

# Certified products for the marking of cultural property

Michel Dubus\*, Aurélie Saïd\*\* and Peggy Rème\*\*\*

\* Centre de recherche et de restauration des musées de France, Paris, France, [michel.dubus@culture.gouv.fr](mailto:michel.dubus@culture.gouv.fr), <http://www.c2rmf.fr/>

\*\* Université Pierre et Marie Curie, Paris, France [aurelie.said@etu.upmc.fr](mailto:aurelie.said@etu.upmc.fr)

\*\*\* Atelier de conservation-restauration d'œuvres peintes, Montpellier, France [peggy.reme@gmail.com](mailto:peggy.reme@gmail.com)

## Summary

Essential for the good management of works of art deposits, labelling for inventory is also necessary to fight against trafficking in cultural property. In France, the Fonds national d'art contemporain (FNAC), the National Manufactories, the National Furniture Collection, the archaeological storages and museums deposits are particularly concerned. So, a commission was especially created to select and have products certified; that wouldn't damage works, be easy to apply, legible, resistant to climate and light, and reversible after aging. Eighty three products have been certified, these were easy to use on various supports or formulated for smooth, rough, dirty or oxidised surface. Collection managers in charge of labelling have now at their disposal a diversified range of tools, appropriate for most difficulties encountered for the inventory of collections.

## Key words

Certification, identification, inventory number, marking

## Introduction

The Checking Commission of Artworks deposits ("Commission de récolement des dépôts d'œuvres d'art", CRDOA) was created in France on the 20<sup>th</sup> of August 1996 following a report from the Revenue Court showing bad management of the national collections and recommended clear stocktaking principles, their monitoring and checking. The CRDOA showed that the marking of inventory numbers was often unsuitable, in the museum sector particularly where French law required decennial checking, so that, in 2000 was submitted to an ad hoc sub commission to write a technical specifications in order to choose appropriate tools and good practises.

In 2001, on the CRDOA's demand, the Laboratoire national de métrologie et d'essais (LNE) wrote an experiment plan based on India ink tests, acrylic paint and felt-pens applied on metal, glass, poly methyl methacrylate, canvas, wood, stone and ceramic substrates (Dubus et al. 2006). The specimen were made and tested from 2002 to 2005 and about sixty curators from archives, libraries and French museums validated the protocol.

The C2RMF carried out the Oddy tests, applicability tests, colorimetric tests and reversibility tests after aging and wrote the reports. The LNE made the resistance test to light and climate variations and managed the certifications. The Minister of Culture and Communication funded the operation with the help of the C2RMF.

The selection criteria of a product (ink, chalk, pencil, paint stick) are the existence and quality of its documentation (data sheets, safety data sheet, commercial instructions), its ease of application (tackiness, covering power, drying time), its legibility, its compatibility with metals (Robinet & Thickett 2003), its resistance to climate variations and light verified by the measurement of the colorimetric difference before and after aging and its solubility after aging.

Eight suppliers (manufacturers and/or distributors) had products tested, of which 48 inks, 29 paints, 6 pencils passed the tests with success and are certified for a period of five years (table 1)

Table 1: Certified products. Mitsubishi is distributed in France by Assoun distribution; Intrama distributes the Co-Markal; Oz international distributes Sakura.

