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1. Introduction

The ProJet MP 3000/3510 Series 3D printers and accompanying 3Shape Dental System software have been thoroughly tested and validated at the manufacturer's facility. This series of 3D printers is ideally suited for manufacturing the 3D CAD models which have been designed, imported, and/or edited using the 3Shape Model Builder.

This document describes how to set up the ProJet MP 3500/3510 3D printer and configure the 3Shape Dental System software.

3Shape email contact: Sven.Nonboe@3shape.com

2. Installation and Tuning

Please contact 3D Systems for further information regarding installation, printer settings, and tuning of parameters.

3D Systems contact details

Email: dentalinfo@3DSystems.com

Internet: <http://www.toptobottomdental.com>

Headquarters

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Hertfordshire, HP2 7UA, 01442 282600

3. Shape Dental System™ Setup

Versions 2.8.8.1 and later of the 3Shape Dental System software have the appropriate settings installed by default. However, the user must prepare the model for printing.

Navigate to the “Edit Manufacturing process” options by choosing “Dental System Control Panel” → “Site Settings” → “Manufacturing Processes”

Create a new process using the following settings:

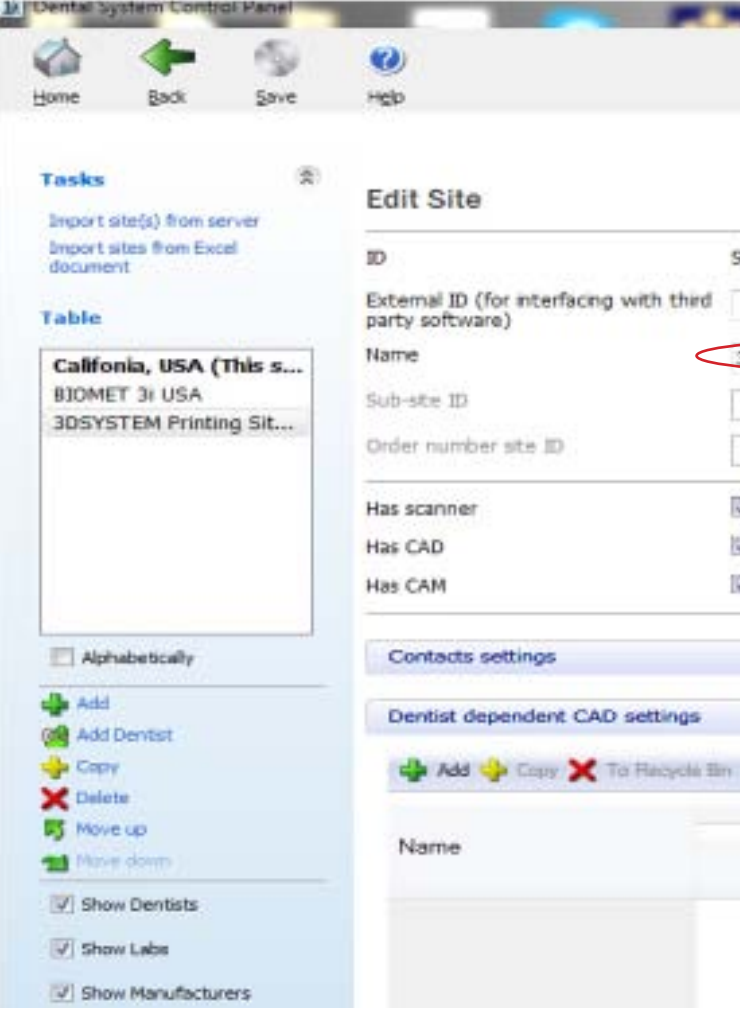
1. **Manufacturing process method:** CADOutputRawSTL.dll
2. **Materials:** 3D Systems Visijet
3. **Manufacturers:** 3DSYSTEM Printing Site Seattle

Edit Manufacturing process

ID	Site73_washington	<input type="button" value="Change ID"/>
Name	Seattle	
Manufacturing process method	CADOutput3DPrinter.dll	<input type="button" value="Select"/>
Output margin line	<input checked="" type="checkbox"/>	
Output outer margin line	<input type="checkbox"/>	
Output 3DX file	<input type="checkbox"/>	
Output INF file	<input type="checkbox"/>	
Milling	<input type="checkbox"/>	
Launch 3rd party application	- None -	


