

Why do astronauts wear a special combination?

Members of the group: Mateusz Wlazlowski, Alexandre Zeddami, Kevin Ella Ramanich

- Hypothesis: When a human would be in space, his blood and air in lung would escape.
 - Aluminum is a good material for the space combination

Research and justification of the hypothesis:

- We found that immediately after a depressurization, the air in lung escapes and tissues of the skin get crushed into bones. Additionally, all liquids escape thanks to natural holes in the body.
- We found that aluminum is a good material because it is flexible.

Experiment:

Recipients: vacuum bell jar, marshmallows, aluminum, polystyrene and balloon.

Protocol:

1. Put an item to the vacuum bell jar
2. Remove the air
3. See the results

Results:

- **Marshmallows:** takes more place in the vacuum as there is no air. When we reliece it, marshmallows are compressed.
- **Polystyrene:** no visible changes.
- **Balloon:** takes more place but regain its initial size.
- **Aluminum:** no visible changes.
- **Aluminum + marshmallow:** it sticks on the aluminum
- **Aluminum + polystyrene:** no visible changes

Interpretation:

Our theories are confirmed, only items that contain air, witch was supposed to associate human lung, that air tried to escape. Same thing would happen if we would try with an item that contains water.

Conclusion:

The aluminum and polystyrene are materials that resist the better to pressure. When we packed a marshmallow (that grew with pressure) in aluminum we have seen that its reaction was not as normal as in normal time. We thought that if we do this experiment once more, replacing the aluminum by polystyrene, the result would even more satisfying.

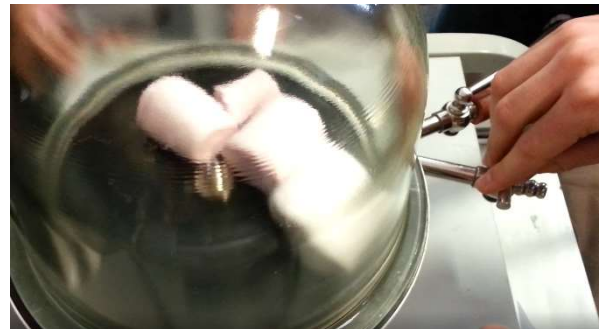
These 2 materials correspond the most for building a space combination thanks to them flexibility. By the way, looking at our experiences, it would be better to take materials that contains no air.

Bibliography:

- <https://fr.answers.yahoo.com/question/index?qid=20070422163751AAHhUj>
<http://www.futuraind.com/2015/04/03/is-aluminum-flexible/>

Images:

Before :



After :



Description: Here we have marshmallows before and after the presence of air. We see that marshmallows are smaller after an injunction of air so we can conclude that the air present in marshmallows escaped.