

Conservation strategies for mixed audio-visual collections in practice

Reto Kromer • AV Preservation by reto.ch

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Bibliography

Peter Z. Adelstein: **IPI Media Storage Quick Reference**. 2nd Edition. Image Permanence Institute, Rochester NY 2009

www.imagepermanenceinstitute.org

Dew Point Calculator. Image Permanence Institute, Rochester NY [2008]

www.dpcalc.org

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Priority

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	quick	longtime
important		
not important		

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คงอนุรักษ์แต่เดิมนั้นกว่าเท่าไรก็ตามแต่ควรที่จะรักษาไว้
ฟิล์มนั้นยังคงมีอายุยืนยาวอยู่

๒. สิทธิของอนุชน

๒.๑ ด้วยตระหนักในความรับผิดชอบของตนในอันที่จะอนุรักษ์
ฟิล์มภาพยนตร์ให้ดำรงอยู่อย่างยั่งยืน หอภาพยนตร์จักยืน-
หยัดต่อต้านการบีบบังคับใด ๆ ที่จะกำจัดหรือทำลายสิ่งของ
ที่หอภาพยนตร์ซึ่งสมควรจะอนุรักษ์ไว้ หรือเลือกที่จะปฏิเสธ
หรือรับส่งของใด ๆ ที่มีผู้เสนอให้ขอเก็บสะสมด้วยเหตุผล
ใดซึ่งอาจอยู่นอกเหนือกฎเกณฑ์ว่าด้วยการอนุรักษ์หรือ
นโยบายการคัดเลือกที่ใช้อยู่ของหอภาพยนตร์นั้น

๓. สิทธิในการใช้ประโยชน์

๓.๑ หอภาพยนตร์ตระหนักว่า สิ่งของในความดูแล มีทั้งมูลค่าใน
เชิงพาณิชย์และคุณค่าในทางศิลปะ จึงนำองค์ความรู้ความดี

Principles

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Conservation

Conservation encompasses all activities for the care of an object, which delay its further decay and ensure that it remains in the most intact condition for the future.

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Restoration

Restoration includes all interventions and treatments that serve to retrieve a certain historical state and contribute to the legibility, aesthetic integrity or reuse of an object.

Restorative actions may be irreversible and require great care in planning, justification, execution and documentation.

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An Ounce of Ethics

- The probability that a work is available in its integrity in the future is increased.
- All the options that existed before taking an action remain open after the action.
- Every step is carefully documented.

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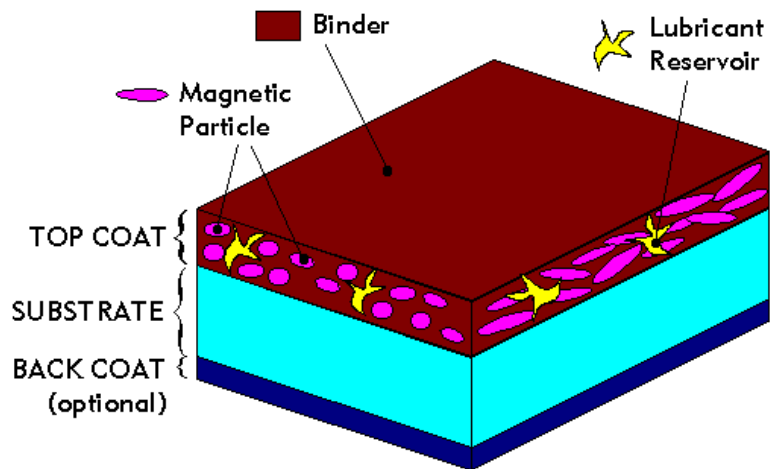
Strategy

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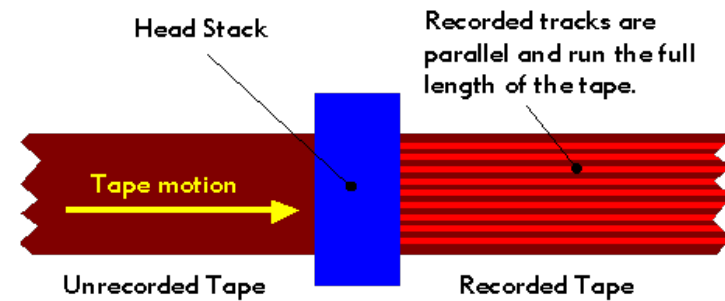
Develop a strategy

