COLLECTING PLASTIC:

BASIC GUIDELINES FOR DEALING WITH PLASTIC ARTEFACTS IN SMALL MUSEUMS

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Bevaringstenestene
MUSEUMSSENTERET i Hordaland

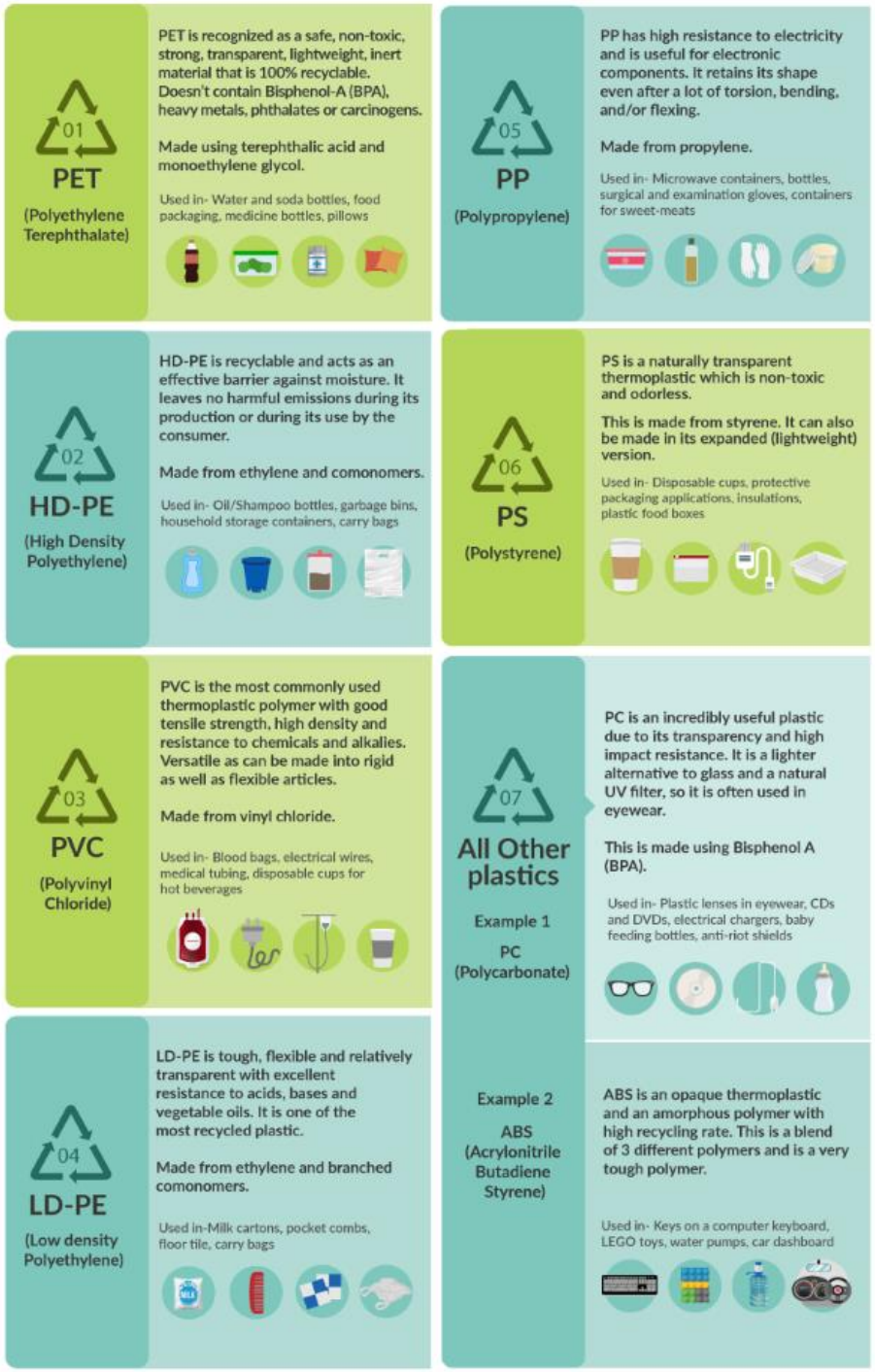
WHAT IS PLASTIC?