brand	name	tip	reference	colour	observations
Mitsubishi Uni	Posca	Fine 1,5 mm	PC-3M	white	water
Mitsubishi Uni	Posca	Medium 2,5 mm	PC-5M	white	water
Mitsubishi Uni	Posca	Broad 8 mm	PC-8K	white	water
Mitsubishi Uni	Posca	Extra broad 17 mm	PC-17K	white	water
Mitsubishi Uni	Posca	Extra fine 1 mm	PC-1MC	white	water
Mitsubishi Uni	Posca	Fine 1,5 mm	PC-3M	black	water
Mitsubishi Uni	Posca	Medium 2,5 mm	PC-5M	black	water
Mitsubishi Uni	Posca	Broad 8 mm	PC-8K	black	water
Mitsubishi Uni	Posca	Extra broad 17 mm	PC-17K	black	water
Mitsubishi Uni	Posca	Extra fine 1 mm	PC-1MC	black	water
Mitsubishi Uni	Prockey	Cone-shaped	PM-122	black	water
Mitsubishi Uni	Prockey	Beveled	PM-126	black	water
Mitsubishi Uni	Prockey	Cone-shaped	PM-122	red	water
Mitsubishi Uni	Prockey	Beveled	PM-126	red	water
Mitsubishi Uni	Paint	Cone-shaped medium 2,2 à 2,8 mm	PX-20	white	aromatic
Mitsubishi Uni	Paint	Cone-shaped fine 0,8 à 1,2 mm	PX-21	white	aromatic
Mitsubishi Uni	Paint	Beveled extra broad 4,0 à 8,5 mm	PX-30	white	aromatic
Bic	PM-43	Marking pocket	1445	black	ethanol
Bic	PM-43	Permanent marker bullet	2000	black	ethanol
Bic	PM-43	Beveled permanent marker	2300	black	ethanol
Digitrace	Ink	Not applicable	Not applicable	black	ethanol
Edding	Permanent marker	Bullet 1 mm	400	black	ethanol
Edding	Permanent marker	Beveled 2-7 mm	353	black	ethanol
Edding	Permanent marker	Bullet 1 mm	370	black	ethanol
Edding	Permanent marker	Beveled 4-12 mm	390	black	ethanol
Edding	Permanent marker	Bullet 0,75 mm	404	black	ethanol
Edding	Permanent marker	Beveled 2-7 mm	500	black	ethanol
Edding	Permanent marker	Bullet 3-4 mm	550	black	ethanol
Edding	Permanent marker	Beveled 4-12 mm	800	black	ethanol
Edding	Permanent marker	Beveled 5-16 mm	850	black	ethanol
Edding	Paint marker	Bullet 2-4 mm	750	white	aromatic
Edding	Paint marker	Bullet 1-2 mm	751	white	aromatic
Edding	Paint marker	Extra fine 0,8 mm	780	white	aromatic
Edding	Paint marker	Bullet 2-4 mm	750	black	aromatic
Edding	Paint marker	Bullet 1-2 mm	751	black	aromatic
Edding	Paint marker	Extra fine 0,8 mm	780	black	aromatic
Edding	Aerospace marker	Rigide fine 0,75 mm	8404	black	water
Edding	Permanent marker	Bullet 1,5-3 mm	2000 C	black	ethanol
Edding	Permanent marker	Beveled 1,5-3 mm	2200 C	black	ethanol
Intrama	SL.100	2-4 mm	31240120	white	ethanol
Intrama	SL.100	2-4 mm	31240220	yellow	ethanol
Intrama	SL.100	2-4 mm	31240320	red	ethanol

