

LOCTITE IND 405 Material Best Practice



Table of Contents

Document Information	3
Legal Notice.....	3
History of Changes	3
How to Use This Guide	3
About LOCTITE IND 405.....	4
Identification	4
Applicable Printers	4
Getting Started.....	5
Primary Supplies	5
Design Parts for LOCTITE IND 405	5
Software	6
Orient Parts Envision One RP Software	6
Support Parts Envision One RP Software	6
Print Preparation.....	7
Fill Material Vat/Material Tray	7
Print with LOCTITE IND 405 Material	7
Post-Processing	8
Clean Printed Parts.....	8
Dry Parts	9
Post Cure Printed Parts.....	9
Manufacturer.....	10

Document Information

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History of Changes

Date	Changes	Version
September-2022	Document creation	1.0

How to Use This Guide

This document serves as a comprehensive guide to prepare parts, post-process, and finish using LOCTITE IND 405 material.

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About LOCTITE IND 405

Identification

LOCTITE IND 405 is a high-strength engineering plastic with good impact resistance and excellent surface finish. Ideal for a wide variety of tools on the production floor as well as end-use functional high production parts in a variety of industries.

Applicable Printers

This material is tested and approved for the following printers:

- Xtreme 8K
- Envision One cDLM

Fig. 1 Xtreme 8K Front View

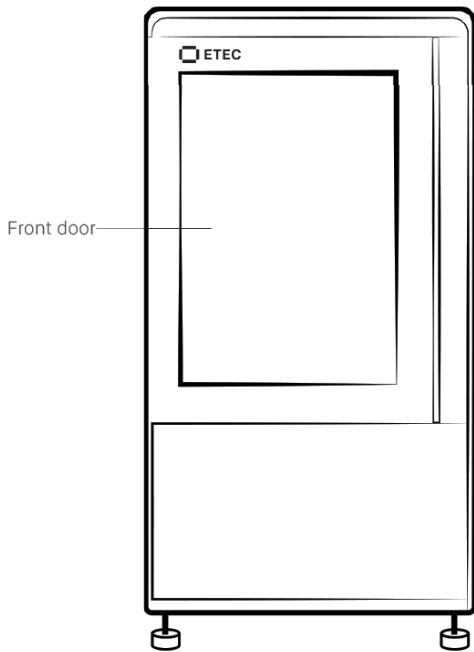
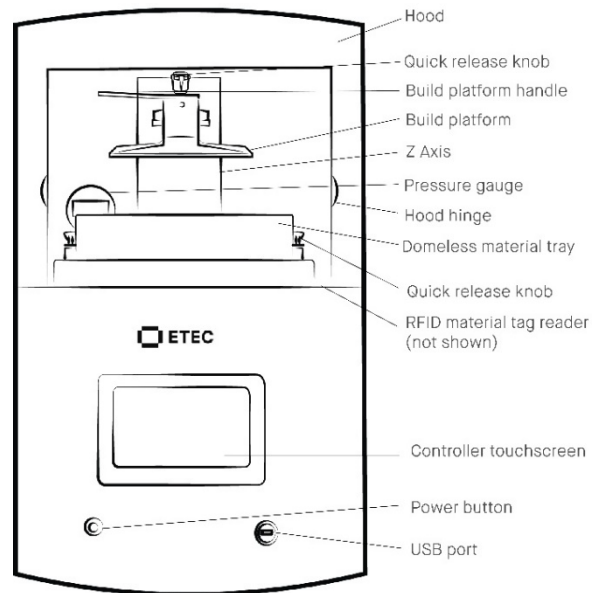


Fig. 2 Envision One cDLM Front View



Getting Started

Primary Supplies

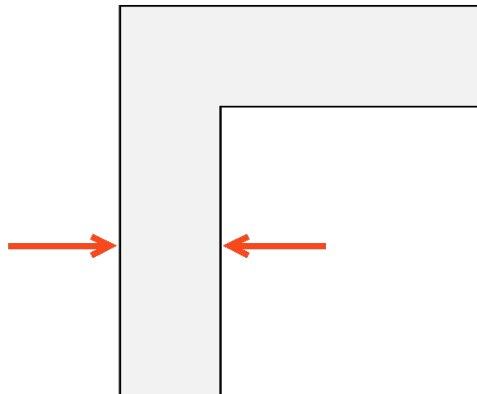
The following supplies are required to print LOCTITE IND 405 material:

