LOCAL SHIT – WATERPROOF PLASTER
Recipe & Tutorial

TOOLS

Buckets
Tub
Small and big shovel
Mixing tool
Plasterboard / wood with plaster grid
Plaster trovel
Sieve

MATERIALS

1 part clay (rich soil)
2,5 parts sand
3 parts cow manure
Water

USAGE

Thickness (mm)	Total kg/m2	Cow manure (kg)	Sand (kg)	Clay (kg)
6	5.8	2.7	2.2	0.9
10	9.6	4.4	3.7	1.5
15	14.4	6.6	5.2	2.2

PREPARATION

Cow manure
There are two different types of cow manure.

1. Compact - collected from the fields - large fibre, little urine, darker color
Prepare by removing large fibres by hand.

2. Slurry - collected under the stable - small fibre, large amounts of urine, lighter color
Prepare by stirring to avoid separation of urine and excrements.

The slurry is easier to work with because of the smaller fibres and shows a higher waterproofing performance due to higher amounts of urine and stronger compression of the material.
However, the bacterial load in the slurry is much stronger, as well as the smell when processing. Once dry, the smell completely disappears.

Sand

When working with locally sourced sand it is important to remove silt before mixing it in, to achieve higher permeability of sand and with that stronger compaction and increased stability.

Low tech technique for small to medium size projects:

Materials Needed:

Large tub
Water supply (hose, buckets)
Shovel or stick
Sieve

Procedure:

Sieve:	Sieve the dry sand through a sieve at the desired size.*
Place Sand in Tub:	Add sand to a large tub.
Add Water:	Flood the sand with water and stir thoroughly.
Agitate:	Use a stick or shovel to agitate the sand, helping silt and clay particles sus pend in the water. You can also shake the container when working with smaller amounts.
Let settle:	Wait 3-4 hours to let the materials separate. (Sand will sink to bottom, clay and silt sit on top)
Pour off:	Carefully pour off the muddy water, which contains the silt.
Repeat:	Add fresh water and repeat the process until the water runs clear.
Dry the Sand:	Allow the cleaned sand to dry before using it for plaster.

*Sieving recommendations:

Very coarse textured:	Max. Grain size: 4,75 mm	Mesh 4
Standard:	Max. Grain size: 2,36 mm	Mesh 8
Fine:	Max.Grain size: 1.18 mm	Mesh 16
Very fine:	Max.Grain size: 0,6 mm	Mesh 30

Clay

How to test the clay amount of your soil before mixing the plaster using the ribbon technique:
Moisten: Add water gradually and knead until the soil is plastic and moldable (not sticky).
Form Ball: Roll the soil into a ball. If it doesn't hold, clay content is very low.
Roll Sausage: Shape the ball into a sausage and check its flexibility.
Make Ribbon: Press the sausage between thumb and forefinger to form a thin ribbon.
Assess: Note the ribbon length and flexibility to estimate clay content.

Observation	Clay Content Estimate	Soil Texture
No ball formed	0–5%	Very sandy
Ball formed, no sausage	5–10%	Sandy
Sausage formed, bends slightly	10–15%	Sandy loam
Sausage bends halfway	15–35%	Loam / silt loam
Sausage bends more than halfway	35–55%	Clay loam / sandy clay
Sausage forms a circle (ribbon strong)	>55%	Clay

To ensure good binding and strength, the minimum clay amount to make plaster should be at least 20-30%.

Mixing

1. Start by dissolving your clay soil in a bit of water until it has a creamy texture.
2. Then add sand and cow manure and mix with an electric drill. The mixture should feel rather dry but gluey then too wet.
3. Apply the first layer on your plasterboard about 7 mm thick.
4. Once dry, apply a second layer about 3 mm thick. Repeat if needed.
5. To finish off you can decide to use one of the following methods (or find others!)

Finishes

Double boiled linseed oil

Take a brush or spray bottle and slowly apply the oil. The material will absorb it quite fast. You will need to apply multiple layers to avoid stains.
Appearance: Very dark compared to other finishing methods.
Waterproof Ability: High - recommended for areas that are exposed to a lot of water like showers
Price: €€

Linseed oil bee wax

Apply with brush or sponge. You might need to repeat multiple times to avoid stains.
Appearance: Slightly darker, waxy finish
Waterproof Ability: High - recommended for areas that are exposed to a lot of water like showers
Price: €€€

Wheat paste

Recipe: 1 part flour, 2 parts cold water mixed, then added to 3 parts boiling water, cooked until thickened.
Apply with brush.
Appearance: Light, matt
Waterproof Ability: Low - medium
Price: €

TROUBLESHOOTING

Parts crumble off - Too much sand, add clay /+ cow manure
Cracks after dry - Too much clay, add sand /+ cow manure
Material doesn't stick together - add clay

TESTING

Apply your sample mixtures on a wall, preferably conventional clay plaster. Let them dry completely. Use a high pressure water spray bottle and spray the samples for a few seconds. When your mixture is right, it should withstand the water and not dissolve.

Disclaimer

This recipe is based on natural materials and will probably always perform slightly differently. There is always the possibility that the materials waterproofing ability fails under extreme weather conditions. However, luckily it is possible to repair it punctually without having to redo the entire wall.