- Any material capable of being shaped or moulded

- Semi-synthetic material
- Synthetic material

- First recycle triangle made in 1988 (useful tool)

WHAT IS PLASTIC?



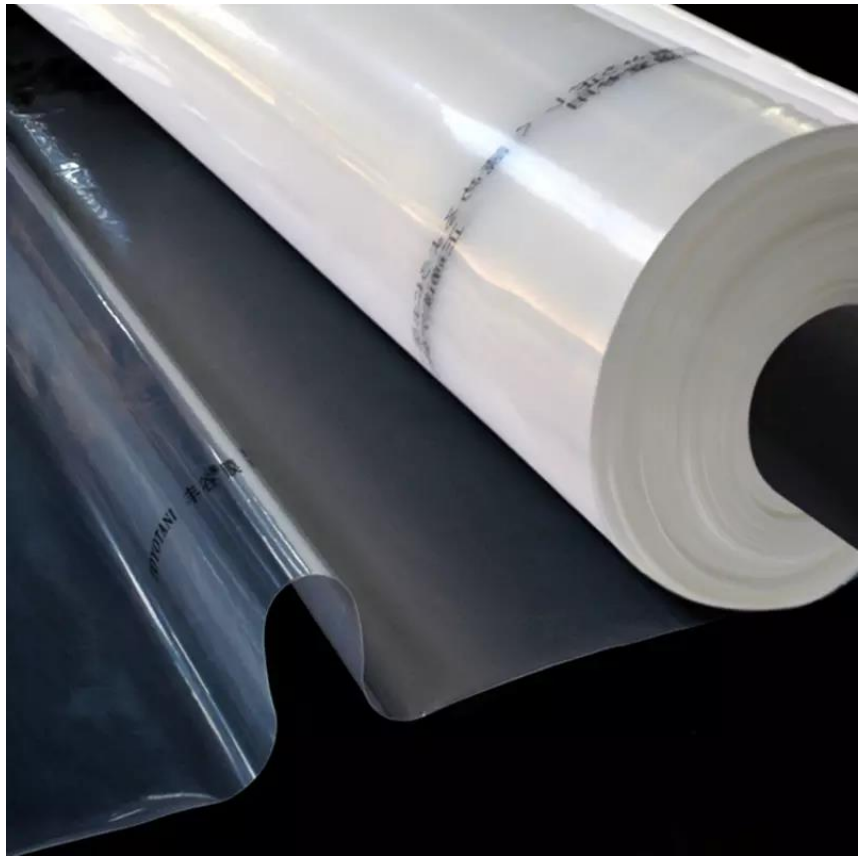
WHAT IS PLASTIC?

Plastemballasjen
skal gjenvinnes

Plastemballasjen skal gjenvinnes

Folien gjenvinnes som plast,
esken gjenvinnes som kartong

HOW IS IT FORMED?



Film

HOW IS IT FORMED?

