

Info Sheet 05

Staff and set sculptures

Practical info sheets to help with eco-friendly set design, training teams and reducing waste during film production.

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ECOPROD Award for Maria de Jessica Palud in 2024

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1/ Introduction to the profession of cinema sculptor and plasterer

Head Set Designer

1st assistant production designer

2nd assistant production designer

Head Builder

Outdoor Materials Location Manager

Head Painter

Set Assembler

Head Sculptor

"Under the direction of the head production designer or interior decorator, they are responsible for organizing, coordinating, and executing the sculpting work required for the sets. In the performance of their duties, they shall ensure compliance with the health and safety rules in force." (Source: collective bargaining agreement)



Sculpture of Louis XIV for Julien Rappeneau's *Little Nicolas' Treasure*. Chief Production Designer Marie Cheminal, production : Curiosa Films, 2021. © Gilles Bontemps



Fake ice sculpture made of transparent resin for an advertisement for the Shangri-La Hotel.
© Gilles Bontemps

2/ Sculpture, different materials

Plasterer

Sculptor

Head Set Designer

Head Builder

Head Painter

Sculpture in film sets is a specialty that is more or less in demand depending on the project. This involves creating statues and ornaments, as well as reproducing all kinds of natural objects such as rocks, trees, stone, etc. The main materials used for sculpting in film sets are **polystyrene, plaster, and resins**.

Polystyrene

Most often, sculptures are made of polystyrene, **which is the most practical and quickest material for shaping volumes**. Several blocks can be easily assembled to create volumes to suit your needs. The material can be cut with a hot wire or with saws, knives, or cutters, brushed, sanded, and, even though it may appear fragile, it can be easily protected with coatings, plaster, or resins. It is also easy to structure it with wood or metal to allow for large spans or heights. Its lightness is often an advantage, except of course underwater.



It is important to take precautions when cutting with a hot wire, as this can generate highly toxic fumes. These fumes contain volatile organic compounds (VOCs), including styrene, which is a powerful irritant that can cause respiratory problems, eye and skin irritation, and other adverse health effects. **It is therefore strongly recommended to work in a well-ventilated environment and to use personal protective equipment, such as a respirator mask, to protect yourself from fumes.**



Wood-reinforced polystyrene cell with sprayed plaster finish for the *The Count of Monte Cristo* by Alexandre de La Patellière and Matthieu Delaporte. Chief Production Designer, Stephane Taillisson, production: Pathé Films, 2024.
© Gilles Bontemps

2/ Sculpture, different materials

Recycling

The polystyrene recycling industry has been slowly gaining momentum in recent years. In France, **nearly 30% of polystyrene is collected for recycling**. It is therefore important to work closely with these companies to establish a recycling protocol.

Virgin polystyrene is 98% recyclable, but the reality is more complex. While theoretically this material can be given a second life, its effective recycling faces several practical obstacles:

- Its large volume relative to its low weight makes it expensive to transport.
- Its collection is not mainstreamed in traditional recycling channels
- Specific facilities for its treatment are not available everywhere.

Its recycling is even more difficult if it is covered with other materials such as resin, paint, etc. In most cases, it will then be **incinerated** and not recycled.

Polystyrene suppliers or manufacturers will **take back cutting scraps and leftover decorations if they are "cleaned," which involves recutting them** to remove surface finishes and glue. **Please note** that this is something that must be planned in advance in the dismantling estimate.

Some companies, such as **ECO2PR**, offer to recycle used polystyrene free of charge, even if it is covered with various materials, but only in small quantities. It is therefore important to plan for solutions during manufacturing that will allow the different materials to be easily separated during disassembly, but this will entail additional costs.

2/ Sculpture, different materials

Possible alternatives / innovative materials

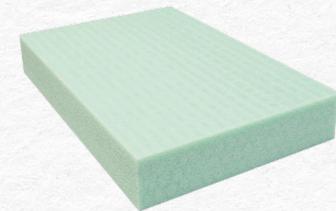
Although new insulation materials and recycled materials are constantly appearing on the market, polystyrene has not yet been replaced by any other material that is easily usable in our industry.

ARMACELL ArmaPET Eco50 insulation (made from 100% recycled PET),

technical data sheet

Feedback from head sculptor Gilles Bontemps:

- Advantages: materials made from recycled PET (second life) and fully recyclable at the end of their life. The product is slightly harder and therefore less fragile than polystyrene. It adheres to neoprene, is resistant to acetone, sands very well, can be painted without much coating, and can be cut with a hot wire.
- Disadvantages: Much higher cost (approximately three times more expensive), minimum order is one pallet measuring 245/122 cm, generates a lot of smoke when cut with a hot wire.
- Conclusion: It is not a miracle product, but it does have some advantages over extruded polystyrene. Even if it requires using a lot of material, ArmaPET can be a wiser investment for superior performance and greater durability, especially for certain applications.



