

# Glowlight roof

Accepted  
ID: 126004  
Follow Glowlight roof

Created by  
Michvd bent

## **Solution Overview**

Replacing conventional lightning by a strong phosphorescent material roofplate. The material does not need solar panels, battery's or any electrical components. phosphorescent materials are wel known from glow in the dark stickers or platics pieces.

The idea is to combine the strongest phosphorescent material in to a plastic roof plate (polycarbonate) that charges its glowing capacity over day from the ultraviolet light in the sun.

## **Detailed description of proposed solution**

Strontium aluminate is the most potent phosphorescent material. The material is 10 times as bright than conventional glowing materials zink sulphide. The material is non-toxic and safe and not a rare material. It can be blended in transparent plastics or combined with other phosphorescent materials. Idea is to create a blend of strontium aluminate with Poly carbonate. The polycarbonate is a stransparent, strong, impact resistant material that is used in greenhouse roofs and roofwindows. The plates will be used as roof plates that are exposed to the sun on the top side and to the toilet interior on the bottom side.

## **Please share how the proposed solution meets stated Requirements and Acceptance Criteria.**

Unlike zink sulphide the strontium aluminate takes up to 30 hours to fully deplete and is strongly phosphorent for 14 hours. This means that a full night can be light the toilet interior for the whole night.

The Polycarbonate plate is impact resistant, strong flexible end very vandalism proof. It can simply replace the current corrugated sheet and be bolted to the top as the roof construction. No training is needed and has a minimal proven lifespan of 15 years.

As there is no active energy consumption no dimming is needed and a nice surrounding glow can give a more safe environment around the cabin.

## **What area of the latrine does this solution apply to?**

Lighting

## **How does the solution impact lighting, locking, alerting or other innovative improvement or integration propositions?**

The solution results in a glowing ceiling/ roof plate that is likely going to be green colored (due to highest brightness potential). The glowing will be the strongest at the start of the evening and slowly decrease over night.

There will be no power source or electricity needed only daily sun exposure.

## **What is the estimated cost for this solution?**

The glowlight roof does not add additional parts for lightning, but integrates in the structural necessary roof. Extrusion is a fairly cheap production method with low startup cost. Extrusion moulds for flat plates are probably fairly available from current sheet production methods or domed shape can be vacuum moulded. Polycarbonate is around 0.7 euro/kg. An sheet of 6mm by 1.2m x1.2m is around 10KG of material. The strontium aluminate is around 35 dollar per Kg for small scale orders, and expected around 20 dollar per kg for large scale orders. Presuming a blend of around 30% strontium aluminate to Polycarbonate and fabrication cost. A roof would cost 11 dollar.

Alternatively a blend of Acrylic sheet (0.4 euro/kg) with strontium aluminate mixed with zink sulphide (5 euro per kg). This could probably lower the cost to around 5 dollar per sheet at the cost of vandalism proofness and light emission.

## **How can this be retrofitted to existing latrines? If it can't, please state your use case.**

Yes, simply remove the corrugated sheet of roof material and replace it with the glowlight roof.

## **How will this solution be maintained?**

No maintenance needed! Maybe cleaning the roof once in a while.

## **Please share the innovative highlights of your proposed solution.**

The glow light roof offers lightning without the susceptibility of any electrical parts or wired power source, no batteries that lose charge. An extremely simple and robust solution to bringing lightning needs to the night. It is expected that the latrines will be used at most at the start of the night where the glow is the brightest and so the glowing behavior matches the human behavior.

The plate can be optimised for roofing shape like a channel plate or a roofwindow dome.

As an alternative the concept can be combined with the conventional user activated light and use a lot less glowing material. This way the solution could create the dimmed light source between the active use. This would spare battery charge and the strontium aluminate would be re-activated by activation of the main light to shine brighter.

**Are you interested in potential further collaboration?**

No

## ATTACHMENTS







