3D Printer FNIS Distributor Document

Materials

I. Silicone Parameters:

- **UV-Cured:**
  - **UV Acrylic:** Offers fast curing times and excellent adhesion to various substrates.
  - **UV Epoxy:** Known for its high mechanical strength and resistance to environmental factors.
  - **UV Acrylic-Urethane:** Combines the flexibility of urethanes with the durability of acrylics.
  - **UV-Curable Epoxy Resin:** Provides a strong, durable finish with excellent chemical resistance.
- **Moisture-Cured:**
  - **Acidic:** Cures quickly upon exposure to moisture, commonly used in construction applications.
  - **Alcohol-Based:** Offers a neutral cure with minimal odor and is suitable for a wide range of materials.
  - **Acetoxy:** Known for its fast curing time and strong adhesion, but releases acetic acid during curing.
  - **Oxime:** Provides a neutral cure, ideal for applications where corrosion of metal substrates is a concern.

II. Ceramic Paste Parameters:

- **Aluminum Oxide (Al_2O_3):** High thermal conductivity, electrical insulation, and resistance to wear and corrosion.
- **Yttria-Stabilized Zirconia (YSZ):** Excellent thermal and chemical stability, used in high-temperature applications.
- **Silicon Carbide (SiC):** Extremely hard and wear-resistant, with high thermal conductivity and chemical resistance.
- **Zirconium Oxide (ZrO_2):** High fracture toughness and thermal expansion, suitable for structural applications.
- **Aluminosilicate (Al_2O_3-SiO_2):** High-temperature stability and thermal shock resistance, used in refractory applications.
- **Titanium Dioxide (TiO_2):** High refractive index and dielectric properties, commonly used in optical and electronic applications.

III. Conductive Paste Parameters:

- **Conductive Polymers:** Flexible and lightweight with good electrical conductivity, used in flexible electronics.
- **Copper-Based (Cu):** High electrical and thermal conductivity, cost-effective, but prone to oxidation.

- **Silver-Based (Ag):** Excellent electrical and thermal conductivity with high stability and resistance to oxidation.
- **Carbon or Graphene-Based:** Offers good electrical conductivity and mechanical strength with excellent thermal management properties.

Materials and applications

1. Silicone

Parameters:

- Substrate materials: aluminum, stainless steel, glass, plastic, rubber, ceramic
- Operating temperature: from -50°C to 200°C
- Hardness: 20-80 Shore A

Examples of usable parts:

Automotive

- **Vacuum System Suction Cups**
  - **Product Name:** VacuGrip Silicone Vacuum Suction Cups
  - **Base Material:** Stainless Steel
  - **Description:** Suction cups used in vacuum systems for transferring automotive parts, providing good adhesion to metal surfaces.
- **Valve Cover Gaskets**
  - **Product Name**: Reinzosil
  - **Base Material**: Aluminum
  - **Description**: Gaskets are printed directly onto metal surfaces to seal valve covers.

Medicine

- **Surgical Equipment Suction Cups**
  - **Product Name:** MedVac Silicone Medical Suction Cups
  - **Base Material**: Glass
  - **Description:** Suction cups used in surgical devices for gentle manipulation of tools and samples, adhering to glass surfaces in sterile conditions.
- **Medical Device Gaskets**
  - **Product Name**: Nusil MED-6755
  - **Base Material**: Stainless Steel
  - **Description**: Used in medical equipment, such as incubators, where biocompatibility is required.

Electronics

- **Component Assembly Suction Cups**
  - **Product Name:** ESD-Safe Silicone Vacuum Cups
  - **Base Material:** Plastic (e.g., ABS)
  - **Description:** Suction cups used in electronics assembly, protecting against electrostatic discharge, adhering well to plastic casings and components.

- **Electronics Enclosure Gaskets**
    - **Product Name**: Momentive TSE397
    - **Base Material**: Aluminum or plastic (PC/ABS)
    - **Description**: Used in electronic device enclosures to protect against dust and moisture.

Food Industry

- **Food Packaging Suction Cups**
    - **Product Name:** FoodSafe Silicone Suction Cups
    - **Base Material**: Stainless Steel
    - **Description:** Suction cups used in food packaging machines, adhering to steel surfaces and meeting hygiene standards.
- **Packaging Machine Gaskets**
    - **Product Name**: Nusil R-2634
    - **Base Material**: Stainless Steel
    - **Description**: Gaskets used in packaging machines that come into contact with food.

Pharmaceutical Industry

- **Vial Handling Suction Cups**
    - **Product Name:** PharmaGrip Silicone Suction Cups
    - **Base Material:** Glass
    - **Description:** Suction cups used on production lines for transferring glass vials and bottles, ensuring gentle handling without scratching.
- **Autoclave Gaskets**
    - **Product Name**: Momentive RTV 118
    - **Base Material**: Stainless Steel
    - **Description**: Gaskets used in autoclaves for sterilizing medical instruments.

