

Gleaning Preservation Information:

Third Party and NARA Testing Results

Presented by Jennifer K Herrmann

Conservation² = Preserving Collections x Our Environment

March 2011

Roles of the R & T Lab in Preservation

☀ Quality Assurance Specifications

- ☀ Low Lignin Archives Box
- ☀ Map Folders

☀ Material Review for Building/Renovation Projects “Gleaning Conservation Info”

- ☀ MSDS review
- ☀ Third Party Testing Results
- ☀ NARA Analysis

☀ Research Projects

- ☀ Cellulose deterioration
- ☀ Microfading Protocols

Keeping our Records Safe on Display

An Example of Gleaning Conservation Info from Varied Sources

THE
HOW
TT.
,000 MEN
Seamen's Pay,
Ordinary Seamen
Landsmen's Pay \$1.5
\$50,0
Already captured, a large she
protects the rights of all the es
PETTY OFFICERS.—Pa
ates, Quarter Gunners, Capt
Landsmen may be ad
PAY OF PETTY OFFICERS.
CHANCES FOR WARR
ticle or by extraordinary hero
mination receive a guaranty o
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or further informat

Navigation arrows: left and right.

DISCOVERING
THE CIVIL WAR

VISIT ABOUT EVENTS RESOURCES EDUCATION SUPPORT

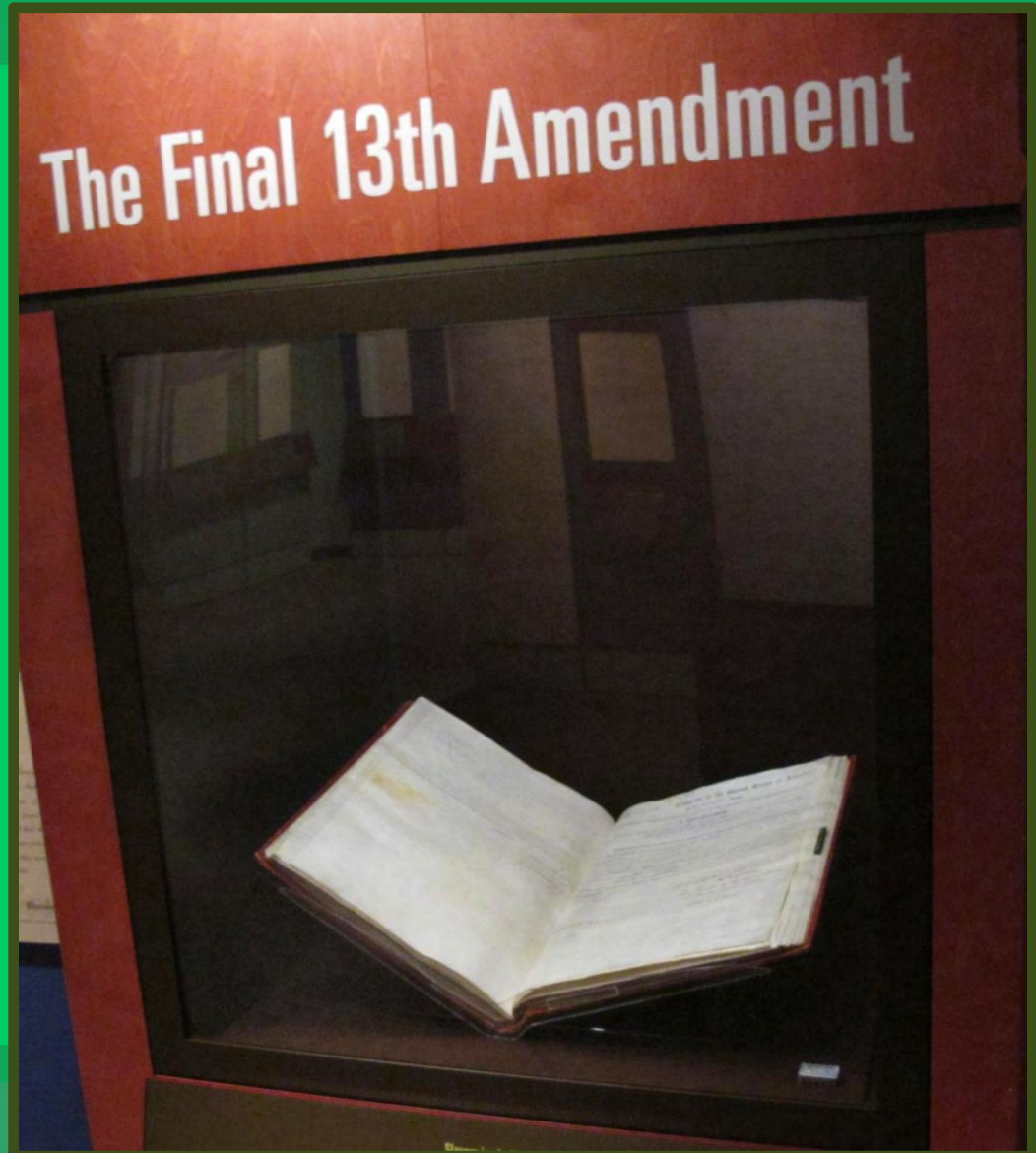
PREVIEW THE EXHIBIT

Navigation arrows: left and right.