Use of ArmaPET Eco50 to build a bench and a marquee for the film *Olympe, une femme dans la Révolution* by Julie Gayet and Mathieu Busson, production: Moteur s'il vous plaît, 2024.

© Valérie Valéro

2/ Sculpture, different materials

AlgiFoam foam (seaweed-based alginate)

Sample tested

- Advantages: bio-based material, easy to sculpt, not very sensitive to heat
- Disadvantages: permeable to water, therefore requires the application of a varnish; material still in development, therefore still expensive; small size of tiles (13x13 cm), but hopes to soon market 1-meter tiles.

(Source : Presentation of research conducted by the Kairós design office in collaboration with the Comédie Française on low-impact materials during the Augures Lab review (2025).



Mycelium

The innovative American company Ecovative has developed a **material made from a network of mushroom roots** that aims to replace polystyrene and can be used for packaging, furniture design, and even construction.

- Advantages: bio-based material, 100% compostable, naturally fire-resistant, relatively simple to use: The recipe for growing Myco Foam can be compared to that of a yeast cake. The ingredients—corn residues and mycelium—provided by Ecovative in a pre-mixed bag can be activated with a little water and flour, then poured into the mold of your choice. Once growth is complete, the material is baked to stop the process. "



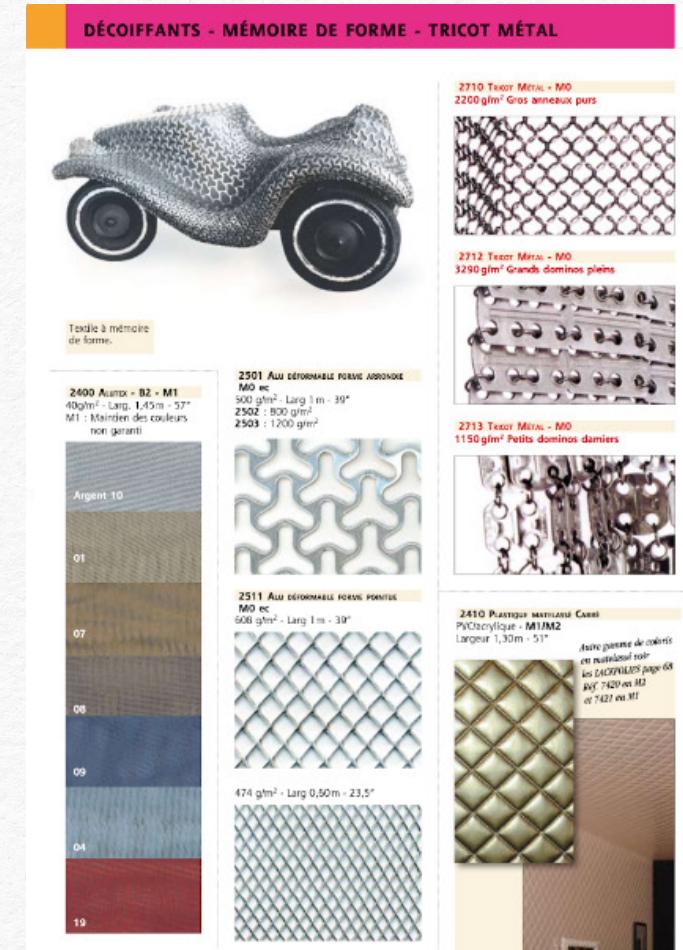
For more information on mycelium, see the article "Sustainable solutions for production design" by Green Film Shooting, 2016.

2/ Sculpture, different materials

FORM IT (formerly Brusan)

Form'it is a fabric laminated onto a very thin sheet of aluminum that can be used to create fairly simple shapes.

- Advantages: Very easy to work with, it retains the shape you give it and offers many advantages:
 - Easy to use (cutting, folding, gluing, sewing, malleability, etc.)
 - Quick to use (lightweight, compact, adaptable, and reusable material)
 - Resistant (fireproof, supports its own weight, water-repellent)
 - Customizable (water-based or acrylic paint, digital printing)
 - Easy to dismantle and reuse
- Disadvantages: realistic 3D volumes are more difficult to achieve when viewed up close. It is also important to remember that it will soon need a frame to hold it in place and prevent it from moving.



