



With courtesy of Prof. Neri Oxman

PolyJet® Materials

The Power Behind Your 3D Printer

With a choice of over 100 materials, Inkjet-based PolyJet 3D printing materials enable highly realistic visual and functional simulation for Rapid Prototyping purposes.

PolyJet materials are capable of simulating properties ranging from varying grades of rubber all the way to clear transparent glass and engineering plastics combining high toughness and high temperature resistance.

Using PolyJet materials, designers, manufacturers and engineers can create highly accurate, finely detailed models and parts to answer the Rapid Prototyping needs of virtually any industry.



Create Flawless Models with PolyJet Materials

Meeting your Precise Application Requirements

Stratasys provides a wide variety of materials offering transparent, colored, opaque, flexible, rigid, high temperature and high toughness properties. These materials are designed to answer the visual and verificational requirements of designers and engineers in every industry.

Unrivalled productivity

Based upon proprietary, acrylic-based photopolymer technology, PolyJet materials produce fully-cured models that can be handled immediately after printing, with no need for lengthy post-processing.

Models and parts made from PolyJet materials feature smooth surfaces and fine details. They can readily absorb paint and can be easily machined, drilled, chrome-plated, glued or used as a mold.

Ease of use

PolyJet Support material, used in combination with any PolyJet material, enables the design and production of models with an unlimited array of complex geometries, including overhangs and undercuts. With no hard edges to scrape or chemical baths to use, the gel-like support is easily and quickly removed with a water-jet.

Environment

PolyJet materials are environmentally safe, being REACH compliant. They are delivered in fully sealed 1kg, 2kg or 3.6kg cartridges that are simple to use, change over and replace.

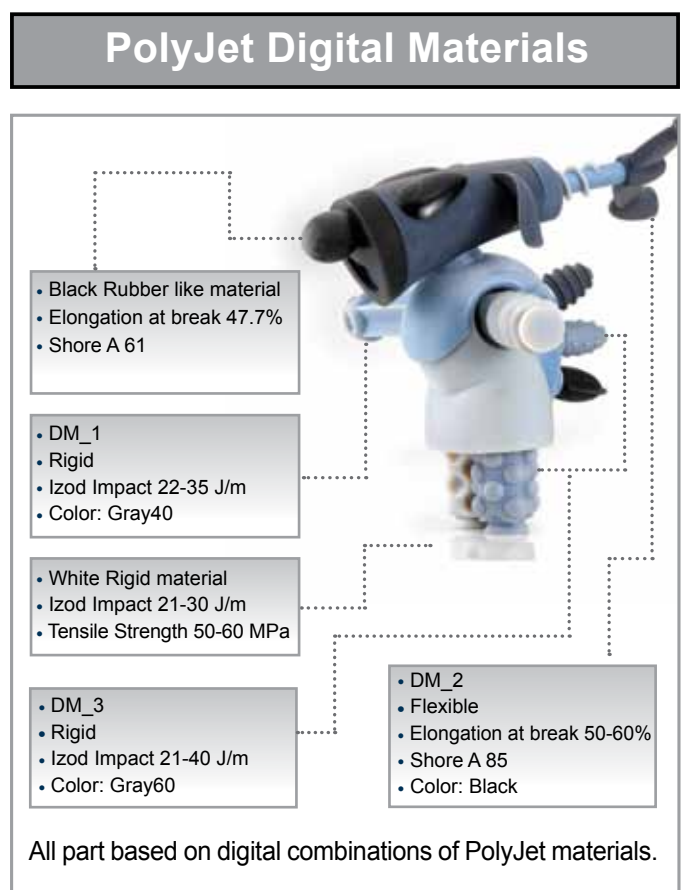
Your Choice of over 100 PolyJet Digital Materials!

The Objet Connex-line of 3D Printers offers users the unique ability to fabricate over 100 different Digital Materials, with up to 14 different materials within any single printed part.

PolyJet Digital Materials are composite materials created by simultaneously jetting two different PolyJet materials. The two are combined in specific concentrations and structures to provide unique mechanical properties and to provide a closer look, feel and function of the desired end-product.

- Simulate rubber – Print a whole range of different Shore A values including Shore 27, 40, 50, 60, 70, 85 and 95, to simulate various elastomers and rubber products.
- Simulate toughness – Print various rigid materials ranging from standard plastics to the toughness and temperature resistance of ABS or engineering-plastics.
- Create shades and patterns – Print various shades of rigid opaque materials and mix transparent and rigid opaque materials to create shades, dots, grids and patterns.

