

## The Complete Line

BAKE, CURE, DRY . . . MORE THAN JUST OVENS



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# THE OVENS: QUALITY THROUGH MANUFACTURING EXCELLENCE



Precision Welding

Our automated, fully integrated fabrication facility provides us the ability to maintain exceptional tolerances and to produce *perfect parts*. This ensures welding and product construction is solid and will last for decades. We use oversized motors and bearings to provide longer motor life and extra cooling fans to minimize effects of heat. Our non-contact heating elements prohibit burn-out and their wattage precisely matches the chamber size to prohibit temperature overshoot and stress on controllers, increasing longevity and precision.

**The culmination of 35 years industry experience.** Combining our market experience and manufacturing excellence provides a solid foundation for our industrial product offering. We challenge ourselves throughout the process to ask “What is the benefit of this feature to the end user, does it offer value?” This is how we supply outstanding performance and value.



Excellence in Work Force

**Innovation.** Our continual commitment is to improve the product and to provide you with the best equipment for your application. Our manufacturing flexibility and desire to be the best are critical to allowing our ovens and humidity test chamber lines to evolve. We listen to the marketplace so we can respond quickly to changes in requirements and market demands.

**Safety first and throughout.** Safety and quality are built into every product. Safety is our primary consideration in the design and development of all the constant temperature equipment. For this reason, our independent overtemperature protection (OTP) operates independently from the main controller. The dual-control, fail-safe function means a second system will ensure that temperature setpoint is never exceeded. Also, the heating elements are strategically placed outside the stainless steel oven chamber, thus protecting them from accidental spills inside the chamber.



Powder Coat Finish

**Powder Coat Paint Process and Finish.** We provide a powder coat paint finish for exteriors that is corrosion-resistant and easy to clean. Our fully automated, electrostatic paint process provides a durable and flawless product surface. Total paint coverage is ensured to protect the unit under continuous usage. This finish is applied as a powder and then baked at a high temperature resulting in a finish that is hard, durable, and eliminates chipping.



Quality Inspection

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## Horizontal Air Flow Diagram

A high volume blower system circulates air through stainless steel air ducts, providing horizontal *one pass* airflow. This horizontal airflow provides superior temperature uniformity and fast heat-up capabilities. The unique air ducts move heated air and direct it to the right side of the chamber. This slightly pressurized air escapes through the small perforations in the chamber wall, flows across each shelf picking up moisture and then this is gently cushioned through large openings on the opposite chamber wall. Our precise horizontal airflow delivers performance even under maximum capacity oven loads.



## Gravity Convection Air Flow Diagram

Our gravity ovens rely on the natural thermal properties of heating – warm air rises. We utilize this airflow and combine it with our unique air duct system to allow heated air to move up through these ducts improving uniformity. Gravity ovens are commonly used in applications when *natural heating* is required without the assistance of fans or blowers. This technology is ideal for applications which include samples that are sensitive to air movement i.e. powders.

## Oven Selection Guide

### Standard Oven Series

Airflow  
Chamber Size (cu. ft.)  
(liters)  
Maximum Temperature  
Temperature Controller  
Timer/Electronic  
Air Intake Capabilities  
Air Exhaust Capabilities  
Interior Chamber Finish  
Exterior Chamber Finish

				
<b>High Performance</b> Programmable Forced Air Floor Models Page 6	<b>High Performance</b> Programmable Forced Air Benchtop Models Page 5	<b>General Purpose</b> CE Forced Air Page 8	<b>General Purpose</b> CE Gravity Page 8	<b>Large Reach-In</b> Forced Air Page 9
Horizontal Forced Air 10-30 cu. ft. 305-934 lit. 260°C	Horizontal Forced Air 4,4 cu. ft. 124.6 lit. 300°C	Horizontal Forced Air 3.0 & 5.0 cu. ft. 85 & 142 lit. 225°C	Gravity Convection 3.4 & 5.4 cu. ft. 96 & 153 lit. 225°C	Back to Front Forced Air 13.6 and 28.0 cu. ft. 385 & 793 lit. 200°C
Microprocessor, Programmable Inclusive/Main Controller Adjustable Adjustable Stainless Steel Powder Coat Paint	Microprocessor, Programmable Inclusive/Main Controller Adjustable Adjustable Stainless Steel Powder Coat Paint	Microprocessor, Single Setpoint Microprocessor/99hr/59min Not Adjustable Adj. Sliding Damper Stainless Steel Powder Coat Paint	Microprocessor, Single Setpoint Microprocessor/99hr/59min Not Adjustable Adj. Sliding Damper Stainless Steel Powder Coat Paint	Microprocessor, Single Setpoint Microprocessor/99hr/59min Adj. Sliding damper Adj. Sliding Damper Stainless Steel Powder Coat Paint