Packaging Industry

- **Packaging Sealing Suction Cups**
    - **Product Name:** PackMaster Silicone Vacuum Cups
    - **Base Material:** Plastic (e.g., polypropylene)
    - **Description:** Suction cups used in packaging sealing machines, providing adhesion to plastic lids and covers.
- **Bottle Gaskets**
    - **Product Name**: Dow Corning 737
    - **Base Material**: Glass or plastic (HDPE)
    - **Description**: Gaskets used in bottle caps to ensure a tight seal.

Chemical Industry

- **Chemical Handling Suction Cups**
    - **Product Name:** ChemSafe Silicone Suction Cups
    - **Base Material:** Stainless Steel
    - **Description:** Suction cups used for transferring chemical containers, adhering to steel barrels and containers, resistant to chemical corrosion.
- **Chemical Reactor Gaskets**
    - **Product Name**: Elkem Silicones BLUESIL RTV 3040

- **Base Material**: Stainless Steel
- **Description**: Chemical-resistant gaskets used in chemical reactors.

Construction Industry

- **Tile Handling Suction Cups**
  - **Product Name:** BuildGrip Silicone Vacuum Cups
  - **Base Material:** Ceramic
  - **Description:** Suction cups used for transferring ceramic tiles, providing good adhesion to smooth ceramic surfaces.
- **Window Gaskets**
  - **Product Name**: Dow Corning 995
  - **Base Material**: Glass
  - **Description**: Gaskets providing a seal for windows.
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2. Ceramic Paste

Examples of usable parts:

Automotive

- **Cylinder Head Gaskets**
  - **Substrate Material:** Alumina (aluminum oxide)
  - **Product Name:** Cotronics Resbond 940
  - **Description:** Used in high-temperature areas such as engine cylinder heads

Medical

- **Autoclave Gaskets**
  - **Substrate Material:** Stainless steel
  - **Product Name:** Aremco Pyro-Putty 2400
  - **Description**: Used in autoclaves for sterilizing medical instruments, requiring high temperature and pressure resistance.

Electronics

- **High-Temperature Device Gaskets**
  - **Substrate Material**: Alumina (aluminum oxide)
  - **Product Name:** Aremco Ceramabond 503
  - **Description:** Used in electronics operating at high temperatures, such as electronic furnaces

Food Industry

- **Industrial Oven Gaskets**
  - **Substrate Material:** Clay
  - **Product Name:** Aremco Ceramabond 571

- **Description: Used** in industrial ovens for food production, providing high temperature resistance.

Pharmaceutical Industry

- **Chemical Reactor Gaskets**
  - **Substrate Material:** Alumina (aluminum oxide)
  - **Product Name:** Aremco Ceramabond 569
  - **Description:** Used in chemical reactors in the pharmaceutical industry, requiring high purity and chemical resistance.

Packaging Industry

- **Packaging Machine Gaskets**
  - **Substrate Material:** Stainless steel
  - **Product Name:** Aremco Ceramabond 571
  - **Description:** Used in packaging machines requiring high temperature resistance.

Chemical Industry

- **Chemical Pump Gaskets**
  - **Substrate Material:** Graphite
  - **Product Name:** Aremco Ceramabond 503
  - **Description:** Used in chemical pumps requiring corrosion and chemical resistance.

3. Conductive Paste

Automotive

- **Electromagnetic Shielding Gaskets (EMI/RFI)**
  - Substrate Material: Aluminum
  - Example Product Name: Henkel Loctite 3888
  - Description: Gaskets used in vehicle electronic enclosures to provide shielding against electromagnetic interference.

- **Sensor Gaskets**
  - **Substrate Material:** Stainless Steel
  - **Example Product Name:** 3M 1181 Conductive Copper Foil Tape
  - **Description:** Gaskets used in vehicle sensors where electrical conductivity is required.

Medicine

- **Diagnostic Device Gaskets**
  - **Substrate Material:** Silver
  - **Example Product Name:** Henkel Eccobond 285
  - **Description:** Gaskets used in diagnostic equipment where biocompatibility and electrical conductivity are required.
- **Monitoring Device Gaskets**
  - **Substrate Material:** Polyimide (Kapton)
  - **Example Product Name:** DuPont Kapton FN

    - **Description:** Gaskets used in monitoring devices such as electrodes and sensors, providing conductivity and flexibility.

Electronics

- **Thermally Conductive Gaskets**
    - **Substrate Material:** Copper
    - **Example Product Name:** MG Chemicals 846
    - **Description:** Gaskets used in cooling electronic components such as processors and integrated circuits.
- **Connector Gaskets**
    - **Substrate Material:** FR4 (Glass-Epoxy Laminate)
    - **Example Product Name:** Aremco Pyro-Duct 597-A
    - **Description:** Gaskets used in PCB connectors, ensuring electrical conductivity between traces.

