Tips and tricks for using a weather balloon

Storage and filling of the weather balloon

The weather balloon has to stay dry and be protected from direct sunlight.

This is the right way to fill and seal the balloon properly:

1. Prepare the probe and the parachute by starting the camera(s) and connect everything with a rope. Filling the balloon is the very last step before the project ascends.

2. Unpack the balloon carefully! It is recommended to place the balloon on a dry sheet or a foil or be held by an assistant not to touch the ground.

3. Insert the hose of the helium tank carefully into the valve and seal it with the hand to avoid loss of helium while filling. The pressure relief valve can be opened now.

4. When reaching the required amount, carefully close the valve with a cable binder or an elastic strap. Now you can attach your payload to the balloon.

5. The balloon is ready for take-off and may start into the stratosphere.

For detailed explanation please visit our website with the Space Balloon Tutorial.

Important note: The special cord complies with the official requirements of the SERA VO in the EU. These specifications must be strictly adhered to, thus the tear resistance of the special cord. This may not be more than 230 N. The tensile strength of the special cord is just below this value. Thus, it is NOT a tear-resistant cord and no so-called jump-start (releasing the weather balloon while the probe is still on the ground) must be performed. This jerk generates enormous forces, although the special cord can be charged with approximately 18 kg! Thus, the weather balloon must be cautiously left open piece by piece and in regular movements on the special string! Jerky abandonment should be avoided!

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How much helium do I need?

For the raising of the balloon you need helium. In theory you could also use hydrogen, but it is flammable and therefor very dangerous. Helium is not flammable! But how much do I need?

First of all you have to define the total amount of weight to be carried. Add all items which are connected to the balloon like: probe, cameras, battery, parachute etc.

You may calculate like this:

Helium (in liter) = weight of the balloon (in gram) + 1,5 x load weight (in gram)

For example: You got a balloon with 800g weight and equipment to carry of 700g you would need: 800 + 1,5 x 700 = 1850 liter helium

Note: If you fill more helium into the balloon, the balloon ascends faster but reaches only a lower height. Using more helium means the expanding of the gas causes an earlier burst.

The following chart shows different tank sizes and the amount of helium gas:

Tank size	Pressure	Amount of gas
10 liter	200 bar	1800 liter
20 liter	200 bar	3600 liter
50 liter	200 bar	9100 liter

Tip: Rent the helium gas tank with a pressure regulator and an approx. 2 m long filling hose ONLY, to fill the balloon properly

Have a great flight!

Everybody needs an adventure!

www.stratoflights.com/tutorial