

# Ambient Weather WS-YG737S-RD Admiral Fitzroy Storm Glass



## Table of Contents

1. Introduction .....	2
2. The Storm Glass .....	2
2.1 Warnings and Cautions .....	2
2.2 Care and Cleaning .....	2
2.3 Initial Use .....	2
2.4 How to Read the Storm Glass .....	3
3. Galileo Thermometer .....	3
3.1 How the Galileo thermometer works .....	3
3.2 How to read the Galileo thermometer .....	4
3.3 Galileo thermometer warnings .....	4
4. Warranty Information .....	4



## 1. Introduction

Thank you for your purchase of the Ambient Weather WS-YG737S-RD Galileo Thermometer and Admiral Fitzroy Storm Glass. The following is a guide for preparation, care and operation of your storm glass.

## 2. The Storm Glass

How this storm glass really works is a mystery, but it is believed that electromagnetic changes in weather patterns activate crystals inside (sealed-glass chamber fills with crystals when air pressure decreases). Famed meteorologist Admiral Fitzroy used a storm glass in 1750 on a historic voyage with Charles Darwin.

A storm glass works on the premise that temperature and pressure affect solubility, sometimes resulting in clear liquid; other times causing precipitants to form. However, the method by which this works is not fully understood. Although it is well-established that temperature affects solubility, some studies have simultaneously observed several different storm glasses forming similar crystal patterns at different temperatures. In addition, sealed glasses are not exposed to atmospheric pressure changes and do not react to the pressure variations associated with weather systems.

Some people have proposed that surface interactions between the glass wall of the storm glass and the liquid contents account for the crystals. Explanations sometimes include effects of electricity or quantum tunneling across the glass.

### 2.1 Warnings and Cautions

-  **Warning:** This product is not a toy; keep away from children
-  **Warning:** Contains Ammonium Chloride, Potassium Nitrate (saltpeter), Camphor, Distilled Water and Ethanol. In case of breakage and contact with liquid contents, wash hands with soap and water.
-  **Warning:** Do not ingest liquid. In case of ingestion, wash mouth with water and call a physician or your local poison control center immediately.
-  **Warning:** Use protective gloves to clean up spilled liquid and broken glass.

### 2.2 Care and Cleaning

Do not install the storm glass outside. The storm glass is intended for indoor use only.

### 2.3 Initial Use

When you receive the storm glass it will be in a state of agitation due to vibration and external heating during shipment, and may take a week or more to settle down into your home.

If the storm glass is cold during shipping or has been sitting outside in cold weather, gently warm it with a hair dryer, occasionally inverting it until it is clear. DO NOT heat the glass until it's hot.

When the instrument is crystal clear, place it in an area of your home that is not subject to sudden temperature changes and is out of direct sunlight. For instance, don't put it on an outside wall, close to a heating or cooling vent or in a window that gets direct sun.

Gradually, as the temperature stabilizes to room temperature, white matter will begin precipitating out of the solution. It will do this for hours and may fill the entire tube, which may appear as a solid white mass. This is normal.

It is also normal for some matter to collect at the top. However, occasionally the precipitate may choose to rise rather than sink. If you notice after a few hours that the precipitate has risen rather than settled, agitate the solution by gently shaking.

Repeat this procedure above 1-3 times per year. Once the instrument has stabilized to room temperature, leave it undisturbed.

## 2.4 How to Read the Storm Glass

Admiral Robert Fitzroy refined the formula and published the following observational guidelines.

Observation	Prediction
Cloudy liquid with small stars	Thunderstorms
Clear liquid	Bright, sunny, good weather
Small, isolated stars in the winter months	Bright sunny, good weather, followed by snow in 1 to 2 days
Large, isolated flakes	Thick, humid air, overcast sky. Snow in winter months.
Flakes which rise and stay high in the glass tube	Winds in the upper regions of the air, changes in the weather coming.
Cloudy or dim solution	Weather will turn to rain, if not already
Strands form near the top of the liquid	Windy weather can be likely
Small spots floating in the solution	Foggy, damp weather
Crystals at the bottom of the liquid	Heavy air or frost in winter

**Note:** The Fitzroy Barometer is a fun instrument for predicting weather, a historical technology and conversation piece. We recommend consulting the National Weather Service forecast information for accurate weather predictions. Do not use this instrument to make important decisions with respect to the weather.

## 3. Galileo Thermometer

### 3.1 How the Galileo thermometer works

The Galileo thermometer consists of a sealed glass tube that is filled with paraffin oil and several floating bubbles. The bubbles are glass spheres filled with a colored liquid mixture.

Attached to each bubble is a little metal tag that indicates a temperature. These metal tags are calibrated counterweights. The weight of each tag is slightly different from the others. Since the bubbles are all hand-blown glass, they aren't exactly the same size and shape.

The bubbles are calibrated by adding a certain amount of fluid to them so that they have the exact same density. So, after the weighted tags are attached to the bubbles, each differs very slightly in density (the ratio of mass to volume) from the other bubbles, and the density of all of them is very close to the density of the surrounding paraffin oil.

As the temperature of the air outside the thermometer changes, so does the temperature of the paraffin oil surrounding the bubbles. As the temperature of the paraffin oil changes, it either expands or contracts, thereby changing its density. So, at any given density, some of the bubbles will float and others will sink. The bubble that sinks the most indicates the approximate current temperature.

### 3.2 How to read the Galileo thermometer

Make certain the weather station is installed on a flat surface. The lowest temperature bubble within the group at the top of the cylinder displays the current temperature.

- The lowest floating ball indicates the current temperature.
- If all of the balls float to the top, the temperature is below the lowest floating ball.
- If all of the balls sink, the temperature is above the highest ball.

### 3.3 Galileo thermometer warnings

-  **Warning:** This product is not a toy; keep away from children
-  **Warning:** Contains paraffin oil. In case of breakage and contact with liquid contents, wash hands with soap and water.
-  **Warning:** Do not ingest liquid. In case of ingestion, wash mouth with water and call a physician or your local poison control center.
-  **Warning:** Use protective gloves to clean up spilled liquid and broken glass.

## 4. Warranty Information

Ambient, LLC provides a 1-year limited warranty on this product against manufacturing defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased and only to the original purchaser of this product. To receive warranty service, the purchaser must contact Ambient, LLC for problem determination and service procedures.

Warranty service can only be performed by a Ambient, LLC. The original dated bill of sale must be presented upon request as proof of purchase to Ambient, LLC.

Your Ambient, LLC warranty covers all defects in material and workmanship with the following specified exceptions: (1) damage caused by accident, unreasonable use or neglect (lack of reasonable and necessary maintenance); (2) damage resulting from failure to follow instructions contained in your owner's manual; (3) damage resulting from the performance of repairs or alterations by someone other than an authorized Ambient, LLC authorized service center; (4) units used for other than home use (5) applications and uses that this product was not intended, such as outdoor use.

This warranty covers only actual defects within the product itself, and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.