Materials	Manufacturers
<input type="checkbox"/> TINI	<input type="checkbox"/> California, USA
<input type="checkbox"/> B3i Ti Ni	<input type="checkbox"/> BIOMET 3i USA
<input type="checkbox"/> Titen	<input checked="" type="checkbox"/> 3DSYSTEM Printing Site Seattle
<input type="checkbox"/> DREVE FotoDentModel Beige	
<input checked="" type="checkbox"/> 3D Systems Visijet	
<input type="checkbox"/> Ti (BIOMET 3i PBG)	
<input type="checkbox"/> TINI (BIOMET 3i PBG)	
<input type="checkbox"/> Zirkon (BIOMET 3i PBG)	
<input checked="" type="checkbox"/> ProJet MP3000 Material	

4. FTP Settings for File Export and Remote Manufacturing



Use the following settings to export an STL file to 3D Systems, Inc. for manufacturing:

- **Name:** 3DSYSTEM Printing Site Seattle
- **FTP IP address/URL name:** files.quickparts.com
- **FTP port:** 21
- **FTP user:** 3shape-us
- **FTP password:** [Password will be provided by 3D Systems]
- **FTP directory:** /





ProJet MP 3000/3510 and 3Shape Dental System Setup Guide

Settings are also provided in the setup file, "3D SystemsProjetMP3510ModelBuilderSetup.dme" which is distributed with this document. Copy this file to a local folder and import it into the software using the Dental System Control Panel.

To make this setup file the default:

- Navigate to "Dental System Control Panel" -> "Digital model" -> "Digital model design" and move the relevant lines to the top of the list.
- **Create/import order:** Create or import the relevant order as normal, depending on the type.
- Ensure that the correct model settings have been chosen.



3DSystems_ProJet_PearlStone_03282013.dme

Digital model ▶ Digital model design

+ Add + Copy X To Recycle bin

Recycle Bin: Show Recycle (No items) Restore All

General			
Name	ID	Description	Ma
Quad. 3DS ProJet 3000	Configuration_11_Quad3DSProJet3000	Quadrant. 3D Systems Proj...	3D Syste
Full. 3DS ProJet 3000	Configuration_11_Full3DSProJet3000	Full arch. 3D Systems Proj...	3D Syste

5. Designing with Model Builder

Refer to the Dental System manual, Chapter 6 for detailed information.

To Produce STL files for CAM (Computer Aided Manufacturing):

- Highlight the desired teeth
- Choose the Type of tooth preparation: Crown, Coping, Bridge Material

Settings for model manufacturing:

- **Material:** 3D Systems Visijet
- **Manufacturer:** Seattle
- **Manufacturing process:** 3D Systems Printing
- **CAD settings:** Quad. 3DS ProJet 3510