Foam

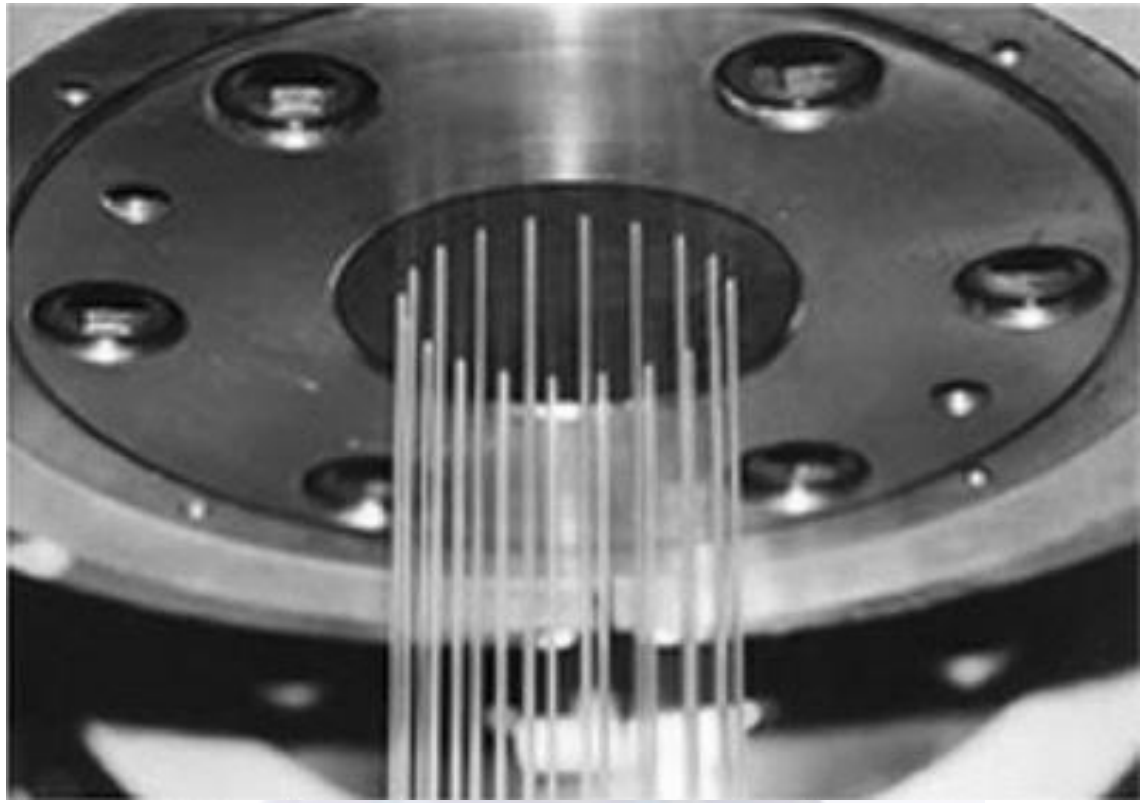
HOW IS IT FORMED?

Solid

HOW IS IT FORMED?

Elastic

HOW IS IT FORMED?