- 99% isopropyl alcohol (IPA).
- Air compressor.
- Cone-shaped paint filter, *Starter Kit item*.
- Curing unit: PCA 4000 *SAP Part # ACC-06-1000*, or UVCA 3000 *SAP Part # ACC-02-1000*.
- Dual Motion Bottle Roller, *SAP Part # ACC-26-1000 (110V) and ACC-26-1000 (220V)*.
- Nitrile gloves.
- Paint scraper, *Starter Kit item*.
- Paper towels.
- Envision One: Plastic funnel.
- Envision One: Rubber spatula, *Starter Kit item*.
- Xtreme 8K: Mixing blade or an industrial spatula.
- Spray bottle with 99% IPA.
- Washing unit: PWA 2000, *SAP # ACC-22-2000*.

Design Parts for LOCTITE IND 405

Parts printed in LOCTITE IND 405 must have a minimum wall thickness of 0.40 mm.

Fig. 3 Minimum Wall Thickness



Tip: Parts placed on the Xtreme 8K build platform will have a pattern imprinted on the mating surface. To avoid this, print parts using the recommended support settings.

It is recommended to add channels or drainage holes to hollow parts. This allows uncured material to drain from the hollow feature during the printing process.

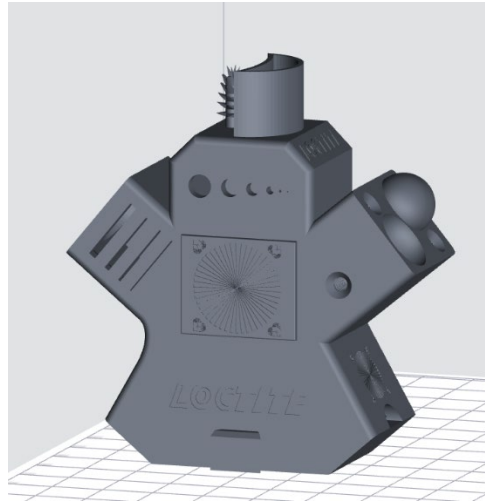
Software

Orient Parts in Envision One RP Software

Envision One RP automatically orients your model, adds supports, if necessary, and sends the file to the printer, resulting in your three-dimensional model. Everything that is printed using ETEC printers must pass through this software successfully.

- **Spacing:** Place parts a minimum of 0.50 mm apart.
- **Level at build platform:** Place unsupported parts directly on the build platform. Place supported parts 10.0 mm from the build platform.
- **Resolution:** 100 μ m Z resolution (dependent on layer thickness).

Fig. 4 Unsupported Part in Envision One RP Software

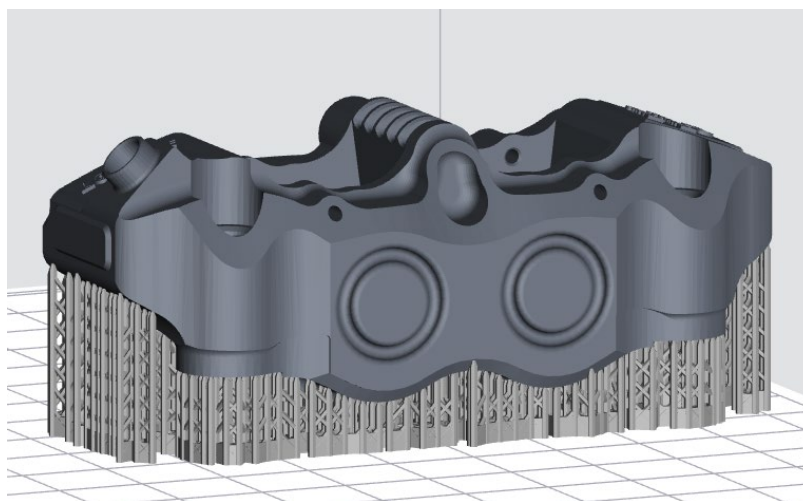


Support Parts in Envision One RP Software

Some approved applications require supports. Always use the LOCTITE IND 405.ini support file:

- **Minimum support base:** 1.50 mm
- **Minimum contact tip:** 0.90 mm
- **Minimum support beam height:** 10.0 mm

Fig. 5 Supported Part in Envision One RP Software



Print Preparation

Fill Material Vat/Material Tray

Do not overfill the material vat (Xtreme 8K)/material tray (Envision One). Overfilling can cause the material to overflow at the start of the print job.



Important: Ensure there are no small, cured particles in the material. If found, then the material must be filtered. See [Xtreme 8K](#) and [Envision One](#) filtering instructions.

Xtreme 8K

Material must be mixed in the material vat for a minimum of 2-3 mins using a mixing blade or an industrial spatula the size of the vat. The material should be a uniform color.

Material is automatically added to the material vat by the resin reservoir. See the [Knowledge Base](#) for more information.

Envision One

LOCTITE IND 405 material must be mixed prior to use on the Envision One:

1. Place the sealed material bottle on the Dual Motion Bottle Roller for a minimum of 60 minutes.
2. Wait for bubbles to subside before filling the material tray.
3. Mix material in the material tray gently with the rubber spatula from the Starter Kit before each print. The material should be a uniform color.

To add more material to the printer, carefully pour material into the material tray between prints. Adding material while the print is paused, or during a print, will cause a small shift line in the part. See the [Knowledge Base](#) for instructions on adding material.

Print with LOCTITE IND 405 Material

Before starting a print:

1. Ensure the build platform is clean and free of cured material.
2. Ensure the material level is correct.
3. Check the build platform level (Xtreme 8K only).
4. Check the recoating blade gap (Xtreme 8K only).

To start the print, follow instructions in the printer's Operations and Maintenance Guide.

To remove the parts from the build platform after the print is complete, follow instructions in the printer's Operations and Maintenance Guide. See the [Knowledge Base](#) for the latest Operations and Maintenance Guide.



Xtreme 8K Tip: To remove parts, place the paint scraper under one corner of the part, angling towards the opposite diagonal corner of the part. Use the rubber mallet to tap the back of the paint scraper.



Tip: Small parts tend to "pop off" of the build platform, so do not apply significant pressure for part removal.

Post-Processing

Clean Printed Parts

Allow the material to drip off parts for 15 minutes before cleaning. Then, immediately clean parts.



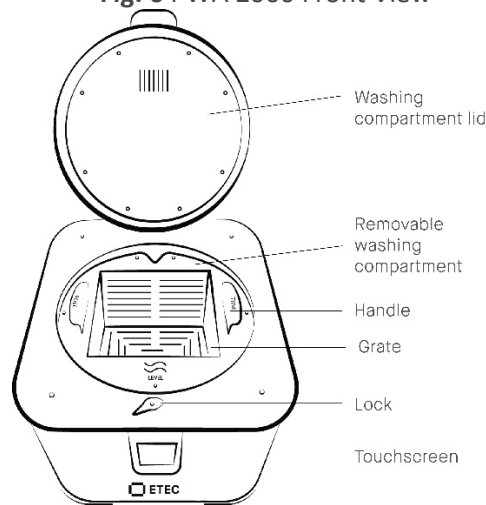
Tip: Time the end of the print in order to post process parts immediately. Ensure clean 99% IPA is available for part washing.

The PWA 2000 is the recommended parts washer for small and medium parts. Always wear gloves when handling uncured material and alcohol.



Important: A new washing solution for large parts is in development.

Fig. 6 PWA 2000 Front View



Important: Do not expose LOCTITE IND 405 to alcohol for longer than 5 minutes. Excess exposure to alcohol may cause adverse effects on the mechanical properties of parts and surface issues.

Getting Started

1. Open the washing compartment lid.
2. Lift the handle to raise the interior grate to the highest position.
3. Pour 99% IPA into the washing compartment to just below the raised grate.
4. Place the part on the grate and gently lower the handle to submerge the part in 99% IPA.
5. Close the washing compartment lid and lock in place.
6. Plug in the power cable to turn on the PWA 2000.