Intrama	SL.100	2-4 mm	31240620	black	ethanol
Intrama	Pro-Line Fine	2 mm	096871	white	ethanol
Intrama	Pro-Line Fine	2 mm	096872	yellow	ethanol
Intrama	Pro-Line Fine	2 mm	096874	red	ethanol
Intrama	Pro-Line Fine	2 mm	096873	black	ethanol
Intrama	Pro-Line Micro	1 mm	096888	white	ethanol
Intrama	Pro-Line Micro	2-4 mm	096889	yellow	ethanol
Intrama	Pro-Line Micro	2-4 mm	096891	red	ethanol
Intrama	Pro-Line Micro	2-4 mm	096890	black	ethanol
Intrama	Trades-marker	8 mm	45160100	white	solid
Intrama	Trades-marker	8 mm	45160200	yellow	solid
Intrama	Trades-marker	8 mm	45160300	red	solid
Intrama	Trades-marker	8 mm	45160600	black	solid
Kremer	White ink	Not applicable	sans objet	white	water
Kremer	Black ink	Not applicable	sans objet	black	water
Kremer	Red ink	Not applicable	sans objet	red	water
Sakura	Pigma Micron	Carbone fibre 0,5 mm	XSDK 08	black	water
Sakura	Pigma Micron	Carbone fibre 0,2 mm	XSDK 005	black	water
Sakura	Pigma Micron	Carbone fibre 0,25 mm	XSDK 01	black	water
Sakura	Pigma Micron	Carbone fibre 0,30 mm	XSDK 02	black	water
Sakura	Pigma Micron	Carbone fibre 0,35 mm	XSDK 03	black	water
Sakura	Pigma Micron	Carbone fibre 0,40 mm	XSDK 04	black	water
Sakura	Pigma Micron	Carbone fibre 0,45 mm	XSDK 05	black	water
Sakura	Pigma Micron	Bullet carbone fibre 1 mm	XSDK10-NO	black	water
Sakura	Pigma Micron	Bullet carbone fibre 2 mm	XSDK20-NO	black	water
Sakura	Pigma Micron	Bullet carbone fibre 3 mm	XSDK30-NO	black	water
Sakura	Pigma Micron	Bullet carbone fibre calligraphic 2 mm	XSDK20-NO	black	water
Staedtler	Lumocolor® permanent Glasochrom		108 20-2	red	pencil
Staedtler	Lumocolor® permanent Glasochrom		108 20-9	black	pencil
Staedtler	Pigment liner	Ring of metal 0,8 mm	308 08-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,05 mm	308 005-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,1 mm	308 01-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,2 mm	308 02-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,3 mm	308 03-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,4 mm	308 04-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,5 mm	308 05-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,6 mm	308 06-9	black	unknown
Staedtler	Pigment liner	Ring of metal 0,7 mm	308 07-9	black	unknown
Staedtler	Lumocolor permanent marker	Medium 1,0 mm	317-9	black	Xylene and toluene free
Staedtler	Lumocolor permanent marker	Super fine 0,4 mm	313-9	black	Xylene and toluene free
Staedtler	Lumocolor permanent marker	Fine 0,6 mm	318-9	black	Xylene and toluene free

## Description of the certified products

These products were chosen in collaboration with distributors and manufacturers for their qualities described in commercial brochures:

- Assoun distribution
  - *Mitsubishi Posca* "for all surface, covering colours, fade-resistant, light-fast, UV and water-resistant, permanent on porous support and resistant but delible on non-porous materials, odourless". Tips are available in five sizes: *PC-3M*, *PC-1MC*, *PC-5M*, *PC-8K*, *PC-17K*. Black and white is certified for metals, marble, wood, canvas, paper. The white colour is not soluble after ageing; the black ink is soluble in dichloromethane and ethyl acetate.
  - *Mitsubishi Prockey PM-122* (cone-shaped tip) "for all supports, fade-resistant, water-resistant and light-fast, doesn't leak or bleed through the paper; totally odourless, these felt-pen don't dry, even open". Bevelled tips are available (*PM-126*). Black and red colours are certified for metal, marble, wood, canvas, ceramics, paper. The black ink is soluble in dichloromethane and ethyl acetate after ageing, the red ink is not soluble.
  - *Paint PX 20*, *PX-21* and *PX-30* (medium cone-shaped tip, line 2,2 à 2,8 mm) "for all supports including extreme surfaces, colours with a covering power, permanent, water-resistant, light-fast and soiling resistant, fast drying, interchangeable tips, can be left without cap". This white paint is certified for metal, marble, wood, canvas and ceramics. Not soluble after ageing.
- Bic
  - *PM-43* black ink "for most of the surface, good light-fast and bad weather resistance, low odour, doesn't dry even uncapped". Rib and bevelled tips are also available. Certified for PMMA, metal, marble, wood, canvas, ceramics and paper. Soluble in acetone and ethanol after ageing.
- Digitrace
  - Black ink allows net and precise marking on canvas.
- Edding
  - Marker *8404* "recommended for electronic components, resistant to many solvents and varnish and light-fast, indelible after drying, neutral odour, slightly corrosive, tested and approved by British Aerospace" is certified for all supports, not soluble after ageing.
  - Markers *400* and *200 C* "indelible, permanent, slight odour, refillable and with spare tips". Nine sizes of tips are available for the marker 400, a bevelled tip is available under number *2200 C* and four spare inks are also certified. Certified for all supports, soluble in acetone and dichloromethane after ageing.
  - Marker *750* "for a marking that perfectly covers almost all materials, also perfectly suitable for dark and transparent materials, permanent; they have a slight odour, with choice of spare tips, and are recommended by Lufthansa Technik." Tips are available in three sizes. Black and white colours are certified for all supports. Not soluble after ageing.
- Kremer
  - Black, red and white inks usable "on all supports and indelible, for refillable felt-pen, brushes, feathers..." are certified for marble, wood, canvas and ceramics, not soluble after ageing.
- La-Co Industries Europe S.A.S.