Background elements: A historical document with 'THE CIVIL WAR TELEGRAPH' and 'Dial TTY' at the top. A circular seal with 'VUTSRODON' is visible. A technical drawing of a building or fortification is at the bottom right.

Products used in Display Cases

- ☼ Laminates
- ☼ Adhesives
- ☼ Fabrics
- ☼ Paints
- ☼ Hardware



Questions to Answer

- ⚙ Do we have the correct and accurate product name?
- ⚙ Do we know the company that makes/supplies the product?
- ⚙ Can we find a Material Safety Data Sheet (MSDS)?
- ⚙ Does the company have any technical data that includes volatile content available for the product?
- ⚙ Is there data for any Third Party Air Quality Control testing on the product?
- ⚙ Does the R&T Lab need to run any special tests on the product?

Wilsonart Laminate



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Manufacturers

Architects & Designers

Owners & Builders

Consumers

indoor air quality

certification programs

technical center

find products

about us

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Keyword Search

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Wilsonart International / Wilsonart Laminate

Number: FC2Ls93111-5

GREENGUARD Indoor Air Quality Certified

Certification Status: Certified

Certification Period(s): 7/2004 - 3/2012

Restrictions:

GREENGUARD Children & Schools Certified

Certification Status: Certified

Certification Period(s): 1/2006 - 3/2011

Restrictions:

Description:

Available in over 200 designs, Wilsonart Laminate is widely used for countertops, cabinetry, furniture, store fixtures and other work surfaces. It is durable, easy to maintain and affordable.

Print Certificates

[Indoor Air Quality Certificate](#)
[Children & Schools Certificate](#)

Wilsonart International

Manufacturer Website:
<http://www.wilsonart.com>

GREENGUARD Product Searches



Find Products

Product Category

- Adhesives/Sealants
- Air Filters
- Bathroom Fixtures
- Building Construction Materials
- Cabinetry
- Ceiling Systems
- Cleaning Products/Systems
- Countertops
- Doors
- Electronics
- Floor Finish
- Flooring

Manufacturer

Sustainable Credits

Certification Type

Product Attributes

Quick Search

Keyword Search

Welcome to the GREENGUARD Environmental Institute Product Guide

Your Resource for Healthier Products and Building Materials.

GEI offers this free resource to help people find healthier products and verify GREENGUARD Certification claims.

All products that have achieved GREENGUARD Certification are listed in this guide. If a product is not listed, it has not undergone the rigorous testing required for this program. GEI is not affiliated with any manufacturer or product that GEI certifies.