1. list the ISO standard for each media type which is present in the collection
2. assess the environment inside each vault at least for one year
3. inspect the condition of the collection
4. analyse the results and find the weak link
5. improve the conservation

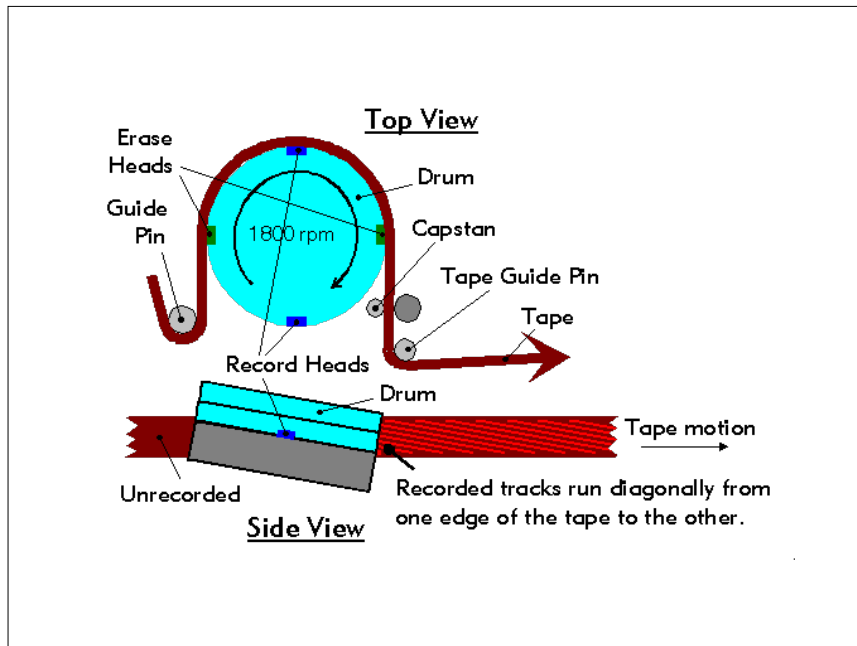
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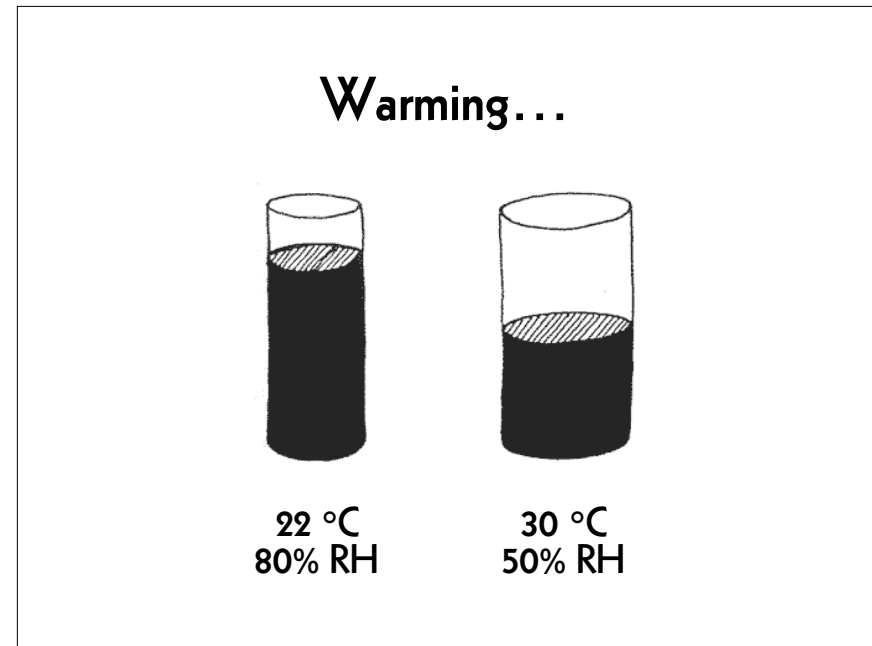
