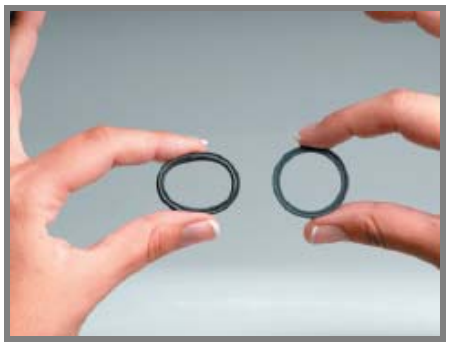
Gaskets Plugs & Seals

Application Note

Overview

Gaskets:



A gasket (See figure below) is a mechanical seal that fills the space between two mating surfaces. Also called a seal, a gasket is generally used to prevent leakage from or into joined objects while under compression.

Plugs:

A plug is a piece of material used to stop up a hole or aperture, to fill a gap, or to act as a wedge. For example, plugs for sanitation are used to firmly close a drainage outlet in bathtubs, washbasins or sinks (see figure below). To ensure a tight seal, plugs are typically made from a soft material such as rubber or have a soft outer ring so that they can be fitted to holes slightly smaller than their diameter.

Valves:

A valve is a device that regulates the flow of a fluid (gases, liquids, fluidized solids or slurries) by opening, closing or partially obstructing a passageway. Valves are used in a variety of contexts, including industrial, military, commercial, residential and transportation. Plumbing valves, such as taps for hot and cold tap water, are the most noticeable types of valves. Other valves encountered on a daily basis include gas control valves on cookers, small valves fitted to washing machines and dishwashers, and safety devices fitted to hot water systems.

Why Connex?

Jetting multiple materials enables gaskets, plugs and seals to be printed in a single build process. Printing in a single build process is less costly and time-consuming than traditional prototyping methods used for simulating such applications. This

means a model can be constructed quickly and affordably - ideal when the design is still in flux. In a single build process, and with very little effort, a prototype can be printed to simulate several variations of a given part where gaskets, plugs or seals are needed. Furthermore, and more importantly, the Objet™ printed part is watertight and airtight allowing for simulation of end-product environmental conditions. This is a significant advantage relative to other prototyping technologies existing in the market place.

Tips and Tricks

When working on your CAD design, every element must have a specified shell assigned to it. In addition, when converting that file to a STL file (see "CAD to STL" on the Objet website for further information) convert the file while defining each STL as a part of your assembly. You will then be able to clearly define the areas you wish to apply different Digital Materials™ for your gaskets, plugs or seals. Likewise, you will be able to assign elastomeric-like materials to other areas for texturing. All this is done as part of the preparation of your printed model using the Objet Studio™ software.

In addition, for texturing you can use the Objet Coating function. This feature allows you to define areas on the model's surface to have a certain coating layer applied. The coating can vary from 0.3mm – 3mm and extracts the existing material so there is no effect on the tolerance.

The pictures above illustrate how Connex technology can generate printed parts for seal, plug and gasket applications. The picture on the right illustrates a prototype. The pictures in the middle and on the left are end products.

Reference

- "CAD to STL" – Found on the Objet website
- Case Study Geberit – Objet website under Case Studies → Consumer Goods
- Case Study Tescoma – Objet website under Case Studies → Consumer Goods
- Objet Studio Software – Found on the Objet website

Disclaimer

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