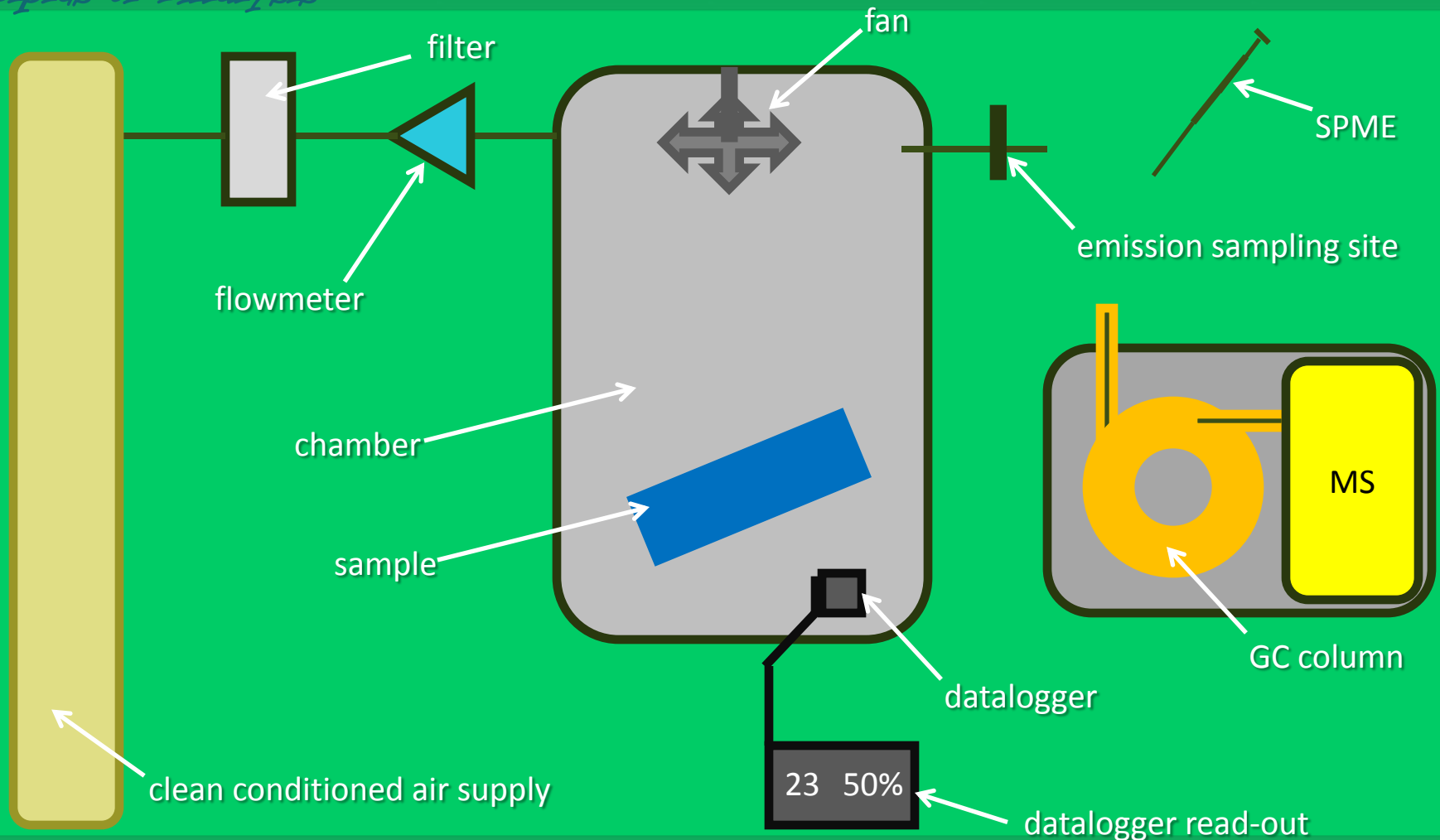
Newly Certified

Congratulations to our newly certified manufacturers...



Dynamic Environmental Chamber Testing

Principles of Analysis



Dynamic Environmental Chamber Testing:

Protocol References

- ⚙ ASTM D 5116, “Guide for Small Chamber Environmental Chamber Determination of Organic Emissions from Indoor Materials/Products”
- ⚙ ASTM D 6670, “Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products”
- ⚙ USEPA ETV, “Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes”
- ⚙ GGTM.P066.Standard Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings Using Dynamic Environmental Chambers
- ⚙ ASTM D 6196, “Standard Practice for Selection of Sorbents, Sampling and Thermal Desorption Analysis Procedures for Volatile Organic Compounds in Air”
- ⚙ EPA Methods TO17, “Determination of Volatile Organic Compounds in Ambient Air Using Active Sampling Onto Sorbent Tubes” and TO-1, “Determination of Volatile Organic Compounds in Ambient Air Using Tenax Adsorption and Gas Chromatography/Mass Spectrometry (GC/MS)”
- ⚙ ASTM Standard D 5197, “Standard Test Method for Formaldehyde and other Carbonyl Compounds in Air (Active Sampler Methodology)”

Other Third Party Testing Organizations

- ⚙ Scientific Certification Systems: Setting the Standard for Sustainability
 - ⚙ FloorScore
 - ⚙ Indoor Advantage
- ⚙ Collaborative for High Performance Schools High Performance Products Database (BETA)
- ⚙ CRI – The Carpet and Rug Institute
- ⚙ Green Seal
- ⚙ South Coast Air Quality Management District (SCAQMD)

Wilsonart Adhesive



Certificate of Compliance

Certification Details:

Certificate No: AD1W/93113-15

Status: Certified

Period: 03/2010 - 03/2011

Restrictions: NONE

Wilsonart® H2O Waterbased Contact Adhesive

Wilsonart Adhesives

This product has been certified according to the GREENGUARD Children & Schools Certification Program for Low Emitting Products

Reference Standard: GGPS.002 GREENGUARD Children & Schools™ Standard

Product Type: All Products

Criteria	Allowable Limits
Individual VOCs ^{1,2}	≤ 1/100 TLV and ≤ 1/2 CA chronic REL (Office Seating ≤ 1/100 TLV and ≤ 1/4 CA CREL)
Formaldehyde	≤ 0.0135 ppm / 13.5 ppb (Office Seating ≤ 0.0675 ppm / 6.75 ppb)
TVOC ³	≤ 0.22 mg/m ³
Total Aldehydes ⁴	≤ 0.043 ppm / 43 ppb
Total Phthalates ⁵	≤ 0.01 mg/m ³
Total Particles ⁶	≤ 0.02 mg/m ³

See referenced standard for a complete technical explanation.

¹Any VOC not listed must produce an air concentration level no greater than 1/100 the Threshold Limit Value (TLV) industrial work place criterion (Reference: American Conference of Government Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, Ohio 45211-4438) and no greater than 1/2 the CA Chronic Reference Exposure Level (CREL) http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html - (CRELs) Adopted by the State of California Office of Environmental Health Hazard Assessment (OEHHA), December 2008).

²1-Methyl-2-Pyrrolidinone must be ≤ 0.16 mg/m³ for Office Furniture or ≤ 0.080 mg/m³ for Office Seating.

³Defined to be the total response of measured VOCs falling within the C₆-C₁₀ range, with responses calibrated to a toluene surrogate.