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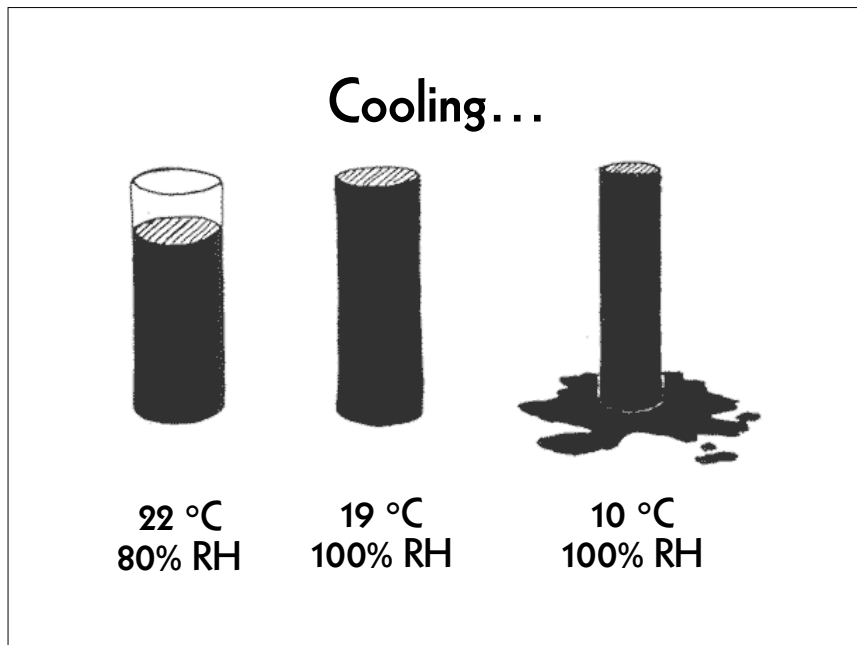
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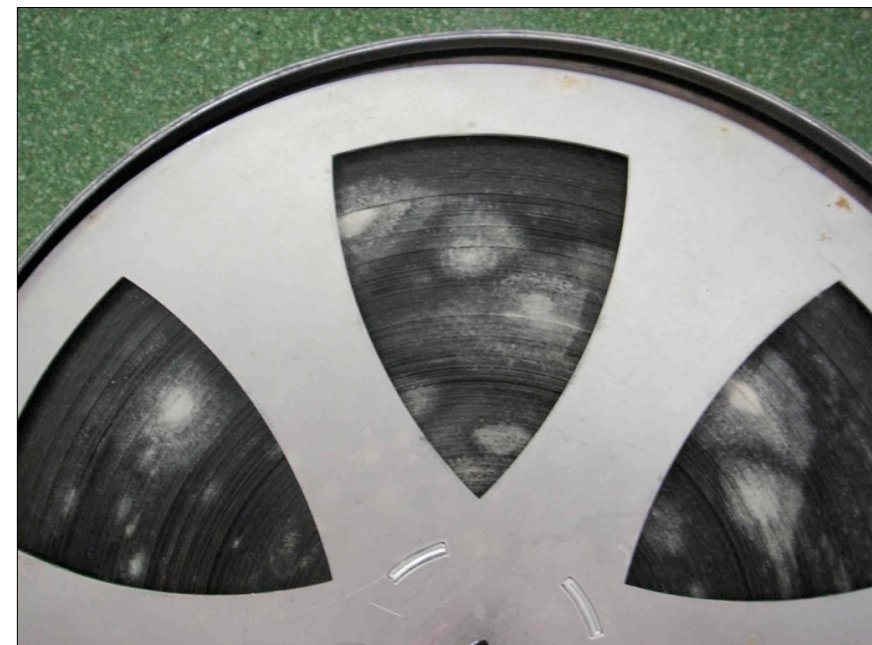
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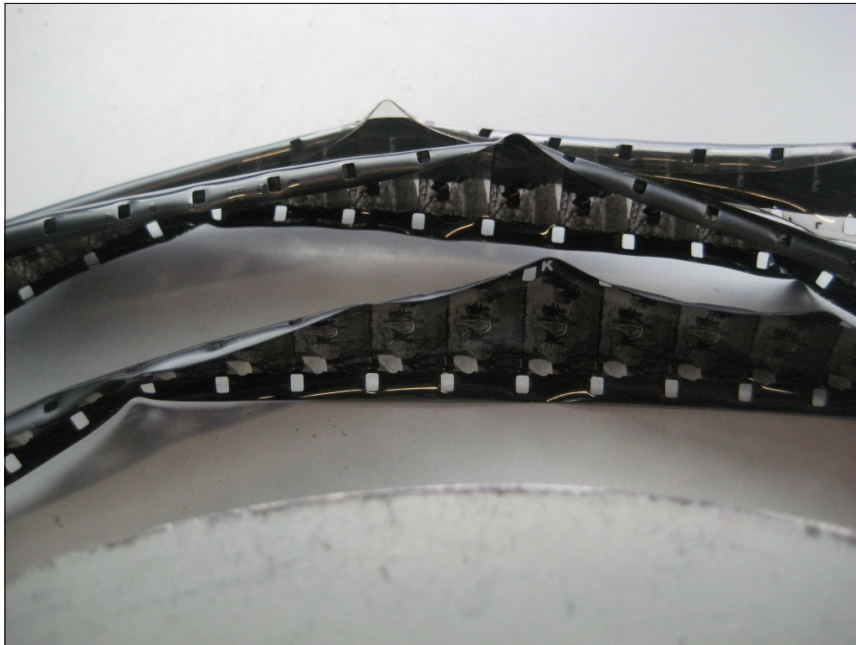
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Statistical method

