

# LASER ART

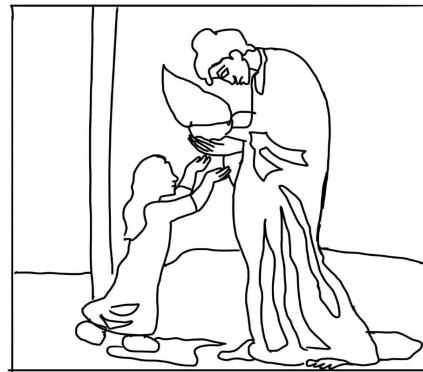
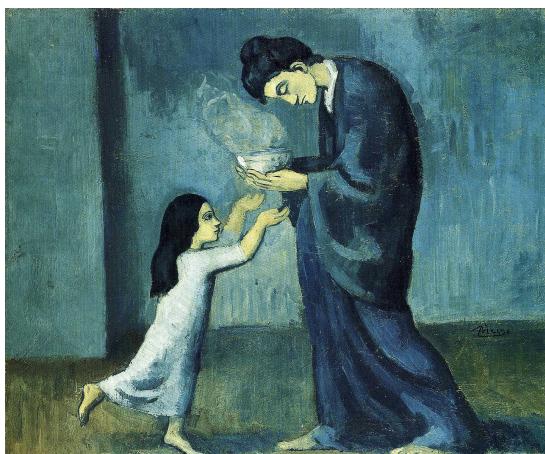
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## INTRODUCTION

The challenge is to employ the laser etching technology to duplicate any single piece of classical art (Da Vinci, Picasso, Van Gogh, etc.) on Ti6Al4V in color or MDF in greyscale. The concept is that a laser creates distinct colors on a Ti6Al4V metal sample at varying powers and speeds. To make art with diverse colors, the optimal laser conditions must be mapped to the color produced on the metal sample.

## DESIGN CONSIDERATIONS

We made the design of the great artist Pablo Picasso-The La Soupe. We made it by tracing the outline on the Ipad, converting it into a DXF file and then doing the whole procedure. We chose this design because it had accurate design and vibrant color shadings.



## CHOICE OF PROCESS PARAMETERS

The laser work machine is used at 300RPM, Hatch/line distance = 50 um, Laser -single sector pulse wave, Sample- Ti6A14V, Stage height = 122 mm, sample height= 2mm, Frequency = 10 kHz, Pulse duration = $10\mu\text{s}$ , Air at room temperature

These characteristics remain consistent across all hues. The color discrepancy is only due to the laser's differing speeds.

Following are the different speeds for obtaining the colors on the metal sample:

Colour	Speed
Purple	0.16
Blue	0.13
Grey	0.02
Brown	0.19
Sky Blue	0.08
Skin	0.45
Silver	1

## PROCESS

- Firstly, we chose a classic painting made by famous painter Pablo Picasso named La Soupe.
- Then we made the outline of the painting in the IPad, then exporting it into dxf file type.
- Dxf file is then opened in the LaserDesk Software in the laser lab.
- With the help of laserDesk software, we removed unwanted polygons that were present in the outline.
- After that we filled the polygons with required colours using software.
- In the mean time, the sample was polished for better surface finish, then cleaned using the UV bed for removing fine particles.
- Then it took about 1 minutes 30 second for completing the laser art.

## LEARNING FROM THE OUTCOME

There are several learning outcomes which we came across during the whole process. We have learned the step-by-step process of reproducing any piece of art onto a Ti6Al4V sample using laser etching technology. This includes understanding the setup, calibration, and execution of the laser etching process to achieve accurate replication of artwork.

## PHOTOS OF THE CHALLENGE DONE



## PEER REVIEW GRADES

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