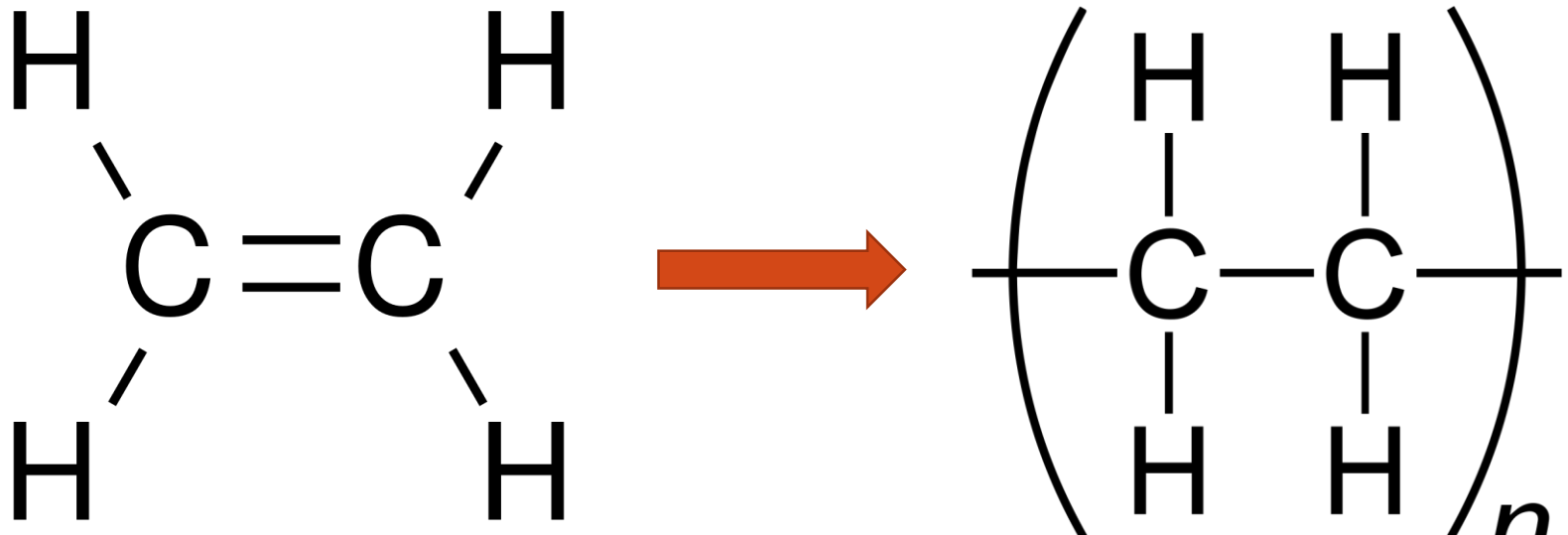
Extruded

HOW IS IT FORMED?

Adhesives/coatings/paints

HOW IS IT NAMED?

- Majority:
  - Poly (polymer/many) + base monomer used
    - E.G. Polyethylene = poly + ethylene

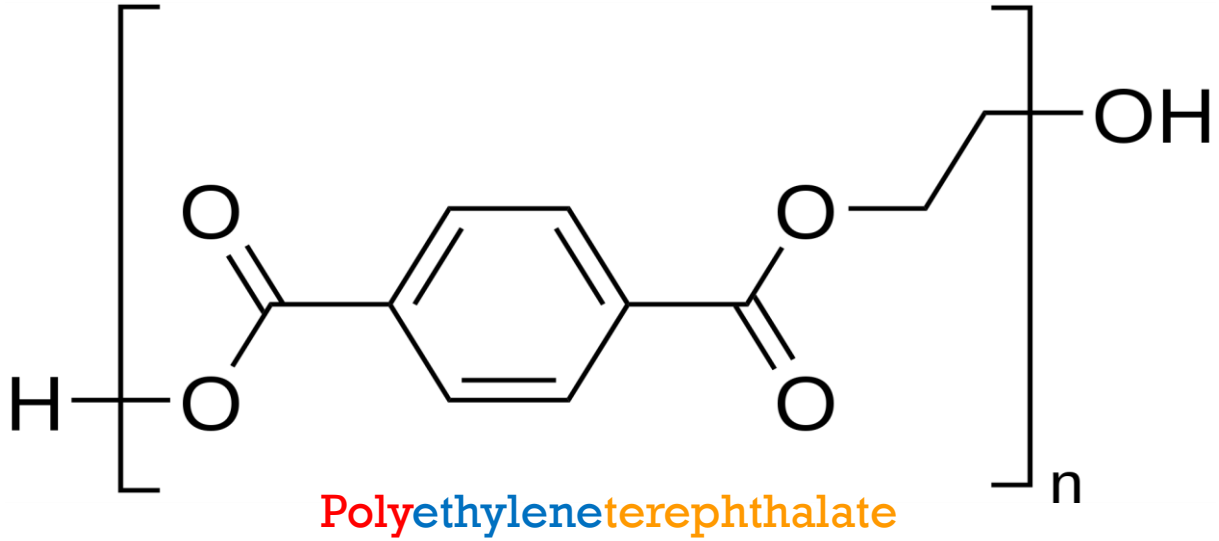


Ethylene

Polyethylene

HOW IS IT NAMED?

- Exceptions:
  - A plastic that can refer to a category, not the specific plastic
    - E.G. Polyester, any polymer with the ester functional group. Most common PET (polyethylene terephthalate, more than one monomer



Polyethyleneterephthalate

HISTORY OF PLASTIC

- First invention was a semi-synthetic in 1846
  - 'Gun cotton' explosive, cellulose nitrate
- First synthetic was invented in 1907
  - Bakelite, phenol-formaldehyde entirely man made
- Huge increase in technologies and manufacture during WWII
  - Rayon, the replacement for silk
- No going back, plastic is <u>everywhere</u>
  - Dozens of different groups and 1 000 of variables for dye additives, plasticisers, fillers, mixing materials, and on and on (nightmare to ID)
    - One object could easily contain more than 10 different plastics

PLASTICS AS MUSEUM ARTEFACTS

- Every collection has plastic
  - The object as plastic (history artefact, fine art artefact)
  - Associated with the artefact (orginal packaging, inside fittings, finishings, even restoration or conservation treatments)
- They degrade differently and for the most part faster, than natural materials
  - May need to be treated differently

PLASTICS AS MUSEUM ARTEFACTS

HOW DO THEY DEGRADE?