The analyse of a randomly chosen subset of
164 items
of each type of material and in each storage
vaults informs about the full collection with the
precision of
80% ± 5%

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Principle

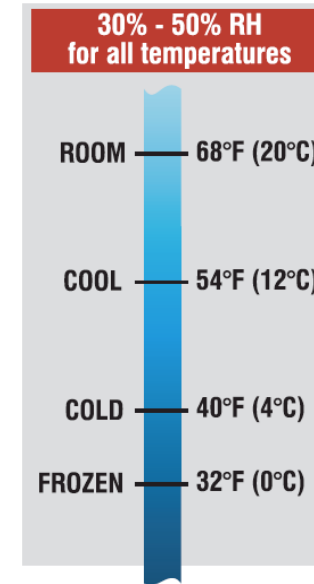
In order to guarantee the conservation, one
must know both the **condition** of the each
media type **and** the **climate** in each storage
vault:

- condition of the collection
- temperature and relative humidity

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Model

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QUALITATIVE RATING SYSTEM

NO	Likely to cause significant damage.
FAIR	Does not meet ISO recommendations but may be satisfactory for extended periods.
GOOD	Comparable to ISO recommendations. ¹²
VERY GOOD	Will provide an extended lifetime.

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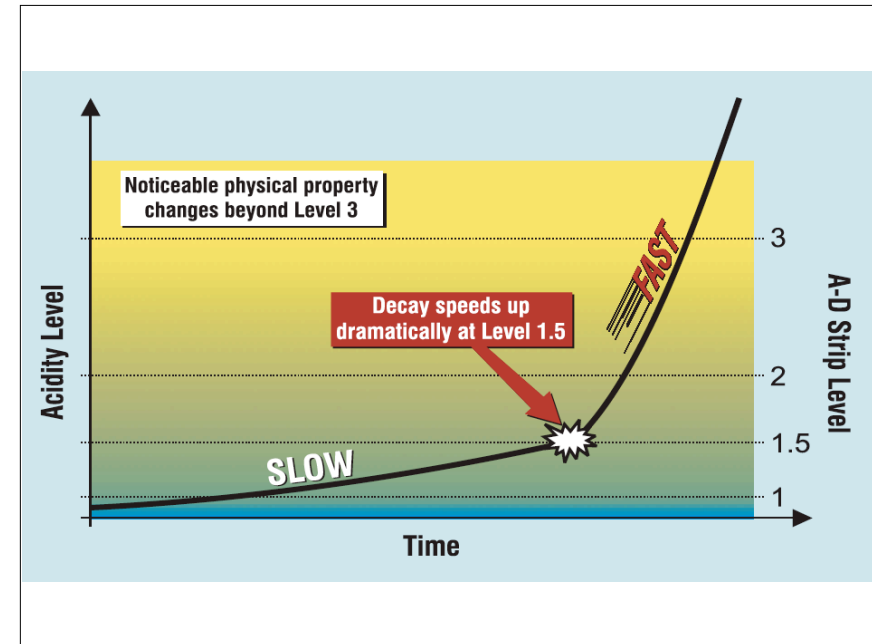
Storage Conditions	Glass Plates	Nitrate	Acetate		Polyester		Photo Prints		Ink Jet Prints	Magnetic Tape		CDs DVDs
			B&W	Color	B&W	Color	B&W	Color		Acetate	Polyester	
ROOM	Fair	No	No	No	Good	No	Good	No	Fair	No	No	Fair
COOL	Good	No	No	No	Good	No	Good	No	Fair	Fair	Good	Good
COLD	Very Good	Good	Good	Good	Very Good	Good	Very Good	Good	Good	Good	Good	Good
FROZEN	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good	Good	Good	No

