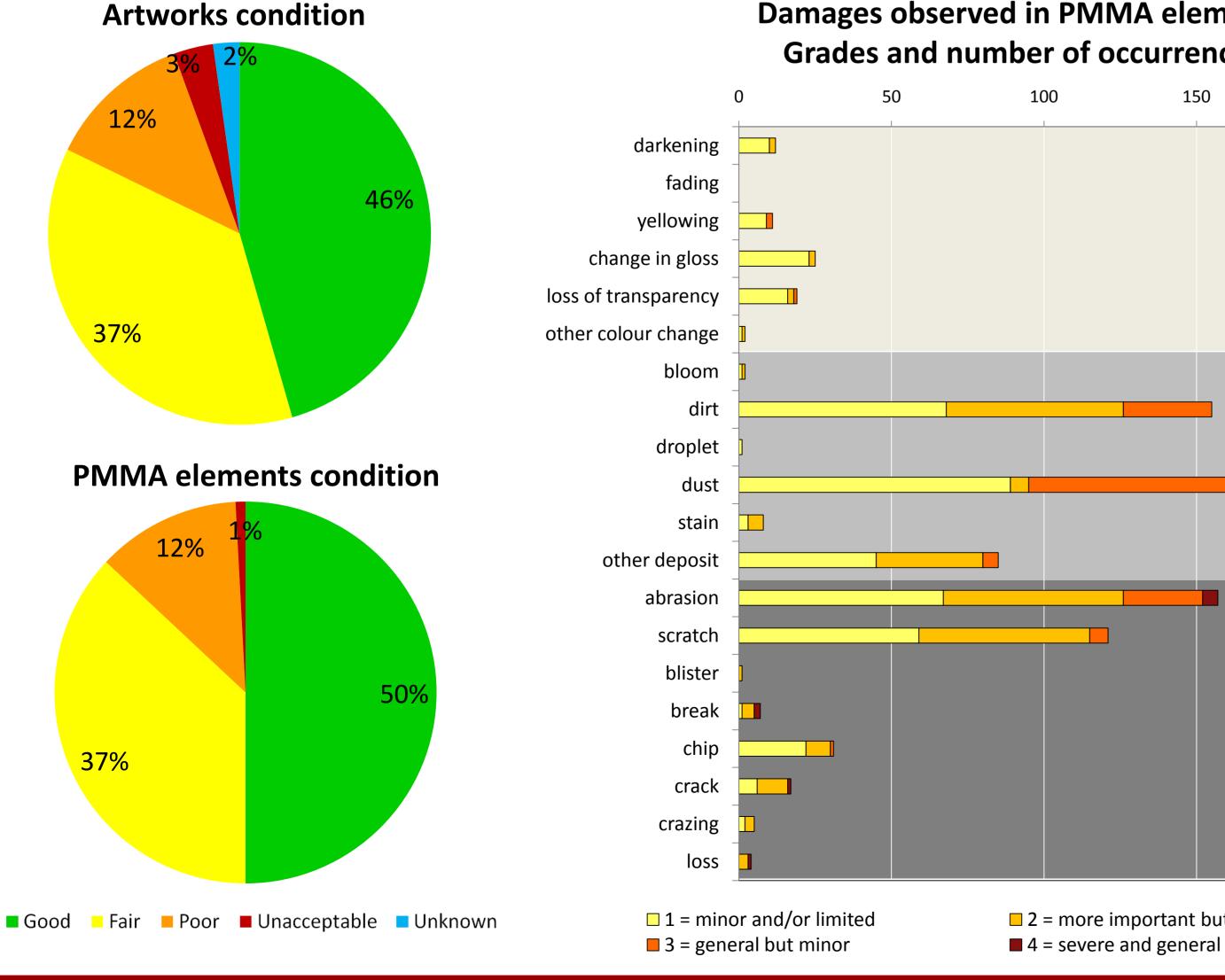


Most of the artworks surveyed are by Portuguese artists, but the three oldest ones belong to English artists: Mary Martin (1959), Peter Blake (1961), and Anthony Hill (1963). The fourth is by Lourdes Castro (1964); she is also the most represented artist in this survey.