Blooming and chalking

Crazing, crumbling, brittleness

HOW DO THEY DEGRADE?

Warping

Discolouration

IS IT ALREADY HERE?

- Assuming the plastic object is already in the collection, now what?
- What is most important?
- Identification (useful for historic purposes but mostly for keeping the object and the surrounding collection safe)
  - Basic condition assessment to aid in ID, storage and handling
- Handling
- Registration
- Packing and storage, or exhibition
- Beyond saving and lost all significance, de-accession?

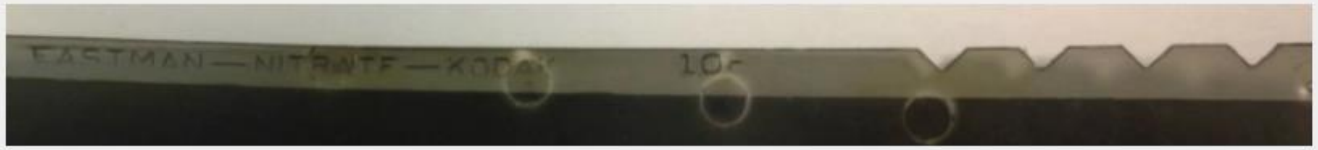
- In an ideal world
  - Scientific equipment only 100% proof
    - FTIR, chemical tests, etc. (Destructive to samples, expensive, extremely time consuming)

- Keep it realistic
- Basics for all collection managers
  - Object date
  - Look and appearance
  - Is there a recycle code? Celebrate
  - The end-use: raincoats, furniture, films and photographs
  - Film cheat sheet:

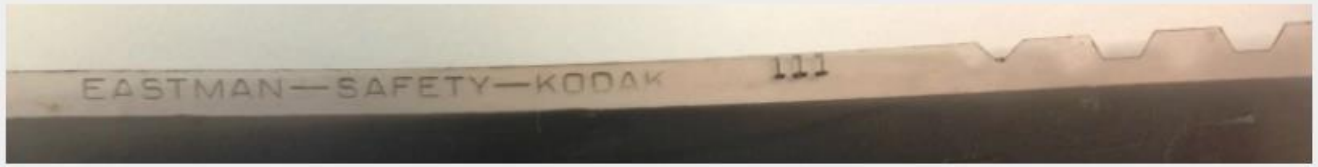
https://plastic-en.tool.cultureelerfgoed.nl/tool

PLASTIC MATERIAL ID

1. Edge printing: Many, but not all, manufacturers identified the type of film along one border of the film with nitrate or safety. Safety indicates the negative is acetate. It is important to note that some early nitrate does not have edge printing.
2. Notch codes: A notch code is a group of indentations or recesses on the edge of a piece of film to help identify the film type and brand. If there is a 'V' notch code first from the edge of the negative, it is nitrate, and if there is a 'U' notch code first from the edge of the negatives, it is acetate. Notch codes are not always accurate as the photographer may have cut the film sheet for various reasons and removed the notch code closest to the edge.



An example of edge printing and notch codes for a nitrate negative. Photo credit: Amanda Oliver



An example of edge printing and notch codes for an acetate negative. Photo credit: Amanda Oliver

https://archivesalberta.wordpress.com/tag/identifying-negatives/

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HANDLING AND REGISTRATION

- Nitrile gloves
- Stabilo pencil
- Input as much information as possible in online database, searchable

HANDLING AND REGISTRATION

STABILO All Graphite Pencil
8008

STABILO All Colored Pencil
Available in 8 colors; 80xx

Accession photo from 1995

Photo from 2019 condition assessment

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PACKING, STORAGE AND EXHIBITION

