ATOMIUM´S PRINT PARAMETERS

Once we have already created the atomium with Tinkercad, it is time to print it.

We can consider this design as a complex one because there are several factors that could tear apart our print.

We have to take into account the first one ¨overhang¨ this problem can easily destroy the process or even make this structure impossible to print it in a successful way.

The ¨overhang¨ makes reference to that part of the structure that is completely suspending in the air. We can see that the connectors between the spheres should be printed suspended in the air, due to that the print could fail or get the final product with low quality.

The second one is the area in contact with the print platform. Most parts of the structure are not in contact with that base, as a result of that problem, the structure can peel off during the printing.

How can we solve this problems?

First one, we have to use the 45 degrees' rule for the ¨overhang¨. When designing a model, we should try not to create unsupported surfaces with more than 45 degrees related to the vertical, so we avoid filament detachments due to the lack of support points.

In that case, when shaping a real building we cannot use this rule so the easiest way to solve it is creating some brackets with the ¨slicer¨. Here we can see the structure once we generate the brackets.
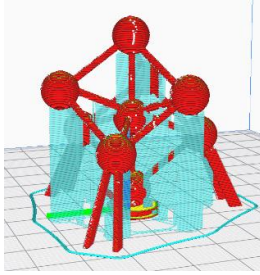
Brackets´settings.
Bracket´s structure: Normal
Placement: everywhere
Bracket cantilever angle: 50.0
Bracket pattern: Lines
Bracket density: 10.0

The print gets easy thanks to that brackets reducing the quality of the structure refinements, as we can see in the image that opens that document.

To get the perfect printing we have to put a removable printing base due to the second problem, in this case we have decided to incorporate a ¨raft¨ base, adding more areas in contact we avoid the structure peels off during the process.

Parameters in our atomium´s printing.

Printing size: X:51 mm Y: 50 MM Z: 48 mm

Layer height: 0.20 mm

Printing speed: 40mm/s

Trajectory speed: 60mm/s

Expected time: 1 h 52 mins.