2/ Sculpture, finishes

Plasterer

Sculptor

Head Set Designer

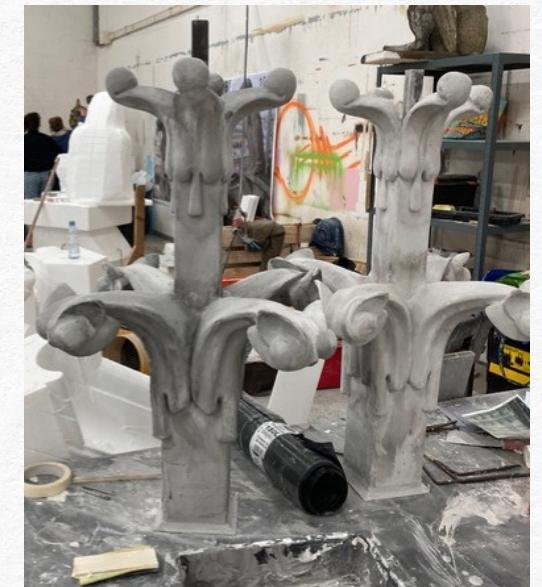
Head Builder

Head Painter

There are several types of finishes:

- **Paint**
- **Coatings**
- **Resin (polycrystal)**

Polycrystal is composed of plaster and an acrylic binder. It is a substitute for polyester resins and is free of VOCs (volatile organic compounds) and solvents. This resin allows polystyrene **to be solidified, as well as enabling very fine prints to be made that are lighter than plaster.**



Plaster molded roof elements for Jean-Jacques Annaud's *Notre-Dame on Fire*. Chief Production Designer Jean Rabasse, production : Pathé Films, 2022.
© Gilles Bontemps

3/ Staff

Plasterer

Sculptor

Head Set Designer

Head Builder

Head Painter

Staff is often used in set design to create stone-type walls or interiors with decorative elements and moldings, such as castle rooms and bourgeois interiors, as well as to create old, crumbling walls.

It usually involves casting plasterboard or lengths of molding reinforced with plant fibers or plant fabric into silicone molds.

These are then attached or glued onto the set panels.

Plasterers also reproduce volumes, sculptures, or accessories in resin, hard or soft, or latex.

Many factors are taken into account when deciding whether to use polystyrene or staff for a set: the size of the set, repetition, ease of dismantling, weight, whether or not volume variations are important, ease of painting, possibility of modification, desired hardness, fire resistance, simplicity of the framework, etc.

It is also common to see a combination of the two, as on this wall, where the cut stones and cornices are made of polystyrene and the infill is made of staff.



Entirely staff-made set, pigment-dyed in the mold for Olivier Megaton's *Transporter 3*. Head Production Designer, Stephane Taillasson, production: EuropaCorp, 2008.
© Gilles Bontemps



Staff and textured polystyrene facade for the *Benjamin Franklin* series. Head Production Designer Dan Weil, production : Apple TV, 2024.
© Gilles Bontemps

3/ Staff

Recycling

For now, **staff is not accepted in the plasterboard recycling chain** and goes to the **general waste**.

It is therefore important to **extend the life cycle of these elements** as much as possible and anticipate their outcome before filming rather than after.

For example, find out about reuse facilities such as cultural resource centers that collect this type of item and contact them to arrange for their transfer after filming.

But in order to do this, you still need to have thought about and assembled these elements in reverse design so that they can be kept in good condition during dismantling.

Reuse

Once again, **the reusability of these components will be facilitated if dismantling has been planned in advance**, so as to simplify their removal and ensure their durability.

For example:

- If possible, screw rather than glue.
- Choose an acrylic resin to enable reuse.

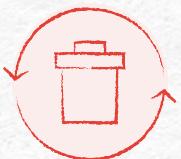
Non-exhaustive list of cultural resource centers in Paris Region that may accept decorative items and sculptures:

- ArtStocK (92)
- Arlequin Matériaux (94)
- La Ressourcerie du Cinéma (93)
- La Réserve des Arts (93)
- La Ressourcerie du Théâtre de l'Aquarium (75)

Items that can be reused most often:

- chimneys,
- windows,
- doors,
- columns,
- sculptures,
- vases,
- fountains,
- wells,
- rocks...

4/ Recycling channels



As previously mentioned, recycling polystyrene or plaster used for staff is not yet very widespread.

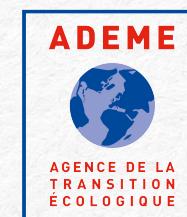
A few organizations exist, such as [ECO2PR](#), which offers to recycle polystyrene, even painted polystyrene, but does not collect it. However, these organizations are still relatively minor players.

It is also possible to use a specialized service provider such as [Fin de déchets](#), which offers comprehensive collection and recycling services tailored to the needs of professionals in the film and audiovisual sector.

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ecoprod