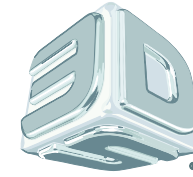


DuraFormProX-PA® Engineered Thermoplastic Customer Information Bulletin



3DSYSTEMS®

Advisory

Upgrade / Repair / Retrofit

Safety Alert

Purpose: Tips and info for building with DuraFormProX-PA® Engineered Thermoplastic on ProX500 SLS® systems

ProX 500

DuraFormProX-PA

A general purpose thermoplastic material, designed specifically for use on 3D Systems' ProX500 SLS systems.

Material Quality Center (MQC) Fresh Powder blending ratio

This setting on the MQC allows the user to set the blending ratio best suited for their needs. The allowable range is from 40% to 100%. It is expected that starting with DuraFormProX-PA you will use the 100% ratio, and after a period of usage (depending on number and size of builds) you will adjust this ratio.

Note: The MQC requires a minimum of approximately 20 liters of powder to blend. This 20 liters is a combination of fresh and used powder. For example if the fresh powder ratio is 60%, then 12 liters of fresh powder and 8 liters of used powder is required and conversely if the fresh powder ratio is 40%, then 8 liters of fresh powder and 12 liters of used powder is required.

DuraFormProX-PA powder reuse

Only sift and reuse soft powder from builds. Powder clumps that are hard and must be forced to break up should be discarded.

Software version

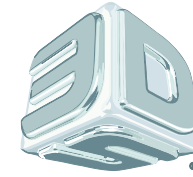
Version 5.4 or higher is required.

Hardware

ProX500 V2 upgrade is required.



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ProX 500

ProX500 N₂ laser window flow setting

Recommended flow is now 5 lpm

Offline IR Calibration

After V5.4 is installed an offline IR sensor calibration is required.

Build Setup software

SLS Build Packet Files are created in the Build Setup software. A Build Packet File (BPF) contains special instructions that are system and material specific. All BPFs to be used with DuraFormProX-PA should be created using the DuraFormProX-PA material configuration file.

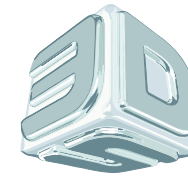
NOTE: Prior to installing Sinter V5.4, any bpf's created in the previous version that you desire to re-use in V5.4 should be exported to create bpz's (zipped compressed bpf's). After the installation of V5.4, when the bpz is opened, parameter values will be converted.

DuraFormProX-PA material configuration file

The default parameter values in the configuration file are best for used powder conditions. For your initial 100% fresh powder builds with this material, see table below. Fresh Powder values are also pre-set in the **ProX500_DuraFormProX-PA_freshpowder_testbuild.bpz**

NOTE: Modification to parameter values may be indicated based on application, powder or system conditions.

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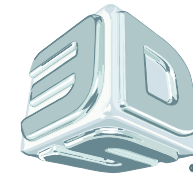
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Purpose: Tips and info for building with DuraFormProX-PA® Engineered Thermoplastic on ProX500 SLS® systems **ProX 500**

Parameter	DuraFormProX-PA default values			DuraFormProX-PA fresh powder suggested value		
	Warmup	Build	Cooldown	Warmup	Build	Cooldown
Part Bed Temperature Setpoint	100°C ramping to 168°C	168°C ramping to 167°C	167°C ramping to 85°C	100°C ramping to 167°C	167°C ramping to 166°C	166°C ramping to 85°C
Feed Powder Amount	0.15	0.22	0.15	0.10	0.15	0.10

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ProX 500

ProX500_DuraFormProX-PA_freshpowder_testbuild.bpz

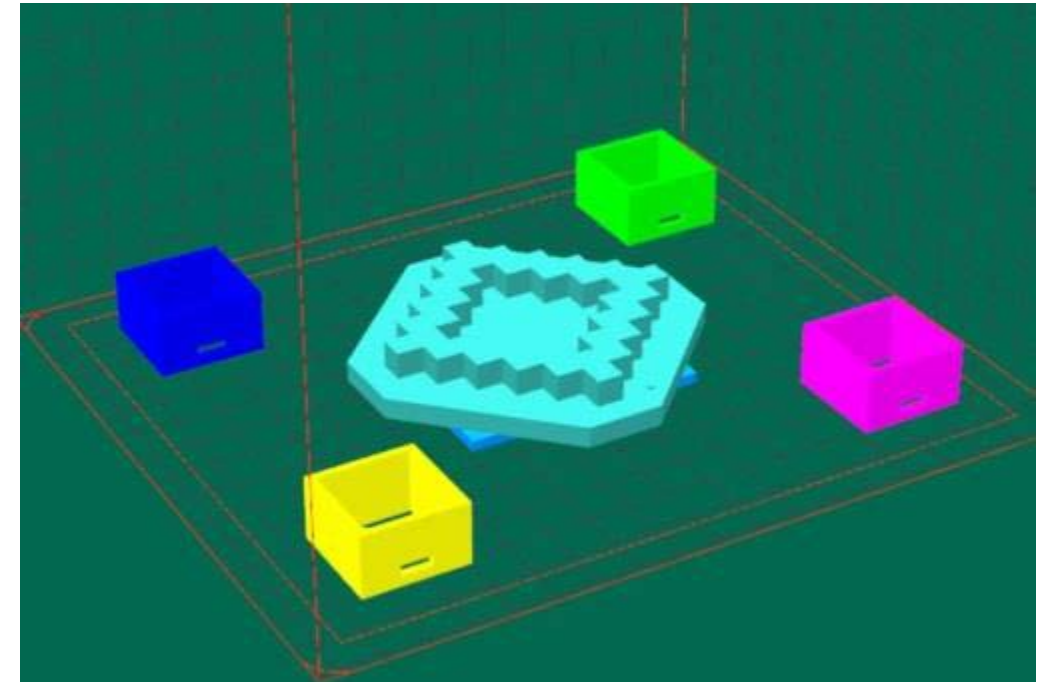
This testbuild uses fresh powder defaults for part bed setpoint and feed amounts. It contains a part (pyr2) for evaluating shrinkage as well as several other test parts.

Scale values for shrink

The shrinkage of 100% DuraFormProX-PA is slightly higher than that of used DuraFormProX-PA. You should expect to evaluate and adjust the scale values used to compensate for shrink as you adjust the Fresh powder blend ratio. Note that shrinkage may vary slightly based on part geometry.

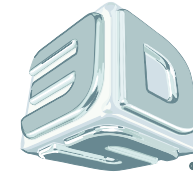
Part bed temperature

- A technique to super heat the part bed during warmup is used for DuraFormProX-PA. During Warm Up stage the top of the setpoint is 1 degree C higher than that of the Part Bed Temperature set point used in the Build Stage.
- Recommendations for adjusting Part Heater Setpoint and Quadrant ratios.
 - Adjust Part Heater setpoint based on breakout of powder in center of the part bed
 - After Part Heater setpoint is at optimum, then adjust ratios (2% adjustments) to adjust part bed distribution



ProX500_DuraFormProX-PA_freshpowder_testbuild.bpz

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ProX 500

Part orientation in the SLS build volume

Large “blocky” sections or structures are susceptible to distortion (post-build curl). Rotating the .stl file a few degrees about X and/or Y can help to mitigate this distortion. Rotation to 30 degrees is shown to give good properties and less distortion. If possible, start these demanding parts later in the build (at greater Z) after other parts have already been built underneath.

Routine maintenance

See ProX500 User guide.