Wash Cycle

1. Using the touchscreen, select the **High** washing program. Set the timer to **00:02:30, or 2.5 minutes**. Press **Start**.
→ *The PWA 2000 will immediately begin the set washing cycle.*
2. Remove the part(s) as soon as the program is complete.
3. Spray the part(s) with the spray bottle filled with 99% IPA.
4. Use compressed air to remove all IPA from the surface of the part(s) as soon as possible.
5. Repeat Steps 1 – 4 of the Wash Cycle.
6. If resin remains, spray the part(s) with the spray bottle and then dry with compressed air.
7. Repeat Step 6 of the Wash Cycle until the part(s) is completely clean.



Tip: Parts with large surface areas can be difficult to clean. Use soft sponges (Xtreme 8K) or brushes (Envision One) and 99% IPA to remove remaining resin after cleaning.

Dry Parts

Parts must be completely dry before post curing:

1. Place the parts on a clean paper towel lined surface.
2. Air dry in ambient room temperature and ambient humidity for 10 min (Envision One)/60 min (Xtreme 8K).

Post Cure Printed Parts



Important: Place parts into the curing unit with as much space between parts as possible. Parts should never touch one another while curing.



Important: Flip parts between cycles for an even cure. Let parts cool completely before handling them or starting the next cycle.

Cure the parts using one of the following methods:

Curing Unit	Time (H:MM:SS)	Temperature	Power
PCA 4000 See Programs and Features PCA 4000 .	Envision One: 2 x 20 Minutes. Xtreme 8K: 2 x 30 Minutes.	20° C	100%
UVCA 3000 See Hardware Operations UVCA 3000 .	Xtreme 8K only: 2 x 120 Minutes	20° C	100%

Fig. 7 PCA 4000 Front View

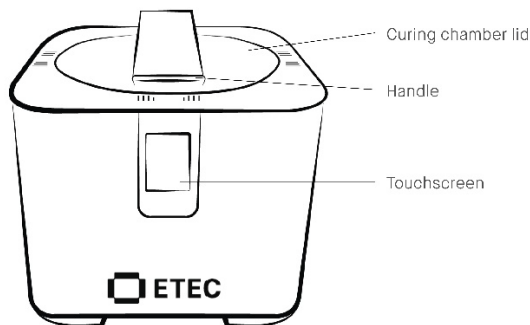
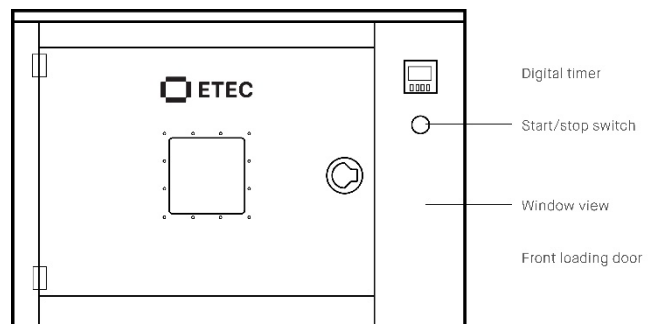


Fig. 8 UVCA 3000 Front View



Manufacturer

Desktop Metal, Inc.
63 3rd Avenue
Burlington, MA 01803
www.desktopmetal.com

Desktop Health
c/o Desktop Metal, Inc.
63 3rd Avenue
Burlington, MA 01803
www.health.desktopmetal.com

EnvisionTEC US LLC (ETEC)
15162 Commerce Dr. S
Dearborn, MI 48120
www.etec.desktopmetal.com

EnvisionTec GmbH
Brusseler Str. 51
45968 Gladbeck
Germany

ExOne Operating, LLC
127 Industry Boulevard
North Huntingdon, PA 15642
www.exone.com

ExOne GmbH
Daimlerstrasse 22
86368 Gersthofen
Germany

ExOne KK
161-5 Haneo
Odawara-shi, Kanagawa
Japan 256-0804