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Four climate zones

	T	RH
room	20 °C ± 2 °C	50% ± 5%
cool	16 °C ± 2 °C	35% ± 5%
cold	4 °C ± 2 °C	45% ± 5%
frozen	-8 °C ± 2 °C	microclimate

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Life expectancy

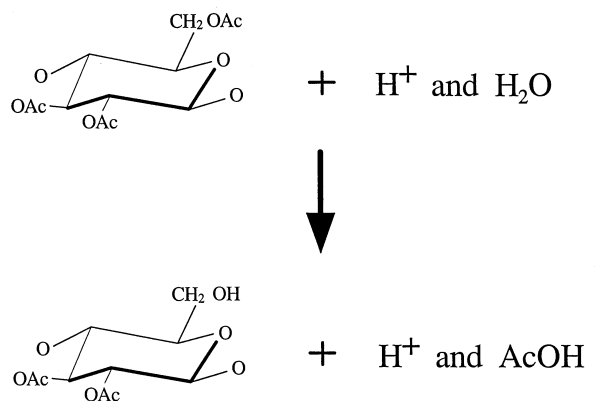
	T	RH	t
room	20 °C	50 %	1,0 x
cool	16 °C	35 %	2,5 x
cold	4 °C	45 %	9,5 x
frozen	-8 °C	50 %	46,0 x

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1. Cool

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Acid catalysed hydrolysis (deacetylation)



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Until autocatalysis (acetate)

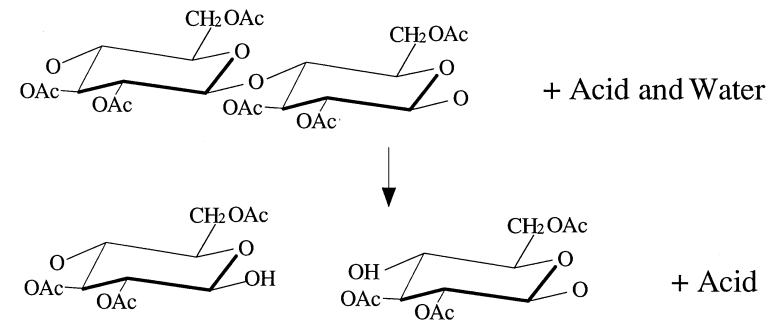
	T	RH	years
room	20 °C	50 %	44
cool	16 °C	35 %	110
cold	4 °C	45 %	414
frozen	-8 °C	50 %	2 021

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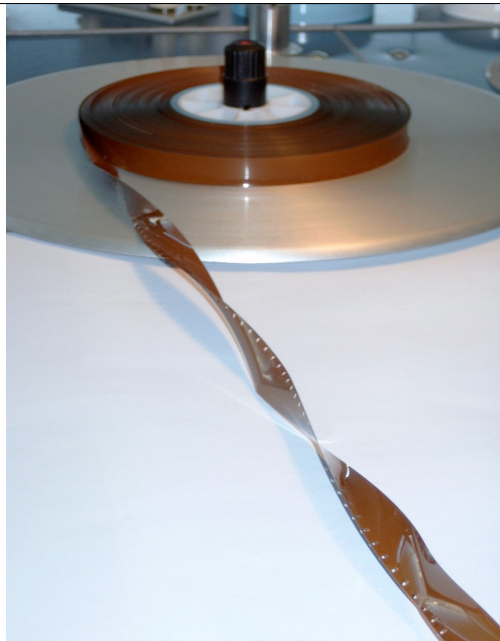
2. Cold

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Glycosidic cleavage by hydrolysis