PolyJet Digital Materials



- Black Rubber like material
 - Elongation at break 47.7%
 - Shore A 61
- DM_1
 - Rigid
 - Izod Impact 22-35 J/m
 - Color: Gray40
- White Rigid material
 - Izod Impact 21-30 J/m
 - Tensile Strength 50-60 MPa
- DM_3
 - Rigid
 - Izod Impact 21-40 J/m
 - Color: Gray60
- DM_2
 - Flexible
 - Elongation at break 50-60%
 - Shore A 85
 - Color: Black

All part based on digital combinations of PolyJet materials.

PolyJet Material Families

Simulating Engineering Plastics

High Temperature



Digital ABS



Simulating Standard Plastics

Transparent



Rigid opaque



Polypropylene-like



Rubber-like



Medical*



* See the Company website & medical brochure for more information on materials for medical, hearing aids, dental and biocompatible applications.

** This material have received 4 medical approvals: Cytotoxicity, Irritation, Sensitization and USP Plastic Class VI. It is the responsibility of the device manufacturer to determine the suitability of all the component parts and materials used in its finished products.

*** PolyJet Bio-Compatible material is suitable for applications requiring prolonged skin contact of over 30 days and short term mucosal-membrane contact of up to 24 hours. The material has five medical approvals according to the harmonized standard ISO 10993-1: Cytotoxicity, Genotoxicity, Delayed Type Hypersensitivity, Irritation and USP Plastic Class VI. It is the responsibility of the device manufacturer to determine the suitability of all the component parts and materials used in its finished products

Simulate Standard Plastics – Transparent

RGD720 is PolyJet original multi-purpose transparent material for standard plastics simulation.

VeroClear™ is a rigid, colorless material featuring great dimensional stability for general purpose, fine detail model building and visual simulation of transparent thermoplastic such as PMMA.

Simulate Transparent Shades and Patterns

Selected Digital Materials –

Combining transparent and black (rigid and rubber-like) materials enables the creation of different artistic patterns, (RGD7513-DM (Dots) & RGD7523-DM (Grid)), various transparent shades and Shore A values for simulating general purpose and polypropylene-like plastics.

Ideal for:

- Form and fit testing of clear or see-through parts
- Glass, eye-wear, lighting covers and light-cases
- Visualization of liquid flow
- Color dyeing
- Medical applications
- Artistic and exhibition modeling



Simulate Standard Plastics – Rigid & Opaque

The PolyJet family of rigid opaque materials includes VeroWhitePlus™, VeroGray™, VeroBlue™ and VeroBlackPlus™.

Combining dimensional stability and high-detail visualization, the PolyJet rigid opaque family is intended for standard plastics simulation and model creations that closely resemble the 'look' of the end product.

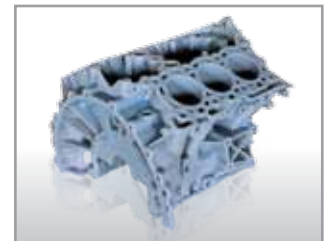
Simulate Rigid, Opaque Shades

Selected Digital Materials –

Combining rigid opaque and rubber-like family of materials.

Ideal for:

- Wide range of fit and form testing
- Moving parts and assembled parts
- Exhibition and sales & marketing models
- Assembly of electronic components
- VeroBlue™ material is ideal for silicon molding



Simulate Standard Plastics – Polypropylene

DurusWhite™ material is ideal for a broad range of applications that require the appearance, flexibility, strength and toughness of Polypropylene. Properties include Izod notched impact of 44 J/m, elongation at break of 44% and flexural modulus of 1026 MPa.

Simulate Polypropylene with Improved Thermal Resistance

Selected Digital Materials –

Combining rigid opaque family with rubber-like materials and combining polypropylene white material with rigid opaque family of materials.

Ideal for:

- Reusable containers and packaging
- Flexible, snap-fit applications and living hinges
- Toys, battery cases, laboratory equipment, loudspeakers and automotive components



Simulate Standard Plastics – Rubber

The PolyJet family of rubber-like materials includes TangoGray™, TangoBlack™, TangoPlus™ and TangoBlackPlus™. The family offers various levels of elastomer characteristics: Shore scale A hardness, elongation at break, tear resistance and tensile strength that make it suitable for a range of applications requiring non-slip or soft surfaces on consumer electronics, medical devices and automotive interiors.

