

# LightForge Rapid Prototyping

## Overview:

LightForge™ is a low-cost rapid fabrication service giving optical designers the ability to create innovative new freeform surfaces, test new ideas and verify designs for production without incurring expensive upfront engineering charges and lengthy prototyping lead times.

Uploading a design to the LightForge™ website could not be simpler. The optical surface must be specified on a 10µm grid for x, y and z. After uploading the design, the LightForge™ website runs a design rule check and if accepted, your optic will be ready in as little as 2 weeks.

LightForge™ can be used to create a wide range of refractive optical elements, from beam transformers and microlens arrays, to unique components such as diode laser smile correctors and wavefront compensator phaseplates, to completely custom surface shapes.

The LightForge™ fabrication service can be used for rapid prototyping as a precursor to volume production, or for one-off designs. The clear aperture can be used to test multiple variants of a single design or multiple separate designs.

## The PowerPhotonic Effect:

# 65µm

Maximum Sagitta (Depth)

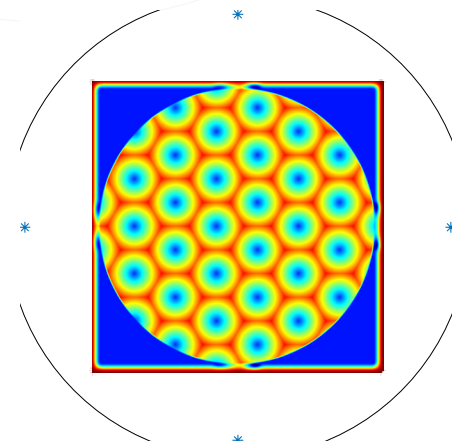
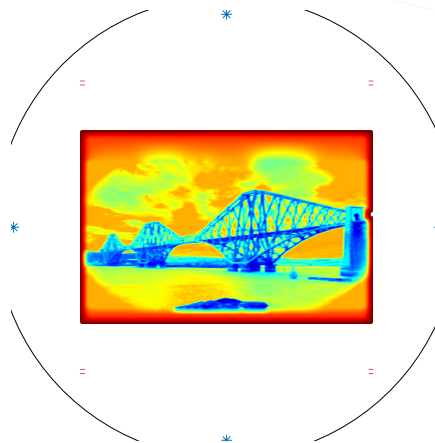
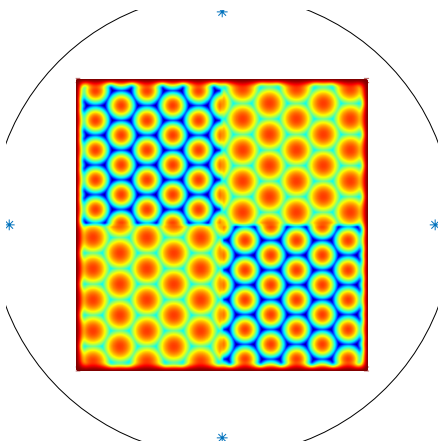
# 15mm

Square Clear Aperture

# 2 Weeks

Lead time

## Design Examples:



## Key Features:

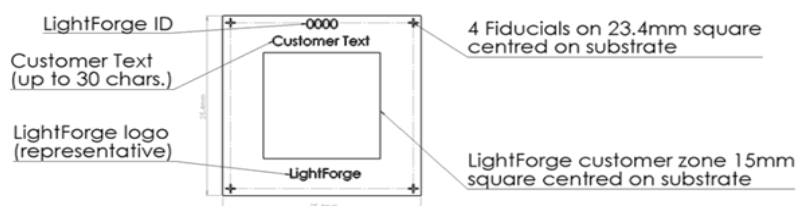
- Short lead time prototyping
- Upload via web
- Fixed design rules
- Zemax to LightForge macro
- AR coatings available

## Target Applications:

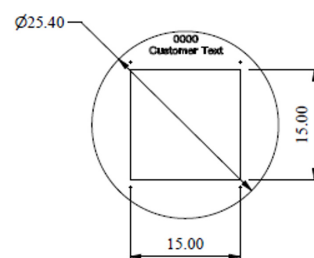
- Beam Shaping
- Imaging Systems
- Laser Material Processing
- Beam Homogenizing

# LightForge Rapid Prototyping

Material Properties		Nominal Specification		
Material	UV fused silica			
Specific Type	Corning 7980			
Transmission	≈ 92% uncoated, >99% coated			
Refractive Index	1.453 @ 808nm			
Mechanical Characteristics		Dimensions and Tolerance		Units
Length (L) or Diameter (D)	25.4 +0/-0.1		mm	
Width (W)	25.4 +0/-0.1		mm	
Thickness	1.0 +/- 0.05		mm	
Optical Characteristics		Dimension		Units
Clear Aperture (X)	15.0		mm	
Clear Aperture (Y)	15.0		mm	
Process Parameters		Range		Units
Sag	0 - 65		μm	
Slope (form error PV < 500nm)	0 - 8		degrees	
Slope	0 - 45		degrees	
Feature Size	200 - 15000		μm	
Steps & Discontinuities	smoothed over 150μm			
Custom Options Available		Notes		
AR Coating	Choice of none; AR-GREEN 532 ± 30nm; AR-IR Broad 780-1020nm; AR-IR-V 1064 nm; AR-TELECOM 1260 - 1620nm;			
Customer Marking	0 - 30 characters, centered above clear aperture			
Mounting Options	2" round interface plate for square substrate			



Square Substrate Dimensions (product code PP-LF-V1)



Round Substrate Dimensions (product code PP-LF-V2)

## Sales and Technical:

### United Kingdom

PowerPhotonic Ltd.  
5A St. David's Drive  
Dalgety Bay  
Fife  
KY11 9PF  
+44 1383 825 910

### North America

PowerPhotonic Inc.  
16220 S. La Cañada Drive  
Sahaurita  
AZ 85629  
United States  
+1 571 866 0551

### Japan

yoshiyuki.mori@powerphotonic.com  
+81 80 1398 0331

sales@powerphotonic.com

© PowerPhotonic 2024. All rights reserved - see www.powerphotonic.com

www.powerphotonic.com