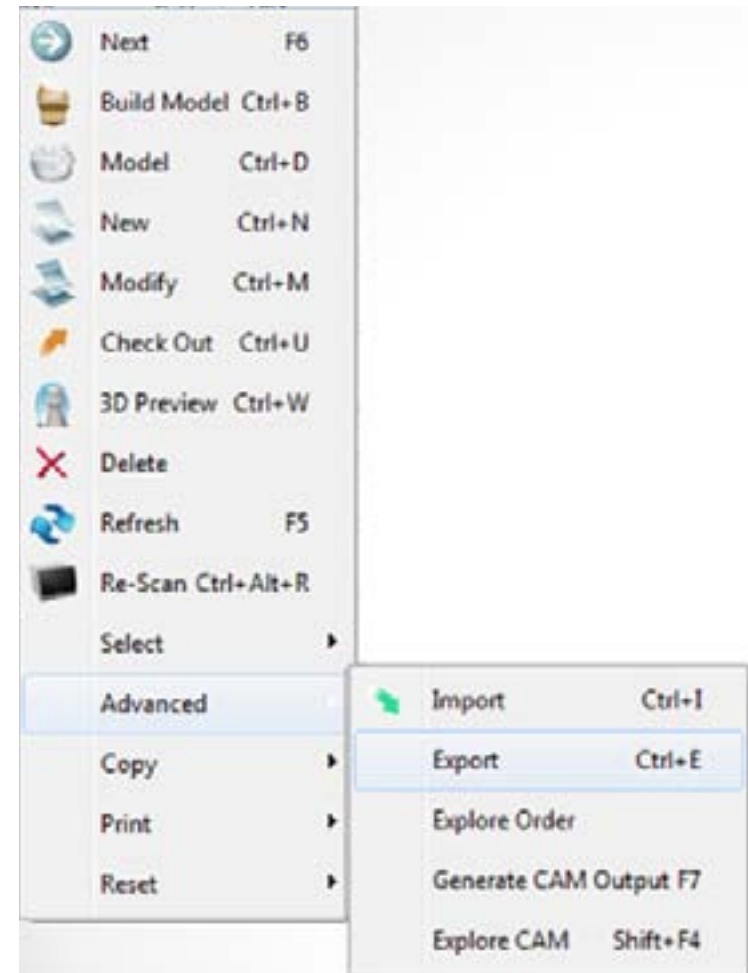
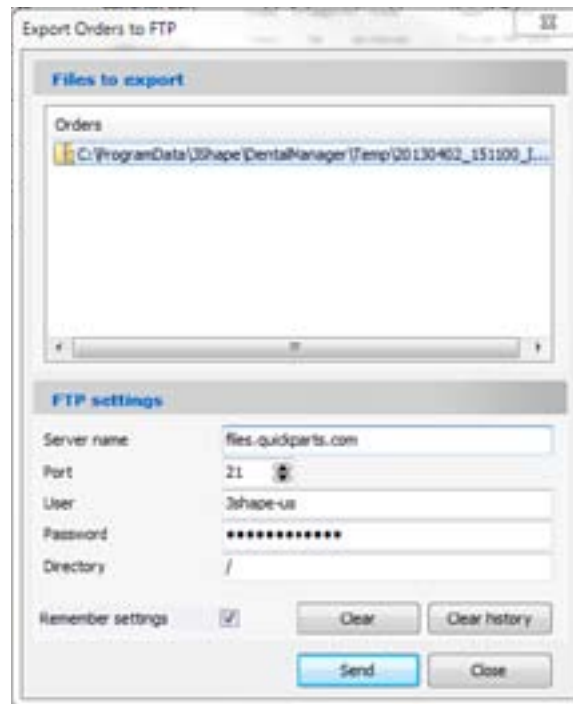
6. Generating STL Files for CAM (Computer Aided Manufacturing)

Note: this step is not needed if CAMbridge is being used for the printing process.