Food Industry

- **Packaging Machine Gaskets**
    - **Substrate Material:** Stainless Steel
    - **Example Product Name:** Henkel Loctite 3888
    - **Description:** Gaskets used in food packaging machines, ensuring electrical conductivity for control systems.
- **Dispensing Equipment Gaskets**
    - **Substrate Material:** Aluminum
    - **Example Product Name:** MG Chemicals 8331
    - **Description:** Gaskets in dispensing equipment where precise dosing and electrical conductivity are required.

Pharmaceutical Industry

- **Laboratory Equipment Gaskets**
    - **Substrate Material:** Glass
    - **Example Product Name:** Henkel Loctite Ablestik 2902
    - **Description:** Gaskets used in laboratory equipment, requiring electrical conductivity and chemical resistance.
- **Chemical Test Device Gaskets**
    - **Substrate Material:** Polyimide (Kapton)
    - **Example Product Name:** DuPont Kapton XC
    - **Description:** Gaskets in test devices, providing conductivity and high-temperature resistance.

Packaging Industry

- **Anti-Static Film Gaskets**
    - **Substrate Material:** Silver
    - **Example Product Name:** Aremco Pyro-Duct 597
    - **Description:** Gaskets in anti-static packaging films, protecting against electrostatic discharge (ESD).
- **Closing Equipment Gaskets**
    - **Substrate Material:** Copper

- **Example Product Name:** MG Chemicals 838AR
- **Description:** Gaskets in sealing machines for packaging, ensuring conductivity and reliability.

Chemical Industry

- **Chemical Pump Gaskets**
  - **Substrate Material:** Stainless Steel
  - **Example Product Name:** Henkel Loctite 3888
  - **Description:** Gaskets used in chemical pumps, providing conductivity and corrosion resistance.
- **Chemical Valve Gaskets**
  - **Substrate Material:** Nickel
  - **Example Product Name:** MG Chemicals 8331
  - **Description:** Gaskets in chemical valves, ensuring electrical conductivity and chemical resistance.

Construction Industry

- **Underfloor Heating Gaskets**
  - **Substrate Material:** Aluminum Oxide (Al2O3)
  - **Example Product Name:** Aremco Pyro-Duct 597-A
  - **Description:** Gaskets used in underfloor heating systems, providing thermal and electrical conductivity.
- **Electrical Installation Gaskets**
  - **Substrate Material:** Stainless Steel
  - **Example Product Name:** Henkel Eccobond 285
  - **Description:** Gaskets in building electrical installations, providing conductivity and corrosion resistance.

Material Analysis

1. **Light machine greases**
   - **State:** Semi-liquid
   - **One-component:** Yes
   - **Conclusion:** Can be extruded by versions A and C.
2. **Carbon-filled silicone**
   - **State:** Semi-liquid
   - **One-component:** Yes
   - **Conclusion:** Can be extruded by versions A and C.
3. **Silver-filled silicone**
   - **State:** Semi-liquid
   - **One-component:** Yes
   - **Conclusion:** Can be extruded by versions A and C.
4. **Acrylic gel**
   - **State:** Semi-liquid
   - **One-component:** Yes
   - **Additional Requirements:** May require UV curing.
   - **Conclusion:** Can be extruded by versions A, B, and C.

5. **Methacrylic gel**
    - **State:** Semi-liquid
    - **One-component:** Yes
    - **Additional Requirements:** May require UV curing.
    - **Conclusion:** Can be extruded by version B, and C.
6. **Plastisol (for creating flexible PVC parts)**
    - **State:** Semi-liquid
    - **One-component:** Yes
    - **Conclusion:** Can be extruded by versions A and C.
7. **Modeling waxes**
    - **State:** Semi-liquid
    - **One-component:** Yes
    - **Additional Requirements:** May require heating.
    - **Conclusion:** Can be extruded by version C (due to heating capability).
8. **Artistic clays (e.g., polymer clays)**
    - **State:** Semi-liquid
    - **One-component:** Yes
    - **Conclusion:** Can be extruded by versions A and C.

Conclusion:

- **Version A:** Extrudes all one-component semi-liquid materials, except those requiring heating.
- **Version B:** Additionally allows curing of materials requiring UV.
- **Version C:** Features heating up to 60°C, enabling the extrusion of modeling waxes and other materials requiring heating.

Each material can be extruded using the appropriate version of the FNIS printer, provided that any additional requirements (such as UV curing or heating) are met.

Contact Information

Thank you for your interest in our 3D printer FNIS. If you have any questions or need technical support, please contact our customer service team:

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Final Remarks

This document aims to provide detailed information on the capabilities and applications of our 3D printer FNIS in various industries and describe the materials that can be used for printing advanced seals and suction cups. We hope the information contained in the document will help you fully exploit the potential of our printer.