- Prevention!
- The environment
  - Low to no light
  - Cool is always best, slows down the chemical reactions
  - Stable!
  - Low humidity is generally best
- Materials
  - Never place abosorbing materials in direct contact, e.g. never tissue paper (silke papir)
- Adsorbents for released acids
  - Cellulose Nitrate and Cellulose Acetate

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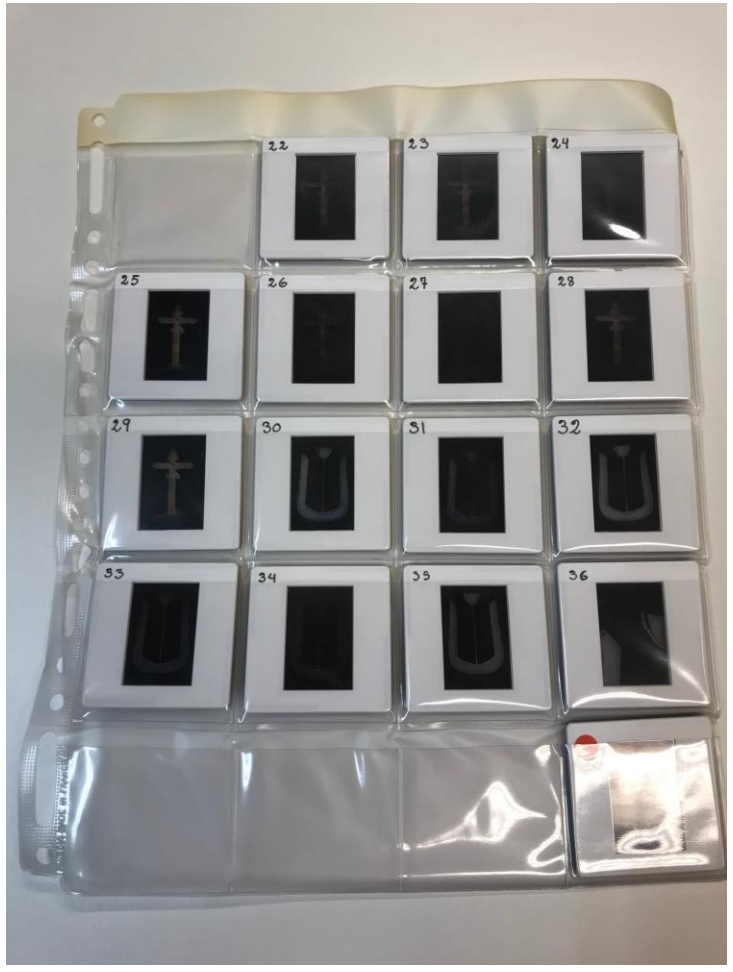
PLASTICS AS PACKING MATERIALS

Plastics suitable for direct contact	Common names and materials
Polyethylene and polypropylene	Sheet, foam, containers, corrugated sheets: Tyvek, Plastazote, ziplock storage bags, Correx, Ethafoam
Polyester and polyethylene terephthalate (PET)	Sheet, containers and films: Melinex, Bondina, Dacron
Polytetrafluoroethylene PTFE	Sheets, Teflon, Fluon

Exception! For PVC objects Do NOT use polyethylene, pulls out the plasticisers

PLASTICS AS PACKING MATERIALS



PLASTICS AS PACKING MATERIALS

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PROBLEMATIC PLASTICS

- Cellulose Nitrate
  - Hates: light, moisture and oxygen
  - Degradation reaction forms nitric acid (acedic smell), highly flammable and self-igniting!
  - Visually: internal cracks, crazing, bloom from additives and discolouration
  - Storage requirements:
    - Ventilation, cold, dry, adsorbents

PROBLEMATIC PLASTICS

- Cellose Acetate
  - Very similar to CN
  - Degradation reaction forms acetic acid (vinegar smell), not flammable
  - Requires less ventilation than CN