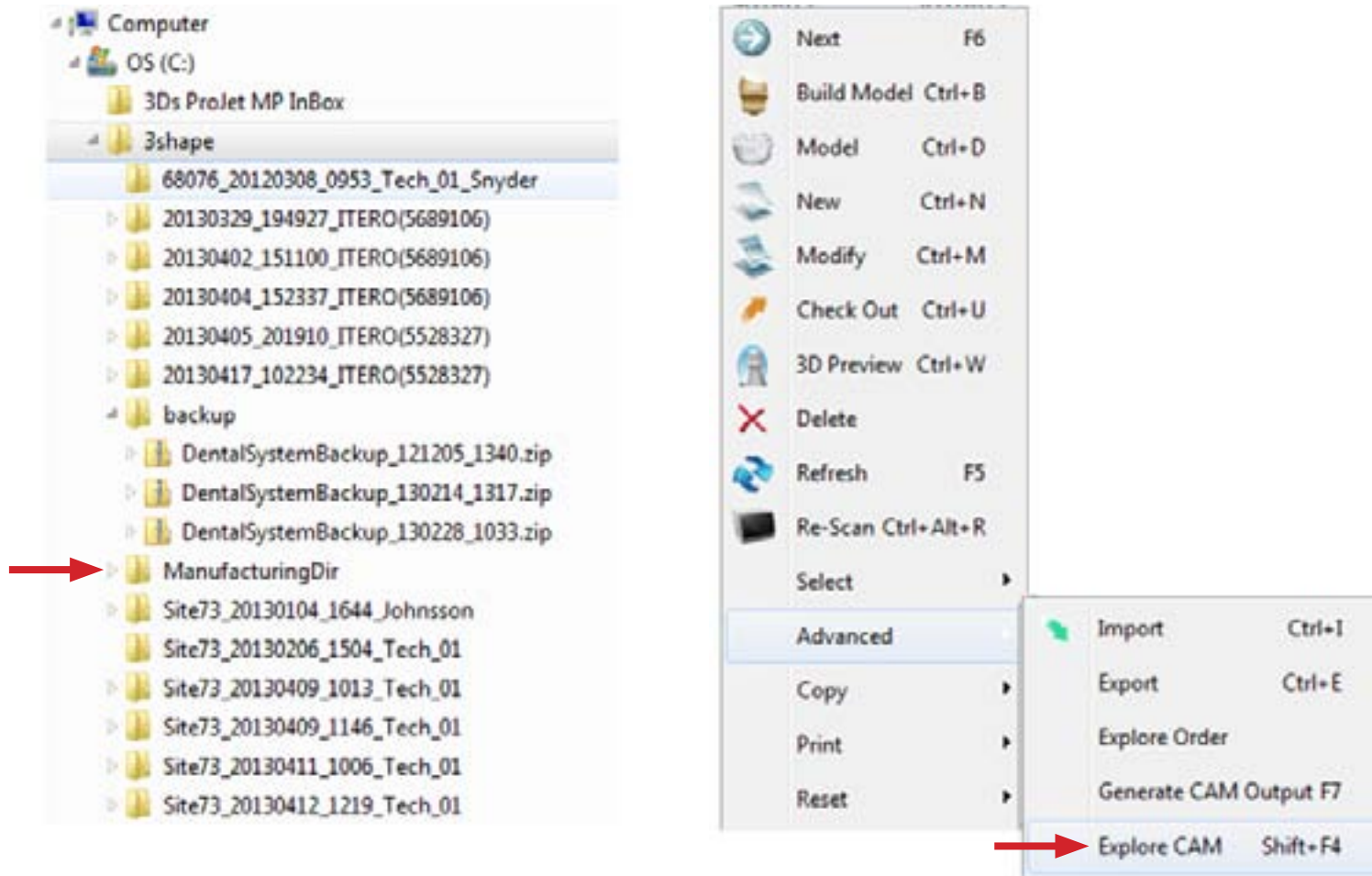
After the design of the CAD model has been completed, an STL file can be created for use in CAM.

To generate this file:

- Right-click on the Orders and choose "Generate CAM Output (F7)"