- Intrama Paint markers *SL.100* "for all type of smooth and clean materials; indelible, they are water-resistant, light-fast and UV-resistant, dry quickly". Tips can be found in three sizes. Red, yellow, and black are certified for canvas, PMMA, metal and wood, white is certified for canvas. Red is soluble in acetone, dichloromethane and ethyl acetate, yellow is not soluble, black is soluble in acetone and ethyl acetate, white is not soluble after ageing.
- Pencil *Trades-marker* with refill for "all types of materials and surfaces, don't spoil the surface marked, humidity resistant, and are refillable." White, black, red and yellow are certified for canvas, PMMA, metal and wood. White and red are soluble in xylene, black is not soluble, yellow is soluble in xylene and ethyl acetate after ageing.
- o Oz International
  - The felt-tip *Sakura Pigma Micron* is "usable for archives and acid free environments, it is water-resistant and light-fast, doesn't leak, doesn't bleed through." Tips in Carbone fibre are available in 10 sizes. This black ink is certified for wood, canvas and paper, not soluble after ageing.
- o Staedler
  - *Lumocolor permanent 317* "for all supports and smooth surfaces especially, bad weather and UV resistant, water and rubbing resistant; it quickly dries on the support, ideal for left-handed, refillable and can be left open for several days and doesn't dry out. Tips are available in four sizes. This black product is certified for wood, canvas and paper, not soluble after ageing.
  - *Pigment liner* "for porous supports and particularly paper, UV and humidity resistant, and can be left uncapped for 18 hours". Tips are available in nine sizes. This black ink certified for wood, canvas and paper, is not soluble after ageing.
  - *Lumocolor permanent Glasochrom* for "all supports and smooth surfaces especially; the marking is opaque, they are UV resistant and can be sharpened like pencil". Black and red are certified for PMMA, metal, marble, wood, canvas, ceramics and paper. Both are soluble after ageing in dichloromethane, ethyl acetate and xylene.

## Conclusions

Managers in charge of the labelling of the National Furniture Collection, National Fund for Contemporary Art, National Manufactories, Archaeological Warehouse and museums have now at their disposal, a large range of tools suitable for most difficulties encountered during marking the collections: the thirty five certified products are legible, have a good covering power, don't leak, are water-resistant and light-fast. These products can be used with tips of different shapes and dimensions; these represent one hundred and seven available references.

Most of these products dry in less than five minutes; otherwise, they have been formulated to mark very hard surfaces and have consequently qualities of their flaws. After aging, products soluble in at least one solvent are considered reversible and products insoluble, sustainable. Nineteen products are compatible with supports that were not claimed. Products that reacted with silver, copper or led have to be used on a layer of varnish. Black and red pigments are perfectly UV resistant; no yellow or red product is completely illegible after aging, even if it was considered to be satisfying because of a too important colorimetric difference.

The certified products are easy to find in France, instructions and safety data sheets are freely available for consultation online. A practical guide updated every year is available on the ministry for the Arts and Communications website and the C2RMF which answered to eighty information requests and trained two hundred and fifty managers in charge of the inventory and labelling to the use of certified products since 2008.

## Acknowledgement

To Jean-Pierre Bady, Chief Counsellor at the Court of auditors and president of the CRDOA, Jean-René Gaborit and Jean-Pierre Mohen who oversaw the subcommittee of the marking, helped by Geneviève Ravaux, rapporteur of the subcommittee, for trusting us throughout this project.

To Jean-Pierre Mohen and Christiane Naffah, Directors of the C2RMF, Jean-Louis Boutaine, head of the Preventive conservation and Research departments, for carrying out the project with the help of Hubert Beolet, Eliane Bohnert, Marie-Christine Dorothé, Yannick Loué, Georges Saintesprits who managed the financing of the tests and certification.

