

# LA-306

## COMPACT HIGH TEMPERATURE INFRARED FURNACE

- Production and Laboratory Applications
- 30-inch IR Heat Chamber, up to 1000°C
- 3 Separately Controlled Heat Zones
- Controlled CDA, N2, & FG Process Atmospheres
- Dual gas option (N2 & Forming Gas) for Low O2
- BRAND NEW Digital Control System



### **THE LA-306 FURNACE**

A compact 3-zone furnace, this furnace is small enough to be used in a laboratory setting and robust enough to often be used for production applications. This model is approximately 10 feet (3070 mm) long and 2 feet (500 mm) wide. The LA-306 has a 6-inch (150 mm) wide belt and 2-inch (50 mm) high product opening. The small chamber offers excellent temperature control and rapid rise to 1000°C. The newly designed control system is easy to use and provides sophisticated zone temperature control. Upper and lower lamps can be independently enabled to operate the furnace in radiant mode, radiant convection mode, or convection mode.

*IR color.* Depending on supply voltage, the furnace will operate in the IR wavelength of 1900-2600 kelvin. Voltage compensation assures the lamps operate consistently at the design color temperature.

### **WHERE IT IS USED (ENVIRONMENT)**

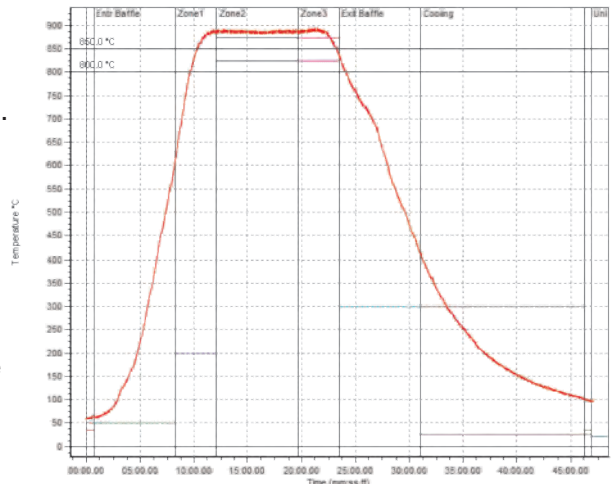
It is used in production and laboratory environments for thermally controlled continuous processes in a controlled atmosphere of nitrogen, forming gas or air. The furnace can heat to 1000C or ~1800F and typically reaches stable process ready in 30 minutes. It is available in a dual gas configuration, a second gas such as forming gas composed of nitrogen and up to 4% hydrogen can be introduced into the furnace chamber while pure nitrogen is used in the rest of the furnace. It runs on single phase 208-240 volt (50/60 Hz) power. It is efficient: when operated at 800°C it draws only 40 amps of current.

### **HOW IT IS USED (TYPICAL APPLICATIONS)**

The LA-306 is used thermal processing of substrates, wafers, PCBs, metal ingots and manufactured parts, ceramic, glass, optical coatings and polycarbonate products. Specific applications include:

- ✘ Precise Curing of Coatings on Optical Lenses
- ✘ General Curing and Drying
- ✘ Semiconductor processing, Package sealing, Epoxy Die Attach, Polymer Curing
- ✘ Copper and Hybrid Thick Film firing
- ✘ Advanced thin film, crystalline silicone, cadmium telluride (CdTe alloys) and certain copper indium diselenide (CIS-alloys) solar cell processing

The LA-306 furnace is popular for dental labs and dental production applications.