⁴Defined to be the total response of a target list of aldehydes (2-butanal; acetaldehyde; benzaldehyde; 2, 5-dimethylbenzaldehyde, 2-methylbenzaldehyde; 3-and/or 4-methylbenzaldehyde; butanal; 3-methylbutanal; formaldehyde; hexanal; pentanal; propanal), with each individually calibrated to a compound specific standard.

⁵Total phthalates include dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl (BBP), di-octyl (DOP), and dimethyl (DMP) phthalates.

⁶Particles are only applicable to fibrous, particle-releasing products with exposed surface area in air streams.

Complies with California Department of Health Services' "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" Version 1.1 (CA section 01350)

GREENGUARD Certification affirms that products meet the criteria of the referenced standard and the requirements of the specific certification program. Certification testing is conducted according to a consistent, defined protocol. The testing does not evaluate emissions under usage conditions other than those defined in the protocol and does not address potential environmental impact other than chemical and particle emissions.

The GREENGUARD Environmental Institute (GEI) is an industry independent, third-party certification organization that qualifies products for low chemical emissions. GREENGUARD Certification programs use defined product standards, test methodologies, product sample collection and handling procedures, program application processes and on-going verification procedures. GREENGUARD standards, methods, and procedures are available at www.GREENGUARD.org.

Air Pollutant Limits

NARA 1571 Appendix B

Type of pollutant	Maximum permitted after air filtration
Sulfur dioxide	1 ppb; 2.7 $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	2.6 ppb; 5.0 $\mu\text{g}/\text{m}^3$
Ozone	2.0 ppb; 4.0 $\mu\text{g}/\text{m}^3$
Formaldehyde	4.0 ppb; 5.0 $\mu\text{g}/\text{m}^3$
Acetic acid	4.0 ppb; 10.0 $\mu\text{g}/\text{m}^3$