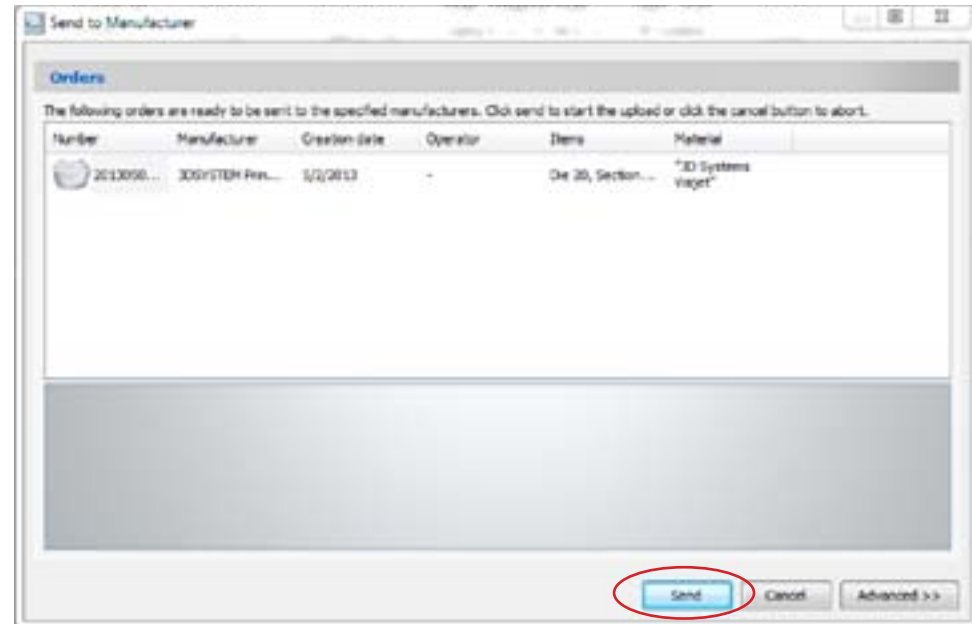
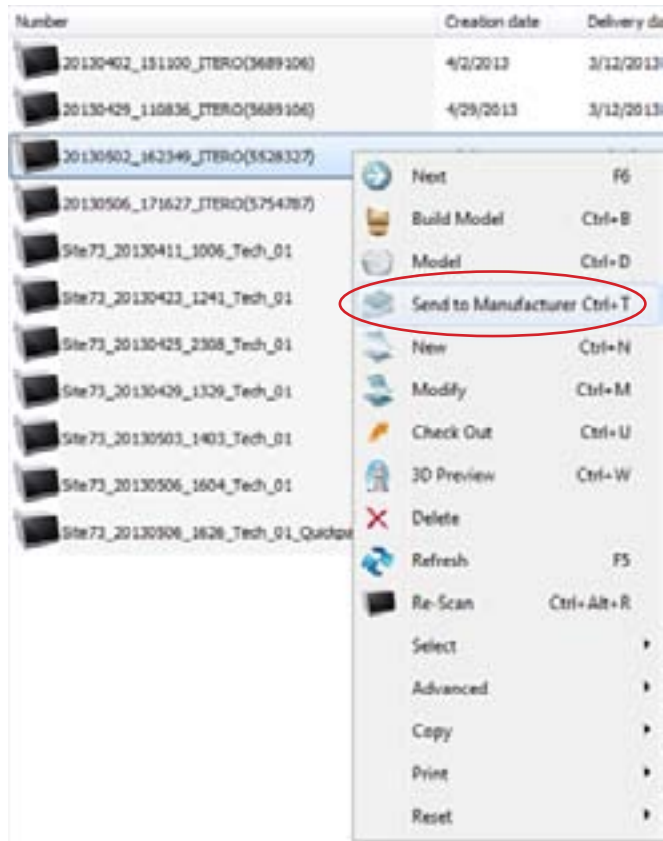


The files can now be found in the CAM output folder. Click on “Explore CAM (Shift+F4)” to view them. There is an alternative method which is described below.



A second option to send to the manufacturer

- Right-click on the desired model, then select “Send to Manufacturer (Ctrl+T)”
- Click “Send” to upload the file to the FTP site of 3D Systems



7. Printing Models Using 3Shape CAMbridge

There are two options for printing models:

- Use the CAMbridge software. This program will find the relevant files and integrate them into the Dental System.
- Use the 3D Systems software.