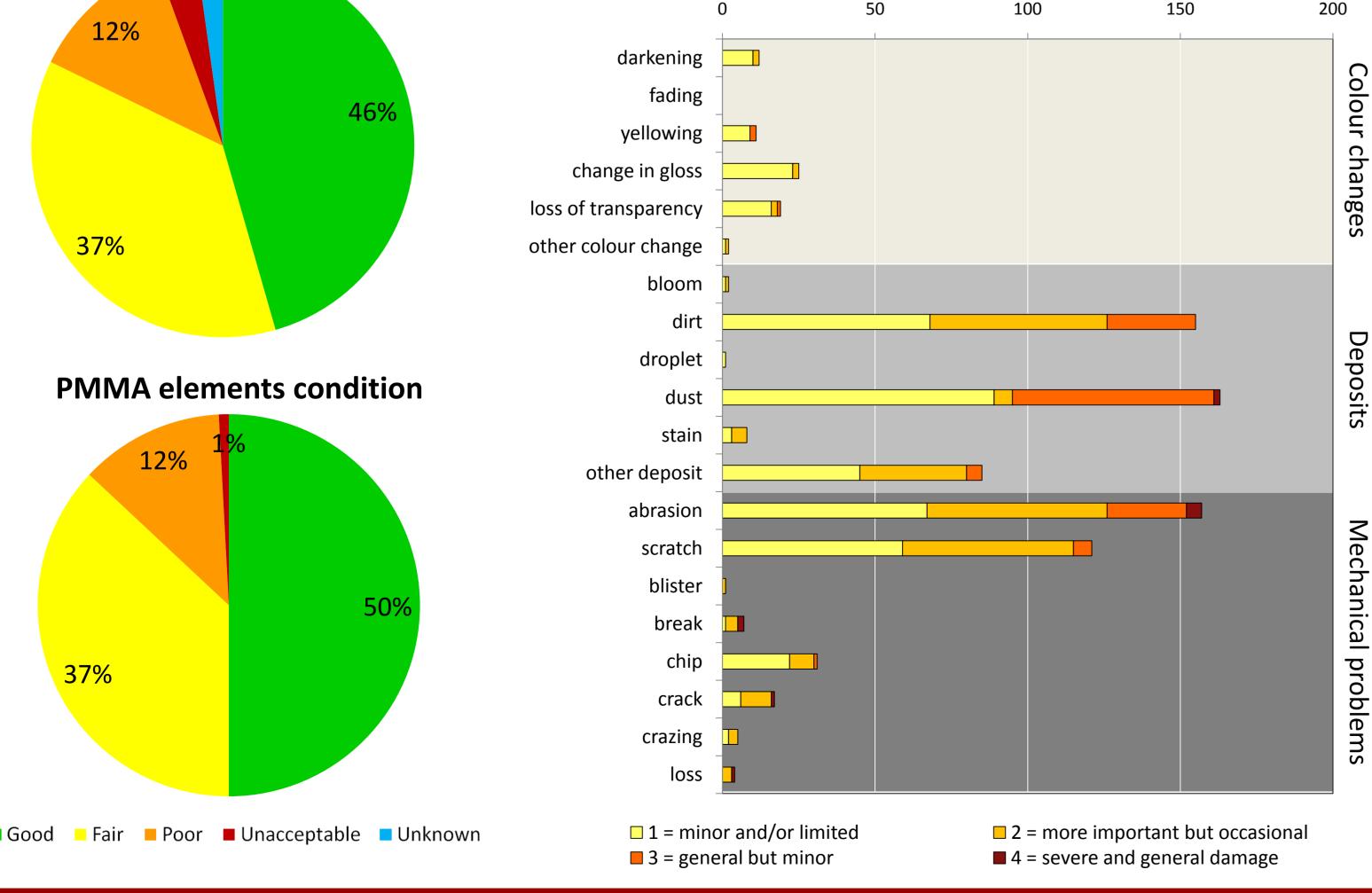
What type of PMMA was used?



What is the condition of the artworks and PMMA elements? What are the main problems observed in PMMA?



Damages observed in PMMA elements. Grades and number of occurrences.



Conclusions

• This survey shows the diversity of artworks in which PMMA may be

- present, including not so obvious ones such as faced-mounted photographs.
- The use of PMMA by artists is consistent with its availability for the rest of the society. It started to be explored during the 1960s and remains in use until today.
- Lourdes Castro is a key reference. She was probably the first Portuguese artist to explore this material and her artworks are the most represented in collections.
- The majority of artworks and PMMA elements is in good condition.
- Main problems observed result from external factors (dust, inappropriate handling, inappropriate cleaning, accidents).
- Given the extreme sensitivity of acrylic to abrasion and scratch, conservation research should focus on the development of safer cleaning methodologies.

Acknowlegments

The authors thank the financial support of Fundação para a Ciência e Tecnologia, Ministério da Educação e da Ciência (FCT/MEC), Portugal, through doctoral programme CORES_PD/00253 /2012, doctoral grant SFRH/BD/52318/2013 and projects IF/00653/201/CP1284/CT0004 and PTDC/IVC-HFC/5174/2014. This work was supported by the Associate Laboratory for Green Chemistry LAQV, financed by national funds from FCT/MEC (UID/QUI/50006/2013) and co-financed by the ERDF under the PT2020 Partnership Agreement (POCI-01-0145-FEDER-007265).