GREENGUARD Indoor Air Quality

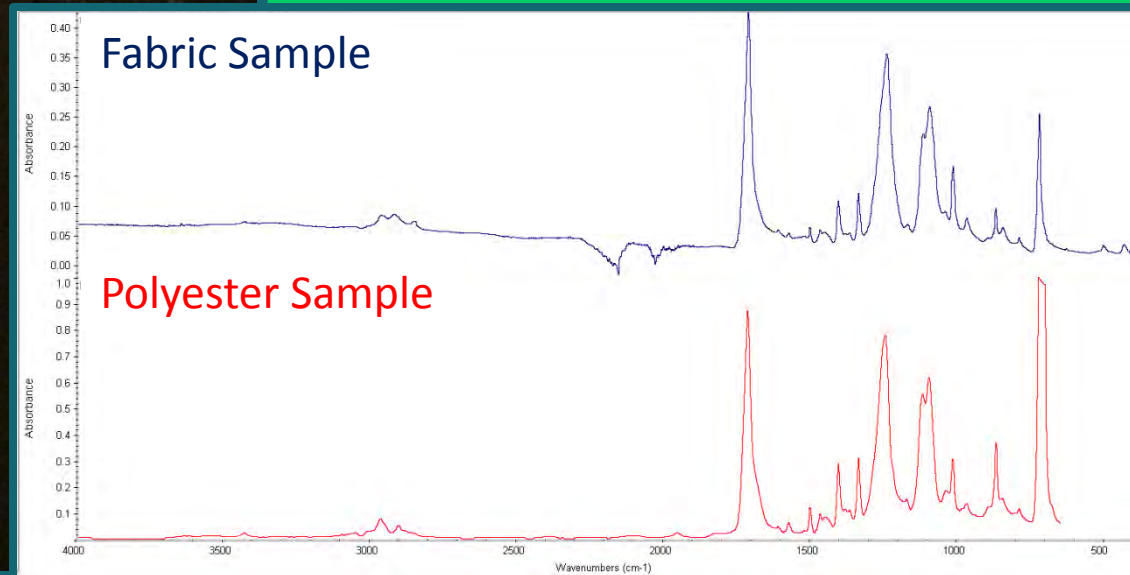
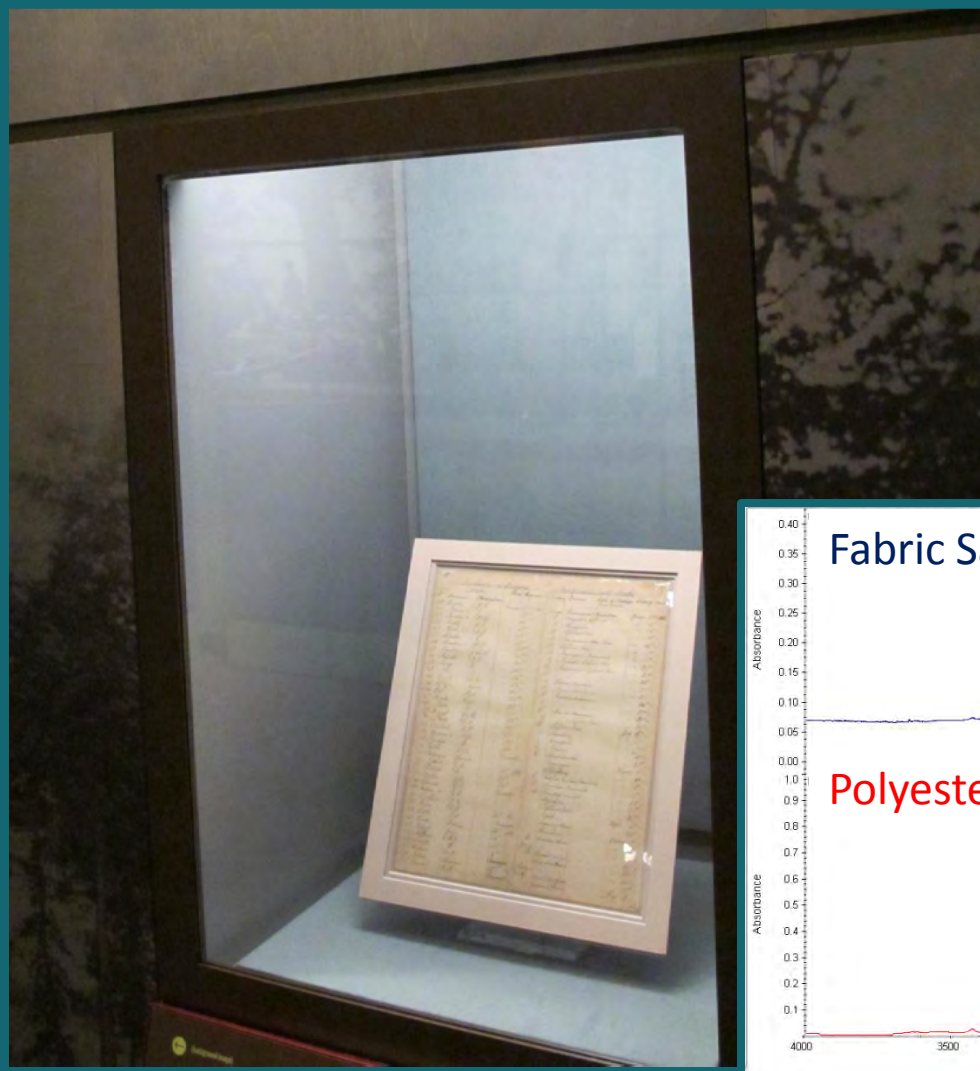
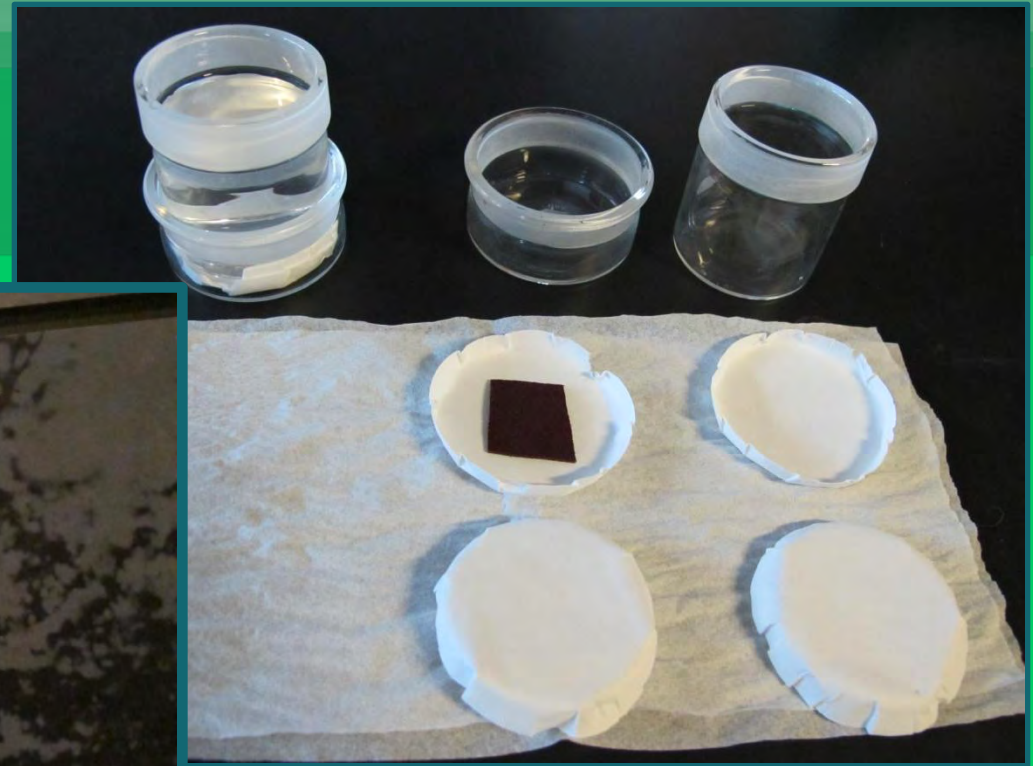
Type of pollutant	Maximum permitted after air filtration
Individual VOCs	≤ 0.01 TLV
Formaldehyde	50 ppb
4-phenylcyclohexane	6.5 $\mu\text{g}/\text{m}^3$
Styrene	70 $\mu\text{g}/\text{m}^3$
Total VOCs	500 $\mu\text{g}/\text{m}^3$
Total Aldehydes	100 ppb