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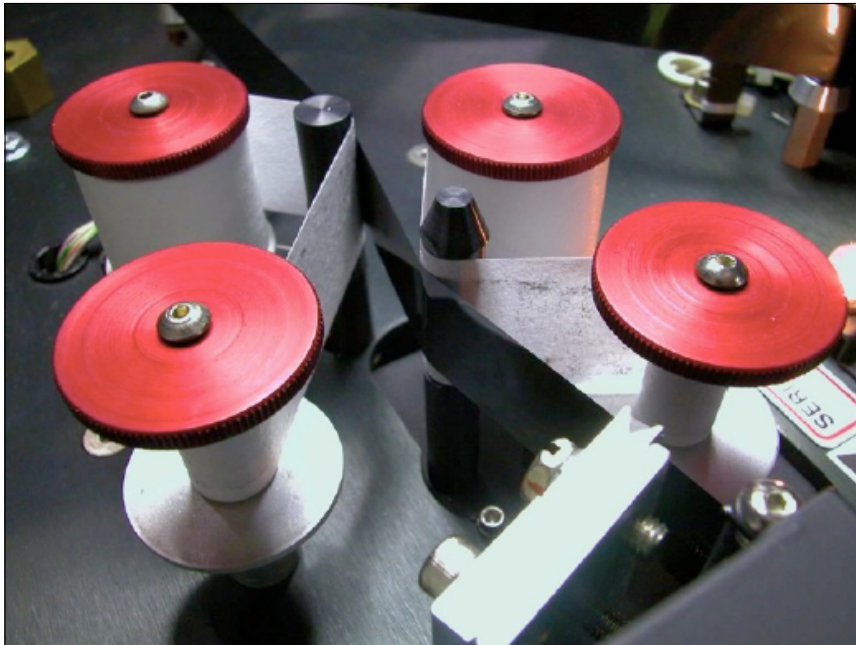


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From autocatalysis on (acetate)

	T	RH	years
room	20 °C	50 %	7
cool	16 °C	35 %	18
cold	4 °C	45 %	67
frozen	-8 °C	50 %	322

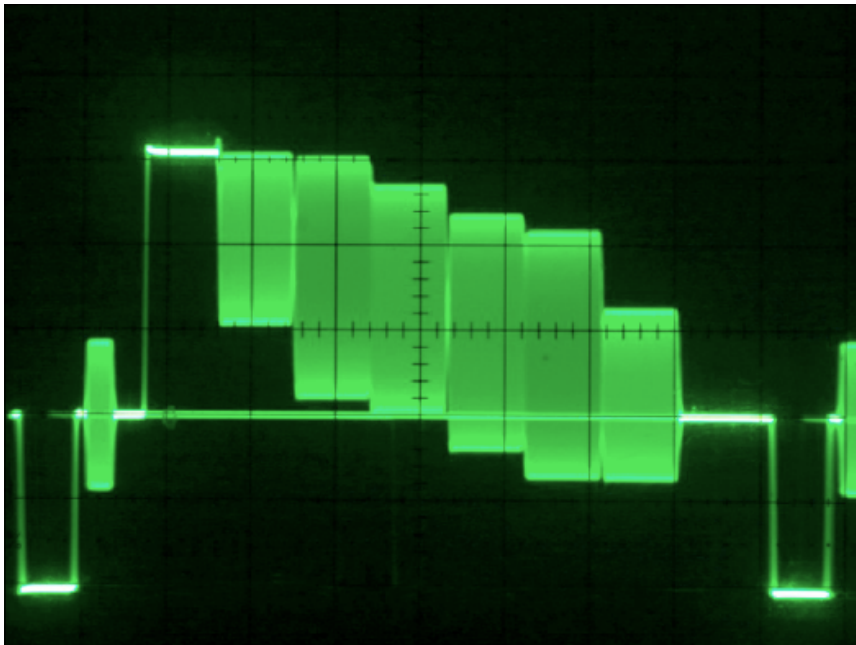
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3. Frozen

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Emergency (acetate)

	T	RH	years
room	20 °C	50 %	1/2
cool	16 °C	35 %	1
cold	4 °C	45 %	5
frozen	-8 °C	50 %	23

