

3D Printing Basics

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Author: Max Bensryd

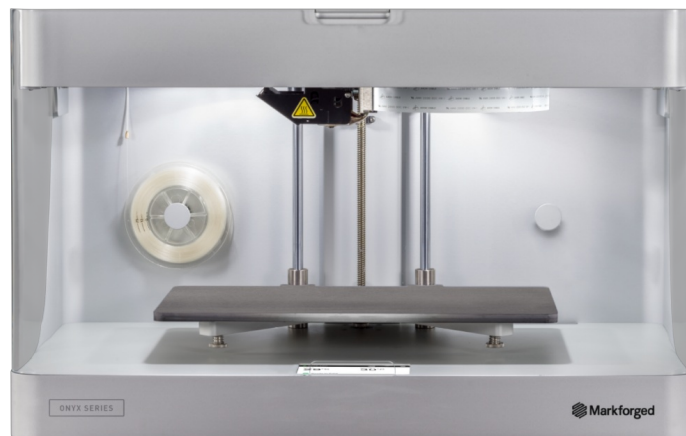
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General Information

To order a print. Use the **3D-print Queue Folders** in teams and follow the instructions later in this article.

The X7 & Onyx Pro utilizes the CFR (Continuous Fiber Reinforcement) 3D-printing technique. There is two 3D-printers available in the Swedish office and are located in the printer room on the 5th floor.



Markforged Onyx Pro



Markforged X7

Build Volume

The dimensions you can print is at maximum:

- **X7:**
 1. Base plate: 330 mm x 270 mm
 2. Height: 200 mm
- **Onyx Pro:**
 1. Base plate: 320 mm x 132 mm
 2. Height: 154 mm

Layer thickness

The printer can print in layers of:

- **50 µm (Only for the X7)**
- **100 µm**
- **150 µm**
- **200 µm**
- **250 µm (Turbo)**

How to empty a print job

- **See the Markforged support guide here: [Safely Remove Printed Parts](#)**

Available Build Materials

Onyx® - Nylon composite with micro carbon fiber. Tough, expensive & good surfaces.

- **Color:** **Black**
- **Tensile Mod:** **2400 MPa**
- **Flex Mod:** **3000 MPa**
- **Yield:** **40 MPa**



PLA - Polylactic Acid. Weaker & cheaper.

- **Color:** **White**
- **Tensile Mod:** **2300 MPa**
- **Flex Mod:** **2300 MPa**
- **Yield:** **31 MPa**



TPU 95A - Thermoplastic polyurethane. Rubber-like, impact absorbent & flexible.

- **Color:** **Black**
- **Tensile Mod:** **13-98 MPa (strain dependent)**
- **Flex Mod:** **90 MPa**
- **Shore Hardness:** **95 A**



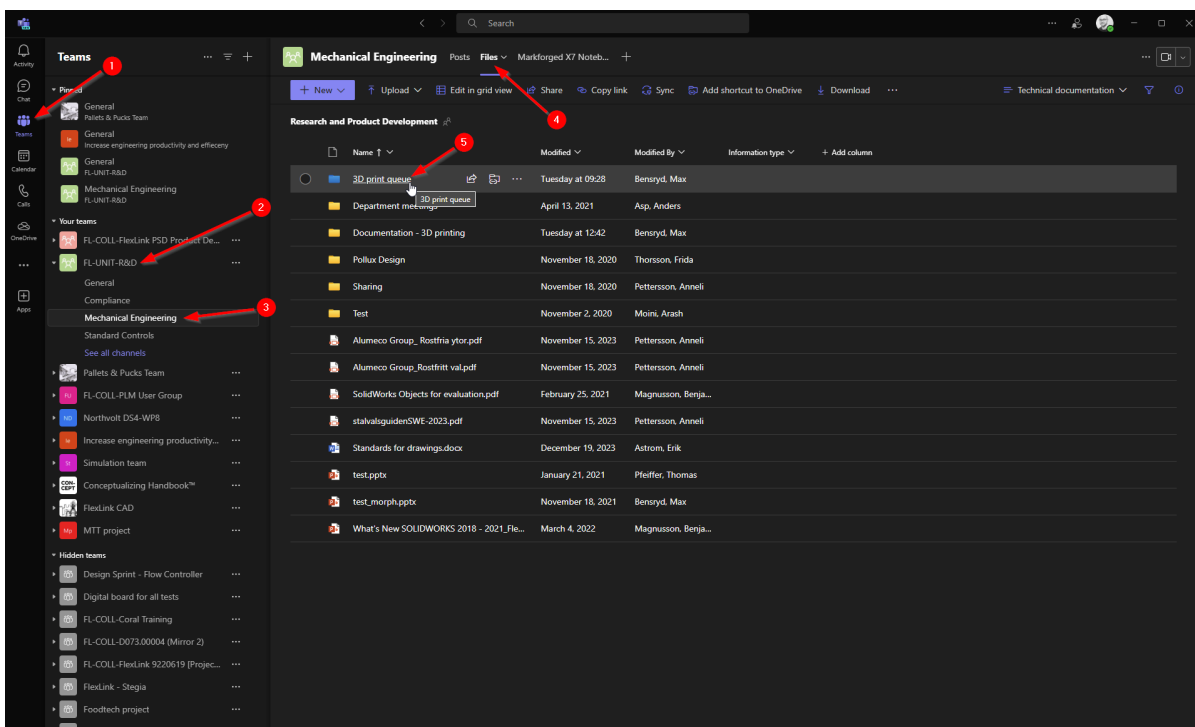
Available Reinforcing Materials (layers with continuous fibers)

- Carbon Fiber (only with Onyx®)

How to order a 3D-print job

- Find the queue folders in teams (or here: [3D-print Queue Folders](#)).
- Add your .STL-files to the corresponding folder.
- Add your order in the excel with eventual demands ([Print Queue Excel](#)).
- Send a message informing all the users of the splice software:

1. Benjamin
2. Bo
3. Magnus
4. Max



The Print Queue Excel comes with columns for relevant settings. If your print requires it, you can demand special settings to be used instead of the default ones. All of them have explanations included in the pop-up notes:

Basic information						Print settings			Admins		
3D-print name	Quantity	Designer	Date added	Deadline	Priority	Material	Wall layers	Other comment	Exporter	Status	Time to print
example_bracket_13.STL	4	Mikael	2024-01-05		High	Onyx - Nylon composite with carbon fibre. Tough, expensive and black in color.	2 (default)	I need 2 asap but other 2 is low prio	Max B		
FLX1009230_modified.STL	1	Andreas	2024-01-03		Low	PLA * Tensile Mod: 2400 MPa * Flex Mod: 3000 MPa * Yield: 40 MPa	2 (default)	I want it in blue!!!!	Max B		
3DBenchy.STL	1	Max B	2025-25-25		Low	Onyx	---	Don't clear bed without me present	Max B		4h
ok_turn_3.STL	2	Max B	2025-01-09		Low	PLA - Polylactic Acid. Weaker, cheaper and white in color. * Tensile Mod: 2200 MPa * Flex Mod: 2300 MPa * Yield: 31 MPa	4		Benjamin		
						TPU 95A - Thermoplastic polyurethane. Rubber-like, impact absorbent, flexible and black in color. * Tensile Mod: 13-18 MPa (strain dependent) * Flex Mod: 90 MPa * Shore Hardness: 95 A					

To see “Advanced tips & tricks” check out this [article](#).