GREENGUARD Children and Schools Program

Type of pollutant	Maximum permitted after air filtration
Individual VOCs	≤ 0.001 TLV and $\leq \frac{1}{2}$ CA CREL
Formaldehyde	13.5 ppb
Total VOCs	220 $\mu\text{g}/\text{m}^3$
Total Aldehydes	43 ppb
Total Phthalates	10.0 $\mu\text{g}/\text{m}^3$
Total Particulates $\leq 10\mu\text{m}$	20 $\mu\text{g}/\text{m}^3$

TLV = threshold limit value
for industrial work place standards
CREL = chronic reference exposure level

Fabrics

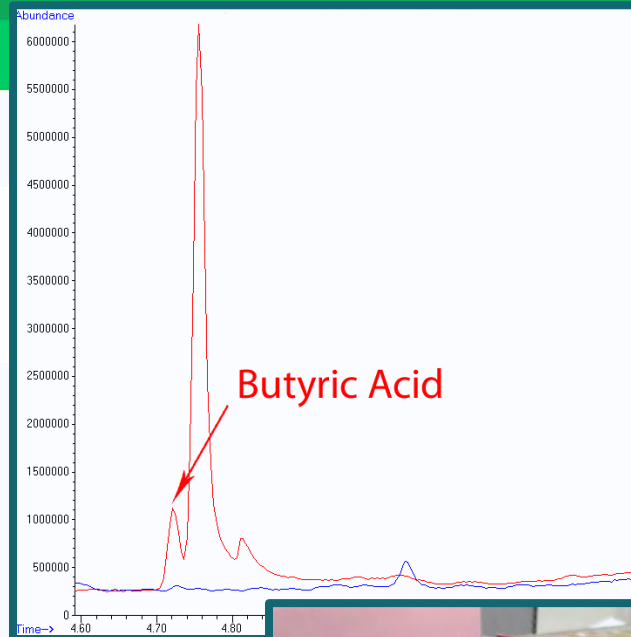
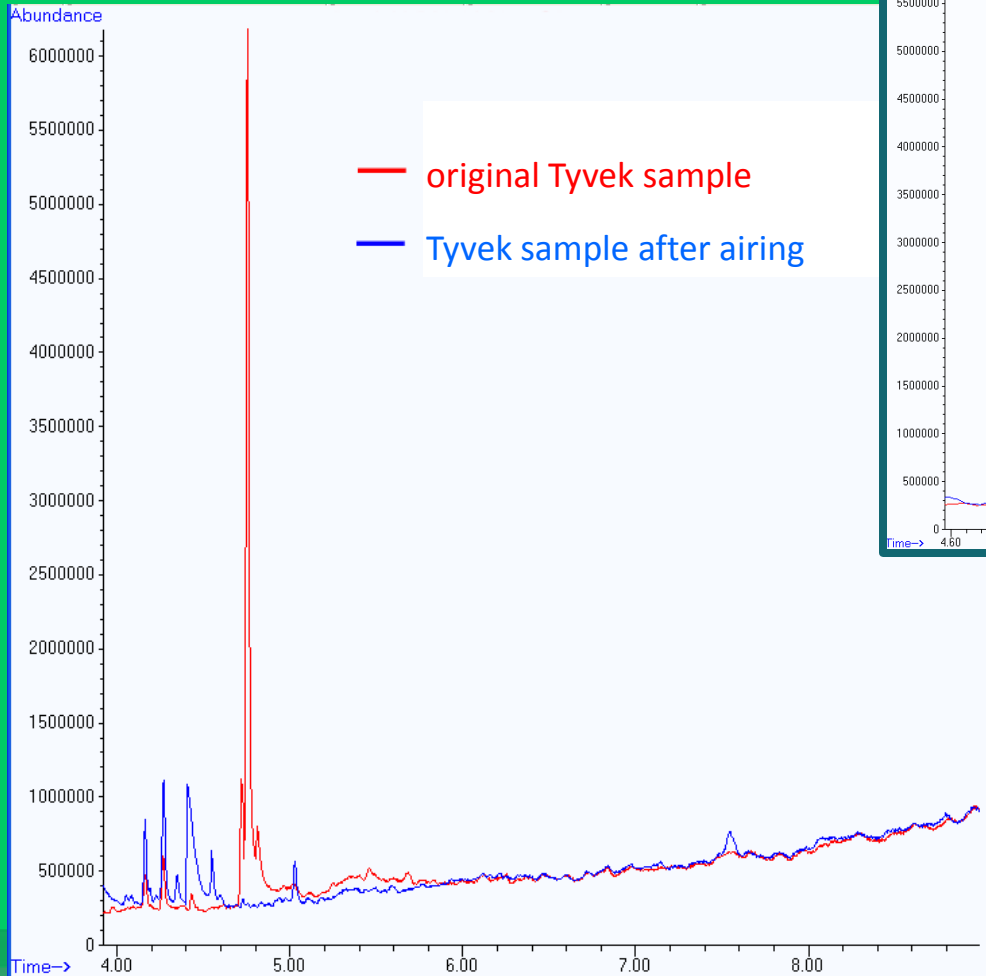