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Implementation

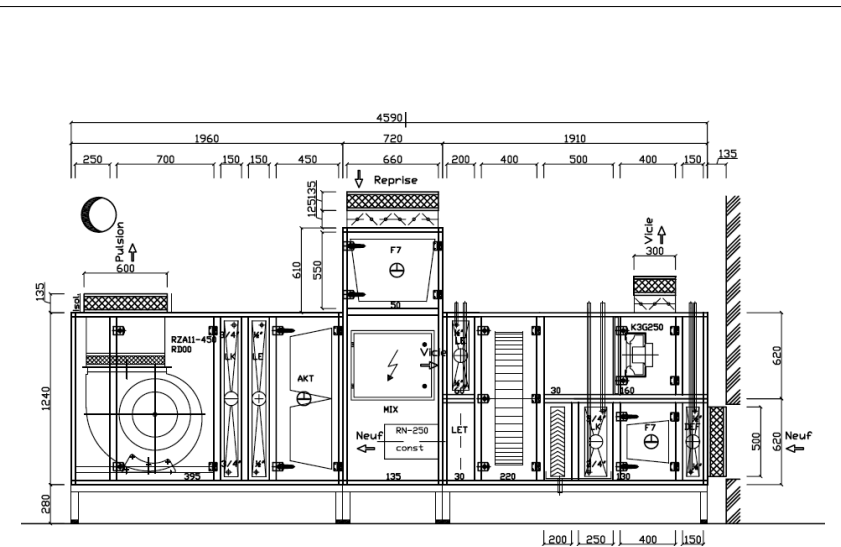
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Active measures

Air conditioning:

- refrigerate
- dehumidify
- filter

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Air pollutant...

- $\text{SO}_2 < 1 \mu\text{g}/\text{m}^3$
- $\text{NO}_x < 5 \mu\text{g}/\text{m}^3$
- $\text{O}_3 < 25 \mu\text{g}/\text{m}^3$

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Outgassed acid

- $\text{CH}_3\text{COOH} < 1 \text{ ppm}$
- $\text{HNO}_3 < 1 \text{ ppm}$

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Air flow

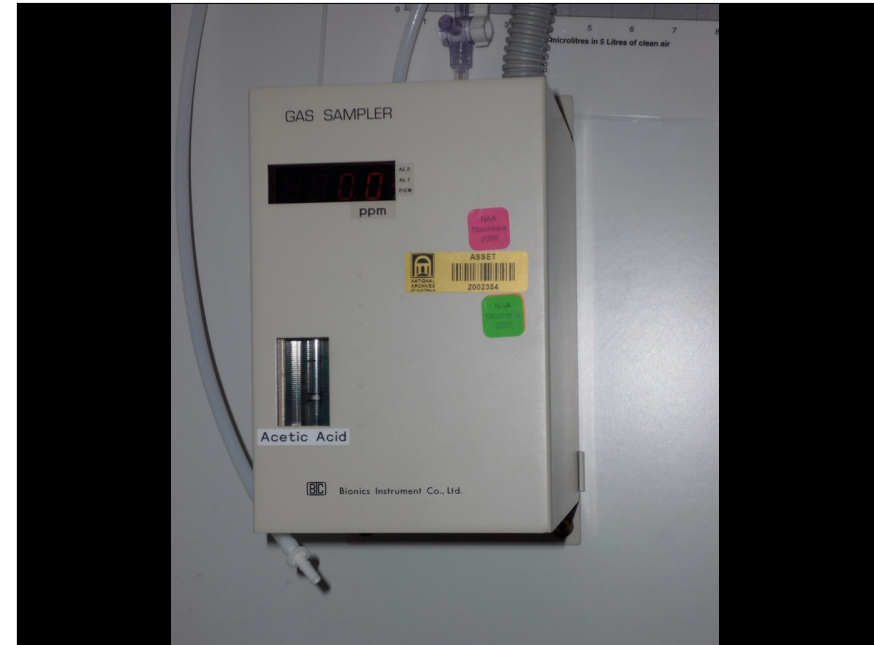
Outgassed acetic acid or nitric acid are heavy gases:

- air supply at the ceiling of one wall
- air exhaust at the bottom of the opposite wall
- air supply and air exhaust on the full length of the opposite longer walls

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Passive measures

- location
- orientation
- exterior paint colour
- shadow
- insulation
- humidity barrier
- apertures

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Interaction

- air conditioning
- insulation
- architecture
- materials

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Advantages

Clear and efficient infrastructure:

- smaller air conditioning
- lower energy costs
- less maintenance
- limited material requirements

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Summary

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Live in the real world!

There is only one efficient way:

- keep the source elements
- more prevention:
 - better insulation
 - more efficient air conditioning
- less handling of the source elements
- make copies

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AV Preservation by reto.ch

chemin du Suchet 5
1024 Écublens
Switzerland

Web: reto.ch
Twitter: [@retoch](https://twitter.com/retoch)
Email: info@reto.ch



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