Please refer to the CAMbridge manual and/or your 3D Systems contact

**3Shape CAMbridge® 2011/1
Quick Guide for RP Machines**

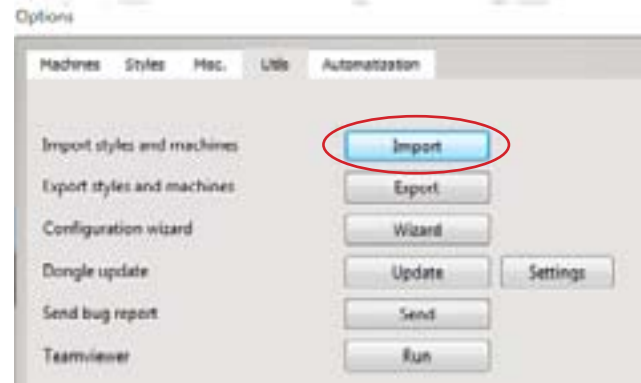


8. .3ce File Setup for CAMbridge

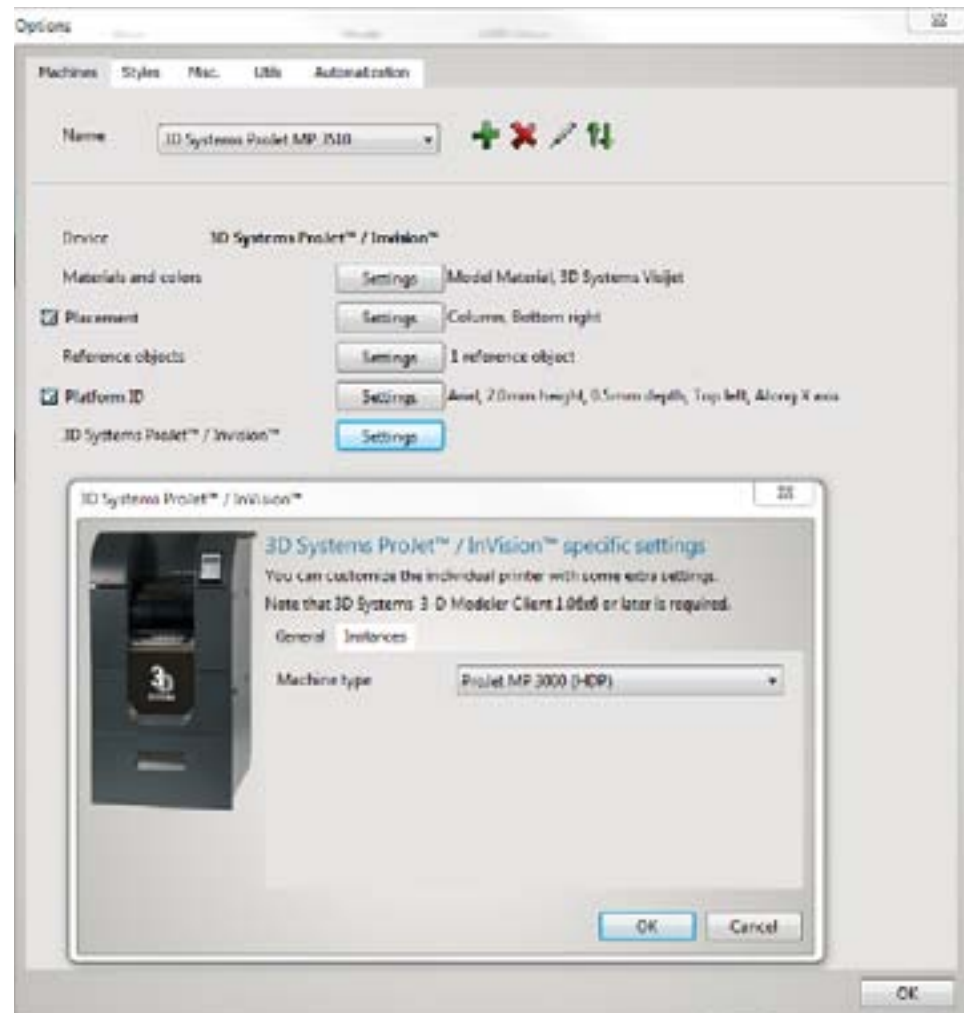
The .3ce file has been preset with all of the settings necessary to manufacture printed models using the CAMbridge software.

To access the .3ce file:

- Open CAMbridge and click the “Options” button.
- Select the Units icon.
- Select the “Import” button for “Import styles and machines.”
- Download the DME file that is below.
- See the settings for the .3ce file on the following page.




3D Systems ProJet MP Setting CAMbridge.3ce



List of .3ce file settings for CAMbridge

Machine

- **Device Name:** 3D Systems ProJet MP 3510
- **Specific Setting:** ProJet MP 3500 (HDP)

Style

- **3D Systems ProJet MP 3510:** PearlStone Models
- **Materials:** 3D Systems VisiJet
- **Specific Dental Style:** Models
- Auto Repair
- **Orientation:** Vertical Placement
- **Scale:** X = 0.8; Y = 1.0; Z = 0.0
- **Wall Thickness:** True

9. Model Cleaning

It is extremely important that the models are cleaned correctly before use. If this is not done properly, the final models may not fit as intended.

Throughout the cleaning process, ensure that the support materials inside the models do not melt. If this occurs, the models will warp and the printing process will need to be repeated.

3Shape currently uses the cleaning procedure outlined in the *VisiJet™ Pearlstone Post Processing Guide—HDP build mode*:

https://3dscentral.3dsystems.com/attachments/2282_2107_VisiJet%20Pearlstone%20Post%20Processing%20Guide-HDP%20Build%20Mode.pdf