Benjamin Moore Paints

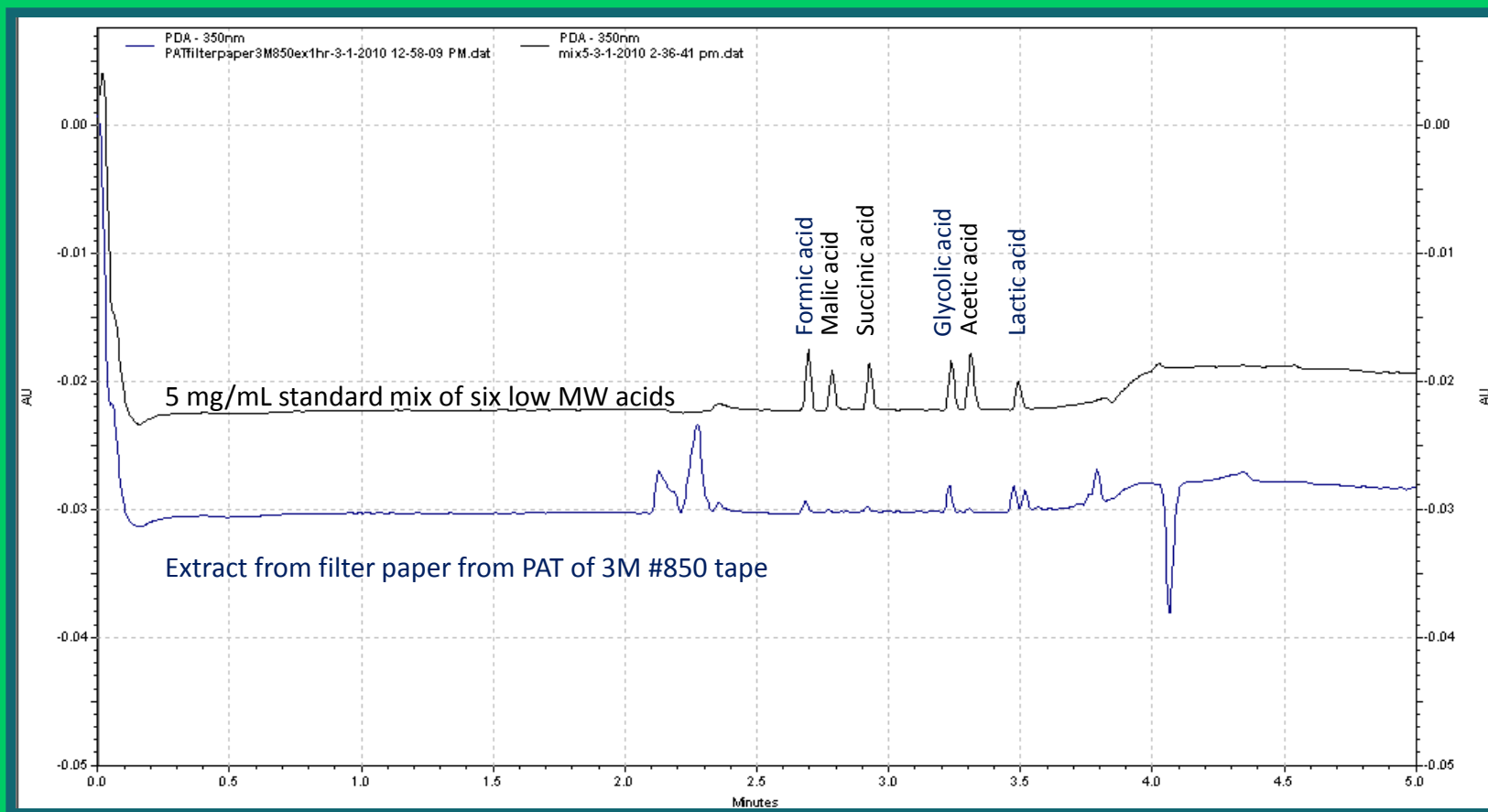
PRODUCT #	NAME	SCAQMD DESCRIPTION	Actual VOC	AIM	OTC	SCAQMD	LEED
<u>N319</u>	REGAL LATEX EGGSHELL FINISH	NA	141 g/l	X			X
<u>W319</u>	REGAL LATEX EGGSHELL FINISH**	NA	42 g/l			X	X
<u>524</u>	AURA EGGSHELL	A low VOC, low odor premium interior eggshell paint	48 g/l	X	X	X	X
<u>223</u>	ECO SPEC LATEX EGGSHELL	A low odor, zero VOC, 100% acrylic latex eggshell enamel	0 g/l	X	X	X	X
<u>374</u>	ECO SPEC WB INTERIOR LATEX PRIMERE EGGSHELL	A low odor, zero VOC, 100% acrylic interior latex eggshell finish that provides high hiding, excellent touch up and a uniform eggshell finish. Enhanced Waterborne Formula.	0 g/l	X	X	X	X
<u>513</u>	NATURA INTERIOR LATEX EGGSHELL FINISH	A premium quality, zero VOC paint that is durable, that also dries quickly to a beautiful, washable and uniform eggshell fade-resistant finish.	0 g/l	X	X	X	X

