

## **A tiny house made entirely of steel**



### **A man with severe MCS had a tiny house built entirely of steel**

*Keywords: tiny house, healthy house, travel trailer, caravan, steel, metal, chemical sensitivity, MCS*

### **The need for a custom tiny house**

Joe (not his real name) has severe chemical sensitivities (MCS) as well as severe allergies to many types of vegetation. He has tried to live in the desert, but he feels better near the coast. He could not afford buying a house on the coast, but he could spend the summers in campgrounds there if he could find a safe travel trailer. But travel trailers are notoriously toxic, prone to get moldy and need constant upkeep.

He decided to have a tiny house on wheels custom built entirely of healthy materials. He did not tolerate wood, so it had to be steel.

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He found a shop specializing in building tiny homes, that was willing to build one of steel instead of their usual toxic materials. They had never done this before, but they were willing to try something new.



*The bathroom and kitchen are next to the door.*

### **The floor plan**

The house is about 20 x 8 ft (6.5 x 2.5 meters) with about 150 square feet (15 m<sup>2</sup>) of living space. There is also a tiny porch.

Right inside the door is a kitchen area to the left and the bathroom to the right. There is a cathedral ceiling throughout, with a small loft in the front of the trailer and some storage area above the bathroom.

## **The tiny house of steel**

The tiny house they built is made entirely of steel. The outer and inner walls, and the roof are made of a coated steel roofing material that is commonly used for MCS housing. The product is called Pro Panel II and is galvanized steel with a baked-on paint that has a 45 year warranty.



*A small loft covers half the length of the house. The floor is stainless steel.*

The studs in the walls are regular steel studs.

Areas where the paint may be worn off, and thus eventually become rusty, are covered with stainless steel plates. The floor and the underside of the trailer are stainless steel, as are the walls inside the bathroom.

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The door is a regular steel door, with an insulating foam core.

The insulation in the walls, the ceiling, and under the floor is one layer of aluminized "bubble wrap" (Reflectix). Together with the steel studs this means there is virtually no insulation, but that was acceptable for the climate of coastal southern California.

The deck on the tiny porch is made of plastic lumber that never needs to be painted.

The entire setup weights 7000 lbs (about 3.5 tons).



*The floor is all steel, no plywood at all.*

#### **Plumbing**

The tiny house has a bathroom with a regular flushing commode and a shower, as well as a kitchen sink. The hot water is generated by an on-demand electric tankless water heater that serves both the kitchen and the bathroom.

There are no tanks for holding fresh water and sewage. Joe expected to either camp in trailer parks with full hook-ups or use the facilities in campgrounds. Adding tanks would be costly and a lot of extra weight to haul. It would also require a sturdier trailer underneath.

### **Heating and cooling**

There are no built-in heating or cooling systems, as they are not needed for the climate. A portable electric space heater may be used occasionally in spring and fall.

### **The cost**

The tiny house cost \$50,000 in 2016. The builder said he considered it a learning experience and would have to charge more for future projects. Customers who wanted better insulation or holding tanks would have to pay more also.

The shop was located in Minnesota; they charged \$3000 to deliver the house to Arizona where the new owner lived.

This tiny house cost a lot less than a real house, but Joe also got a much less house for his money. The cost of \$350 per square foot (\$3500 per square meter) is about three times what a custom built MCS-safe house cost.

Joe had trouble financing and insuring his tiny house, as it did not fit into the bank's standard categories. It was not a travel trailer/RV, not a mobile home and not a house.

### **The story of Joe's tiny house**

The trailer was delivered in fall 2016. This author saw it a month later when the pictures were taken. There was just a tiny bit of outgassing from the materials. It was completely inert when the owner started living in it the following spring.

The trailer was not properly balanced on the axles, so there was not enough weight on the trailer hitch. To compensate, a big steel box was installed on the front and filled with sand bags.

Joe rented a truck to transport his tiny house to the California coast and it all worked well for him.

Sadly, his tiny house was destroyed by a wildfire that ransacked the area around Malibu in 2018. Joe now uses a CampLite trailer he outgassed for several years.

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### **More information**

Other articles about tiny houses for people with environmental illnesses are at:  
[www.eiwellspring.org/temporaryhousing.html](http://www.eiwellspring.org/temporaryhousing.html)

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