**Typical LA-306 880°C Temperature Profile**



**Equipment Model**

Model	Base Equipment	Control Zones	Furnace Heated Length	Nominal Furnace Belt Width
LA-306	Continuous Belt Controlled Atmosphere Furnace	3	30 in 762 mm	6.0 in 152 mm

**Equipment Arrangement**

Phase	Process	Max Temperature (typ)	Length	Process Gas	Temperature (typ)
Phase 1	IR Furnace, 3 Zones	1000 °C	30 in 762 mm	FG	450-950 C
Phase 2	Transition Tunnel		15 in 381 mm	N2	450-750 C
	Gas Convective Cooling, Exterior Fan Heat Removal		30 in 762 mm	N2	35-450 C

**Process Sections**

Function	Name	Location	Length	Process Gas	Temperature (typ)
Product Load	Load Station	Entrance load area	15 in 381 mm	none	ambient
IR Furnace	Entr Baffle/Entrance Eductor	Entrance barrier	15 in 381 mm	N2	410 °C
	Zone 1	Heating chamber 1	7.5 in 191 mm	FG	800 °C
	Zone 2	Heating chamber 1	15 in 381 mm	FG	850 °C
	Zone 3	Heating chamber 1	7.5 in 191 mm	FG	850 °C
Cooling	Trans Tunnel	Heat/cool barrier, single	15 in 381 mm	N2	510 °C
	Gas Convection Cooling	Cooling section	30 in 762 mm	N2	295 °C
Product Unload	Unload Station	Exit unload area	30 in 762 mm	none	ambient
	Frame Adjustment		1 in 25 mm		
	Total		136 in 3454 mm		

**Process Gas**

	Actual Conditions		Typical		Typical (Low O2)		Max (all flowmeters open)	
Furnace Replenishment Rate	Temp °C	Press psi	Min Flow scfh	Min Flow sL/m	Typical scfh	Typical sL/m	scfh	Max Compressor sL/m
N2 Supply	21	70	143	67.5	168	79	662	312
FG Supply	21	70	35	17	121	57	417	197
TOTAL PROCESS GAS			178	84	289	137	1,078	509

**Exhaust Gas**

	Temp °C	Press in H2O	Min Flow scfh	Min Flow sL/m	Typical scfh	Typical sL/m	scfh	Maximum Exhaust sL/m
N2 & FG mix	200	6	89	42	77	37	348	164

**Cabinet Ventilation**

Cabinet Ventilation Fans (vent to room or exhaust system)	Flowrate	550 cfm	930 m3/h
	Temperature	<86°F	<30°C
Control Cabinet Ventilation Fans (vents to room)	Flowrate	212 cfm	360 m3/h
	Temperature	<86°F	<30°C

**Transport System**

Belt width	6.0 in 152.4 mm	Belt Edge Heater(s):	none
Belt type	Balanced spiral weave		
Product height	2 in (50.8 mm) above belt level.	Baffle plate clearance:	0.5" above belt
Belt speed range	1-20 ipm		25-500 mm/m
Conveyor height	36.0 in +/- 1.5 in adjustable		914.4 mm +/-38.1 mm adjustable

**Electrical System**

Voltage required	220 Vac, 50 Hz, 1 Ph
Maximum power required	17.2 kW, 78.2 A
Typical (operating) power required	8.8 kW, 40 A

**Materials of Construction**

Heating Chamber	304 Stainless steel	Cooling	Aluminum, aircraft	Belt	Nichrome V, 80%Ni,20%Cr, <1% Fe
Baffle & Eductor	304 Stainless steel	Belt support	Quartz rod, Quartz tube	Frame	Steel, epoxy or powder coated
Heating element	Quartz, near infrared	Belt Return	UHMW-PE	Cover Panels	18GA steel, epoxy coated

**Furnace Dimensions**

	Length	Width	Height (floor to stack)	Furnace Sect	Coolg Sectn	Total Net Wt
English	136 in	25 in	68 in +/- 1.5 in	1150 LB	none	1150 LB
Metric	3454 mm	635 mm	1715 mm +/- 38.1 mm	530 kg	none	530 kg
Crate, English	145 in	34 in	84 in		Gross Wt:	1673 kg
Crate, Metric	3683 mm	864 mm	2134 mm		Gross Wt:	760 kg

**Standard Conditions**

Pressure	14.7 psia	101.3 kPa	Temperature	70 °F	21 °C
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