**available in Southern California Only
 OTC = Ozone Transport Commission
 AIM = Architectural/Industrial Coatings

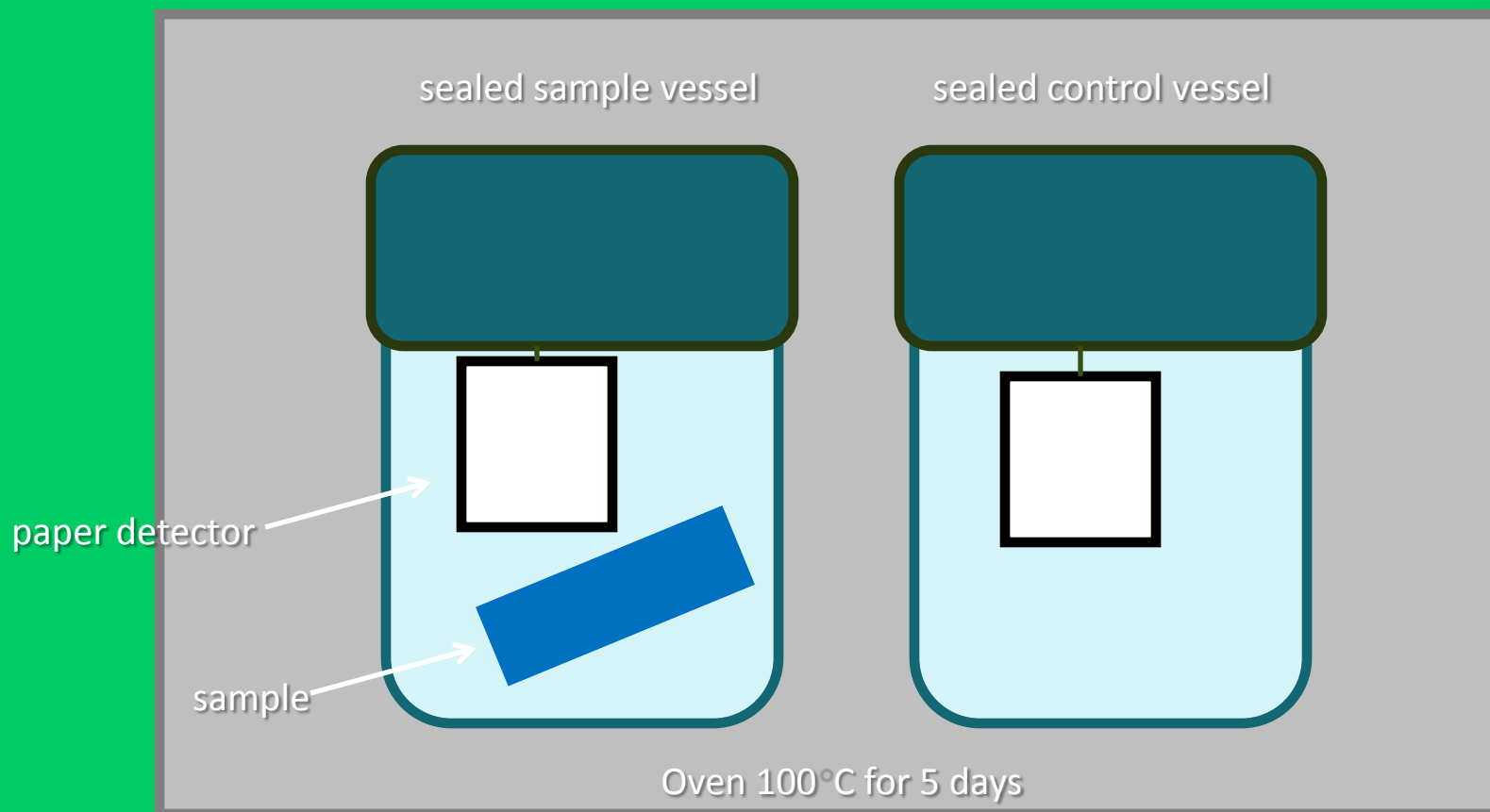
NARA Testing - SPME GC-MS



NARA Testing - PAT and CE



Future NARA Testing – New Methods



- Strlic, M.; Kralj Cigic, I.; Mozir, A.; Thickett, D.; de Bruin, G.; Kolar, J.; Cassar, M., "Test for compatibility with organic heritage materials – a proposed procedure" *e-Preservation Science* **7**, 2010, 78-86.
- Strlic, M.; Kralj Cigic, I.; Mozir, A.; de Bruin, G.; Kolar, J.; Cassar, M., "The effect of volatile organic compounds and hypoxia on paper degradation" *Polymer Degradation and Stability* **96**, 2011, 608-615.

Summary: Gleaning Preservation Information

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Acknowledgements

- ⚙ Mark Ormsby
- ⚙ NWTD
- ⚙ Preservation Programs
- ⚙ And You!