Simulate 6 Different Shore Values

Selected Digital Materials –

Combining – TangoBlackPlus or TangoPlus and VeroWhitePlus / VeroClear to simulate 6 levels of different Shore Scale A values from Shore 40 to Shore 95, with increasing tensile strength and tear resistance.

Additional Shore values can be created by combining other rubber-like and rigid materials.

Ideal for:

- Exhibition and communication models
- Rubber surrounds and over-molding
- Soft-touch coatings and non-slip surfaces
- Knobs, grips, pulls, handles, gaskets, seals, hoses, footwear



Simulate Engineering Plastics – High Temperature*

High Temperature material (RGD525) has exceptional dimensional stability for thermal function testing of static 3-D models.

The material has a heat deflection temperature (HDT) of 63–67 °C (145–153 °F) upon removal from the printer which can be increased to 75–80 °C (167–176 °F) after thermal post treatment in a programmable oven.

Simulate High Temperature Parts with Improved Functional Performance

Selected Digital Materials –

Combine High Temperature Material with rubber-like materials to produce varying Shore A values, gray shades and rigid functional materials featuring higher temperature resistance. In addition, produce high temperature parts featuring over-molding.

Ideal for:

- Form, fit and thermal functional testing of static parts
- High-definition parts requiring excellent surface quality
- Exhibition modeling under strong lighting conditions
- Post-processing including painting, gluing, or metallization processes
- Models in transit
- Taps, pipes and household appliances
- Hot air and hot water testing



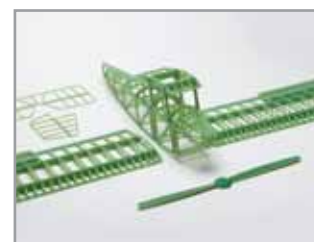
Simulate Engineering Plastics – Digital ABS*

Digital ABS (RGD5160 – DM) is fabricated from RGD515 and RGD535. It is designed to simulate ABS engineering plastics by combining high-temperature resistances with high toughness. Digital ABS is suitable for any simulated parts that require high-impact resistance and shock-absorption.

Digital ABS material has a high impact resistance of 65–80J/m (1.22–1.5 ft lb/inch) and a heat deflection temperature (HDT) of 58–68 °C (136–154 °F) upon removal from the printer. A higher HDT of 82–95 °C (179–203 °F) can be achieved after thermal post treatment in a programmable oven using different temperature profiles.

Ideal for:

- Functional prototypes
- Snap-fit parts for high or low temperature usage
- Electrical parts, casings, mobile telephone casings
- Engine parts and covers



Stratasys' Objet-line of 3D Printers



Stratasys' Objet-line of 3D Printers enables the fast and efficient production of prototypes featuring superior surface quality and ultra-high resolution, down to 16 micron layers. When combined with PolyJet range of over 100 materials, Objet 3D Printers represent the most practical precision prototyping solution available - with unmatched versatility for designers, engineers and manufacturers in virtually any industry. Stratasys has thousands of customers including many of the relevant Fortune 100 companies.

Stratasys systems are in use by world leaders in many industries, such as consumer goods, consumer electronics, defense, automotive, dental, education, architecture, medical & medical devices, hearing aids, animation & entertainment, industrial machinery, jewellery, sporting goods, toys, service bureaus.

Our Awards



The Dental Advisor Board's "Top Innovative Equipment" - Award, 2013



Design World's sixth annual Leadership in Engineering program Winner 2012



The Dental Lab Products "Best of the Best Product" - Award 2011



CNBC European Business Magazine Names Objet Among Europe's 25 Most Creative Companies 2010



Plastol 2009 award for recognition of outstanding product: Alaris30



Material of the Year 2009 Honorable Mentions



2008 RedTech USA Emerging Technologies Award For Objet Connex500



Red Dot Design Awards 2008 for Objet Connex500



Frost & Sullivan Award for Product Innovation 2008



Desktop Engineering 2008 for Objet technology



Desktop Engineering 2007 for Digital Materials



NASA Tech Brief 2007 for Objet Connex500



EuroMold Gold Award 2007 for Objet Connex500



Frost & Sullivan 2007 for superior performance in rapid prototyping industry.



Desktop Engineering 2006 for Objet Eden500V

* For existing customers: operating this material requires the installation of an upgrade kit to Objet 3D Printer. To order contact your Stratasys Regional Customer Support Manager.

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