PROBLEMATIC PLASTICS

- Plasticised Polyvinyl Chloride (PVC)
  - Hates: light and heat
  - Degradation reaction forms double bonds = stiff
  - Shows yellowing and hardening, migration of additives to the surface = sticky
  - Slightly higher RH than CN, avoid ALL absorbent materials (especially polystyrene, also polyethylene)
    - Store as would display, cannot manipulate shape once plasticisers are gone

PROBLEMATIC PLASTICS

- Polyurethane (PU)
  - Hates: oxygen
  - Degradation reaction by oxidation and hydrolysis
  - Shows yellowing, darkening and crumbling; can also be sticky
  - Storage requirements:
    - Cool store, low RH, if possible oxygen-free
    - Store as would display, cannot manipulate shape once structure is gone

PROBLEMATIC PLASTICS

- Latex (natural rubber)
  - Hates: oxygen
  - Degradation reaction by oxidation and hydrolysis
  - Shows yellowing, darkening and crumbling; can also be sticky
  - Storage requirements: similar to PU

- Follow the same de-accessioning protocol as usual
- Proper disposal
  - E.G. Cellulose nitrate is flammable, must be disposed of through a chemical removal company
  - Do NOT throw in the bin!
  - Consider recycling if possible, remember the triangles and only single type plastic is recyclable (only PE, never PE bound to something else)

PRONOUNCED DEAD

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

RAGN SELLS

En del av kretsløpet

NEW PLASTIC AQUISITIONS

- Plastics are part of our lives in every sense including art
- No more plastics ever! Unrealistic
- Go through the steps, aquire with full knowledge

Potential acquisitions must meet three basic criteria:

- **Relevance:** the object must support the Museum's mission and fit within its stated collecting goals.
- **Use:** the object must have the capacity for use in exhibitions and/or for research and scholarly purposes.
- **Condition:** the object must be in reasonable condition and must not require significant expense for treatment in order to make it relevant or useful unless such funds are provided for by the donor or other sources such as grants or by other special arrangements with another institution or organization.

Gufram
i multipli
MARCHIO IN LICENZA D'USO

Edizione numerata

Certificato di origine e garanzia

DARK LADY

Archivio storico Gufram (Omaggio a Salvador Dalì)

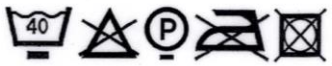
n. 22 / 1000

Divano a forma di labbra giganti, in poliuretano espanso a portanza differenziata.
Rivestimento in tessuto elasticizzato.
Piercing in acciaio inox
Misure: cm 212 x 80 x 85.
Non esporre a fiamme libere o superfici incandescenti.
Esposto a fonte di calore può emanare un leggero odore di gomma. Queste caratteristiche non pregiudicano la qualità del prodotto, essendo da considerarsi peculiarità dell'oggetto e non possono dare adito a contestazioni.
Non si riconosce alcun danno per deterioramento dovuto ad uso improprio.

Rivestimento in tessuto elasticizzato 85%poliammide 15% elastomero, prescrizioni per il lavaggio:

Sofa form of giant lips, in cold foamed polyurethane with differentiated load bearing capacity. Cover in elastic fabric.
Piercing in stainless steel
Size: cm 212 x 80 x 85. (inch. 83,46 x 31,50 x 33,46).
Don't expose to fire or incandescent objects.
If exposed to heat may give off a slight smell of rubber. These characteristics are not detrimental to the quality of the product, since they are peculiarities of the object itself; they can not give rise to contestations.
No claim will be accepted for any damage due to improper use.

Upholstered in elasticised fabric covering 85% polyamide 15% elastomer, washing prescription:



Cassina S.p.a. – Via Busnelli, 1- 20036 Meda (MI) - ITALY - Tel. +39 0362.372.1-Fax +39 0362.342246
http://www.gufram.com

USEFUL RESOURCES

- https://plastic-en.tool.cultureelerfgoed.nl/tool
- https://www.modip.ac.uk/projects/curators-guide
- https://samlingsnett.no/bevaring-av-plast

STAY CALM AND DO SOMETHING

- Thank you for your attention and to all my colleagues past and present who helped me in understanding the significance of plastics in museums
- Can always contact Bevaringstenestene for advice and help with your plastic artefacts