To the mission for advanced technology (MRT) of the ministry for the Arts and Communications, Sylvie Max-Colinart who assisted the project until its conclusion.

The collaboration with the LNE was very successful, especially with Véronique Le Sant and Marianne Ramaz for the tests, Evelyne Denizet and Pascal Prudhon for the certification.

To the French distributors responsible for sales of who were there in November 2009 to certify their products: Catherine Leder (Assoun Distribution), Béatrice Daveney (Bic France), Vincent Peyronnet (Digitrace), Fabien Coquidé (Edding), Géraldine Danner (Intrama), Dr. Georg F. Kremer (Kremer Pigmente GmbH+CoKG), Aurélie Sebbane (Oz International), and Yves Muller (Staedtler).

## Notes

1. Décret n° 96-750 du 20 août 1996 portant création d'une commission de récolement des dépôts d'œuvres d'art, <http://droit.org/jo/19960827/MCCA9600383D.html>, consulted in Novembre, 2010
2. Article 12 de la loi n° 2002-5 du 4 janvier 2002 relative aux musées de France, <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000769536>, consulted in Novembre, 2010
3. Arrêté du 25 mai 2004 fixant les normes techniques relatives à la tenue de l'inventaire, du registre des biens déposés dans un musée de France et au récolement, <http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/arrete-inventaire.pdf>, consulted in Novembre, 2010
4. Michel Dubus, Véronique Le Sant et Marianne Ramaz, "Un protocole pour la qualification de produits de marquage d'identification applicables aux œuvres d'art", *Support/Tracé*, 6, 2006, 58-65
5. Laurianne Robinet, David Thickett, "A new methodology for accelerated corrosion testing", *Studies in conservation*, vol.48, n°4, 2003, 263-268
6. NF EN ISO 4892-2/A1, *Plastiques - Méthodes d'exposition à des sources lumineuses de laboratoire - Partie 2 : lampes à arc au xénon*, octobre 2009, <http://www.boutique.afnor.org/> consulted in Novembre, 2010
7. NF ISO 7724-3, *Peintures et vernis - Colorimétrie - Partie 3 : calcul des différences de couleur*, mars 1988, <http://www.boutique.afnor.org/> consulted in Novembre, 2010

## References

1. Michel Dubus, Véronique Le Sant et Marianne Ramaz, "Un protocole pour la qualification de produits de marquage d'identification applicables aux œuvres d'art", *Support/Tracé* 6, 2006, 58-65
2. Laurianne Robinet, David Thickett, "A new methodology for accelerated corrosion testing", *Studies in conservation*, vol.48, n°4, 2003, pp. 263-268

## Manufacturers

Mitsubishi : <http://uniball.com/home/index.html>

Bic : <http://www.bicworld.com/fr/homepage/homepage/>

Edding : [http://www.edding.com/fr\\_home.html](http://www.edding.com/fr_home.html)

Digitrace, [identification.digitrace@wanadoo.fr](mailto:identification.digitrace@wanadoo.fr)

Intrama : <http://www.intrama.com/>

La-Co Markal : <http://www.markal.com/>

Kremer Pigmente GmbH & Co. KG : <http://kremer-pigmente.de/fr>

Sakura : <http://www.sakuraofamerica.com/Pen-Archival>

Staedtler : <http://www.staedtler.fr/>

## **Distributors in France**

Assoun distribution: 54 avenue du général Leclerc, 92513, Boulogne-Billancourt cedex, France,  
<http://www.assoundistribution.fr/>

BIC® Global Quality Stationery : 14, rue Jeanne d 'Asnières, 92110, Clichy, France

Edding® France S.A.S. : CIT Euraparc, Avenue de l'Europe, 59223, Roncq, France

Intrama SAS : Allée des Combes, 01150 Blyes, France

Kremer Pigmente GmbH & Co. KG: Hauptstr. 41-47, 88317 Aichstetten, Allemagne

Oz international : 1088 rue Marcel Paul, ZA des Grands Godets, 94508 Champigny-sur-Marne cedex,  
France, <http://www.oz-international.com/>

Staedtler® France : 64 rue Ernest Renan, 92022, Nanterre, France