POLYJET BEST PRACTICE:

POLYJET DYNAMIC FRICTION COEFFICIENT

Stratasys
3D Printers and Production Systems

SOFTWARE/PRODUCT/FINISHING/**MATERIAL**

OVERVIEW

Friction is defined as the force that opposes the relative motion or tendency of such motion of two surfaces in contact. The friction coefficient of a prototype's surface is a functional component, not an aesthetic one, and simulates the end product's mechanical properties. A well-designed prototype that takes friction into consideration can have the following advantages: an improved grip for the end-user, reduced part wear, simulated movement functionality and sliding abilities.

PolyJet™ Connex™ 3D Printing systems provide a solution for prototyping surfaces with varied friction coefficients that were impossible or cost-prohibitive to prototype in the past. By being able to print several materials in one build process, Connex systems can produce prototypes with varying friction areas on one given part. Users determine the friction coefficients for different areas of a part according to the load factor. This saves time and money by providing an easy solution for prototyping complex parts whose dynamic friction coefficients can be tested in a single build process.

Figure 1: These objects were printed in a single build to simulate the dynamic friction coefficient.

1. RECOMMENDATIONS

- Save your design in separate STL files according to the different parts. This is recommended for flexible areas, as well as for rigid parts. Later, the parts can be printed in different colors to visually separate areas of the model.
- Label each part with its relevant Shore value. Labeling will help you easily determine which Shore values received the highest score in your evaluation criteria tests.
- Design your model in such a manner to enable the mounting of flexible parts on your full assembly of rigid and flexible parts. You can then use the Connex system's ability to print up to 9 different Shore values in one build process and then assemble each part on the model for evaluation.
- Coating: Use the Objet Studio™ software to coat parts with various thicknesses from 0.3mm to 3mm with one mouse click. You may use any one of the different digital materials as the coating material.
- To avoid disengagements, design the model so the rigid material extrudes as a thin core into the flexible one (see figure 3). This creates a connection that can withstand repeated flexing and bending.

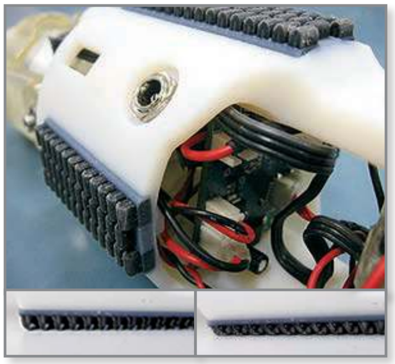

Figure 2: These images were taken from the Technion Bio-Snake case study. They demonstrate how the dynamic friction coefficient is used to generate a force that opposes the relative motion or tendency of such motion of two surfaces in contact.

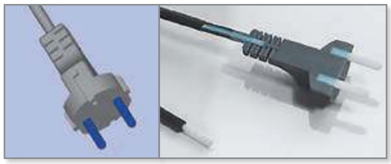

Figure 3: Rigid material extrudes as a thin core into the flexible material.

CONTACT:

To obtain more information on this application, contact:

Stratasys Application Engineering

www.stratasys.com/solutions-applications

Stratasys | www.stratasys.com | info@stratasys.com

7665 Commerce Way
Eden Prairie, MN 55344
+1 888 480 3548 (US Toll Free)
+1 952 937 3000 (Intl)
+1 952 937 0070 (Fax)

2 Holtzman St.
Science Park, PO Box 2496
Rehovot 76124, Israel
+972 74 745-4000
+972 74 745-5000 (Fax)

ISO 9001:2008 Certified