

HAZARD ALERT – PLASTER OF PARIS

Background:

Plaster of Paris is a type of plaster which can be used in art, architecture, fireproofing, and medical applications. When people think of “plaster,” they are often thinking specifically of Plaster of Paris, and associated products such as ModRoc. Plaster of Paris is made by heating gypsum, a process which involves exposing the gypsum to very high temperatures to create calcium sulfate and then grinding it into a fine white powder. When water is added to the powder it quickly rehydrates and the slurry can be molded in a variety of ways. As it sets, a firm matrix is created, which has a smooth solid shape. One advantage to plaster of Paris is that there is very little volume loss and therefore casts made with this plaster are true to the size of the mold.

Hazards:

Plaster of Paris is classified as a hazardous substance. It is generally regarded as a safe material for routine use but is not considered dangerous if worked with responsibly. However, due to recent injuries involving the use of Plaster of Paris in schools, its use is no longer allowed in PTSD Schools.

Prior to starting work think about what you want to use the plaster for and how you are going to use it.



When mixed with water, this material hardens and then slowly becomes hot and temperatures as high as 60 degrees centigrade can be reached. Skin damage (severe burns) can occur at much lower temperatures, perhaps as low as 45 degrees centigrade, if contact is prolonged.

Making a cast enclosing any part of the body using this material is potentially very dangerous, particularly if the thickness of the cast exceeds a few millimetres. Once mixed, the plaster will set rapidly into a solid rigid mass. Anything that is embedded in the plaster may therefore quickly become trapped and exposed to an extreme temperature. Under no circumstances should objects such as a hand or body parts be placed into the setting plaster. Failure to follow this guidance can cause severe burns that may require surgical removal of affected tissue or amputation of digits or a limb.

REMEMBER: never attempt to cast a limb or any body part in a container of wet Plaster of Paris

HEALTH & SAFETY WHEN USING PLASTER OF PARIS :

Note: Plaster of Paris is no longer allowed to be used in PTSD schools.

- ✓ Always wear goggles. If plaster of paris is in contact with eyes, rinse with plenty of water for 15 – 20 min then go to a doctor
- ✓ Always wear dust masks while mixing dry powder indoors
- ✓ Always wear gloves when using plaster
- ✓ Never cast body parts with raw skin or allow hair to be in contact with the plaster
- ✓ Never cast faces in plaster
- ✓ Always use a cloth dipped in plaster (or ModRoc) rather than a direct bath of raw plaster (the latter can heat up into a dangerous temperature)
- ✓ Do not leave plaster in prolonged contact with skin – temperatures as low as 45°C can burn. Upon setting temperatures can increase as high as 60°C
- ✓ Always use flexible containers in which to mix and carry plaster so that they can be easily separated from set plaster

Plaster of Paris is also very hygroscopic and when mixed with water, or allowed to become damp, can turn irreversibly into a solid form. Keep the plaster dry and away from high humidity until needed.

Casting molds:

Small volumes of plaster will always be safer and cleaner. However in the event that an object or body-part mold is required, the safest, fastest, and most accurate method is to use an alginate (a flexible compound sometimes used in dentistry). Alternatively a clay press mould can also be used. Plaster can then be poured into the clay mould to make the cast. Fine casting plaster will provide more detail. A layer of no more than 5mm will suffice with two layers of plaster bandage or gauze then used to secure and hold the plaster together.

Personal Protective Equipment:

Eye Protection - Safety goggles are required to prevent splashes from coming into contact with the eyes.

Skin / Hand Protection - Gloves are required to be worn when working with Plaster of Paris. The plaster contains gypsum, which leaches the oils and moisture from the skin. Serious burns can also result if plaster is placed directly onto the skin. This is due to the exothermic reaction that results from the hardening plaster. Never mix Plaster of Paris with your bare hands.

Respiratory Protection - Plaster of Paris powder is extremely light and fine, thus easily dispersed through air. Plaster of Paris dust needs to be controlled as it is an irritant that can cause mild breathing difficulties, so avoid getting dust into the air. Work in small batches. Do not work in a closed environment where large amounts of powder may get into the air. Wearing a dust mask is strongly recommended.

First Aid:

Eye contact: If Plaster of Paris comes into contact with eyes, use an eyewash station and rinse with plenty of water for at least 15 – 20 minutes (remove contact lenses if easily possible), then go to a doctor.

Skin contact: Direct, prolonged or repeated contact with the skin may cause irritation and attempts at removal can result in abrasions. Rinse with water until free of material to avoid abrasions and then wash skin thoroughly with mild soap and water.

If swallowed: Call for medical help if the amount swallowed is large.

Disposal:

Do not wash Plaster of Paris down the drain, it will set and block the pipes. If you have any leftover mixture, let it harden, then throw it into a garbage can. Lightly spraying the plaster dust and newspaper with water will help prevent the dust from spreading. Try to gather up plastic containers and newspaper without disturbing the plaster fragments. Wipe all utensils with a damp cloth.

Caution: Avoid getting plaster anywhere near clay or clay tools - plaster will cause the metal to rust quickly and if Plaster of Paris is introduced into a clay body that is subsequently fired in a kiln, the clay will explode.

Warnings for students and users of Plaster of Paris :

The use of Plaster of Paris in PTSD schools is no longer allowed due to the serious injuries that may result from its use.

Do all teachers need to be familiar with what a Material Safety Data Sheet is (MSDS)?

Yes!

These pictures show how a simple classroom art project involving Plaster of Paris, went terribly wrong (in two separate incidents) because the teacher did not have an MSDS sheet and did not know the hazards associated with the product.