### Specialty Chambers

Air Flow  
Chamber Size (cu. ft.)  
(liters)  
Maximum Temperature  
Temperature Controller  
Vacuum Capabilities  
HEPA Filter, Internal  
Inert Gas Capabilities  
Humidity Control  
Interior Chamber Finish  
Exterior Chamber Finish

				
<b>Vacuum Ovens</b> 1400 Series Page 10	<b>Class 100</b> CR1-2 Page 4	<b>Inert Atmosphere</b> HF2-2 Page 4	<b>Production Vacuum</b> VPX9-2 Page 11	<b>Humidity Cabinets</b> HC Series Page 7
N/A 3 sizes-0.6/1.7/4.5 cu. ft. 16/47/127.5 lit. 240°C	Horizontal Forced Air 3.7 cu. ft. 105 lit. 250°C	Horizontal Forced Air 4.4 cu. ft. 124.6 lit. 300°C	N/A 9.0 cu. ft. 255 lit. 220°C	Horizontal Forced Air 3 sizes-5/10/30 cu. ft. 141.5/283.3/850 lit. 70°C
Microprocessor, Single Setpoint Yes No Yes No Stainless Steel Powder Coat Paint	Microprocessor, Programmable No Yes Yes No Stainless Steel Stainless Steel	Microprocessor, Programmable No No Yes No Stainless Steel Powder Coat Paint	Microprocessor, Programmable Yes No Yes No Stainless Steel Stainless Steel	Microprocessor, Single Setpoint No No No Yes Stainless Steel Powder Coat Paint

# Specialty Ovens

## Cleanroom Models: CR1-2 | HF2-2

**24-Step Programmable Microprocessor**

**Internal HEPA Filter (CR1-2 only)**  
Class 100 Air. The high efficiency particulate air (HEPA) filter screens out 95% of airborne particles as small as 0.3 micron. The stainless steel interior surface minimizes particulates as well.

**Sturdy Shelves (Perforated Solid 304 sliding stainless shelves)**

**Exterior #304 Stainless Steel (CR1-2 Only)**

**Adjustable Air Intake & Exhaust**

**Superior Uniformity**  
Dual fan wheels with oversized ball bearing motor and Stainless Steel shaft

**Triple Wrap Insulation**

**Two Door Gaskets To Ensure Seal**

**Horizontal Airflow**

**Optional Caster Stand**

**Model CR1-2**

Dual Fan Wheels

### Features/Benefits

- Horizontal air flow provides excellent uniformity and fast heating
- 0.3 micron internal HEPA filter (Model CR1) meets Class 100 Cleanroom requirements
- Nitrogen inlet allows for dry, oxygen-free environment to reduce oxidation.
- Inert gas purge
- Fully welded seams for efficient usage of inert gas and prevention of chamber contamination

### Applications

Temperature processing in a Class 100 environment including:

- Epoxy Curing
- Electronic Devices
- Circuit Board Drying
- Depyrogenation of Glassware

These models include all the quality features noted for the High Performance Horizontal Airflow Ovens on Page 5. Model CR1-2 is built to meet the needs of the Class 100 cleanroom. The unit comes standard with a high efficiency particulate air (HEPA) filter to screen out 95% of the airborne particles as small as 0.3 microns. Filters are easily removed and replaced. To further minimize surface particulates, the cleanroom oven has a stainless steel exterior.

**Inert Gas Capability.** A gas inlet is supplied in both models which is used for nitrogen purging applications. It provides the ability to create a dry, oxygen-free atmosphere which reduces product oxidation. The pressurizing action of the nitrogen also inhibits the entry of contaminants.

**Seam Welded Interior.** The specialty ovens feature insulation which is encapsulated between fully welded, air-tight seams, preventing fibers from entering into the work interior and contaminating samples.

**The Innovation.** A chamber door gasket eliminates heated air leakage. In addition, the door hinges are user adjustable to maintain a positive seal over the life of the oven. Features include 3" air intake and exhaust ports, door latch and punched stainless steel shelves which are user adjustable to 1/2" increments for maximum end user customization.

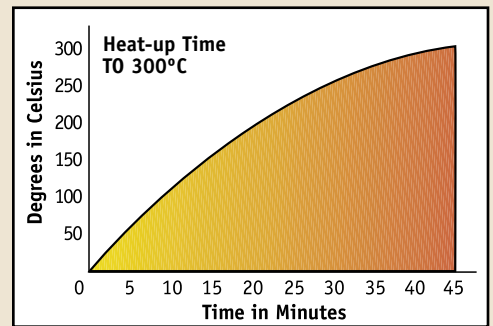
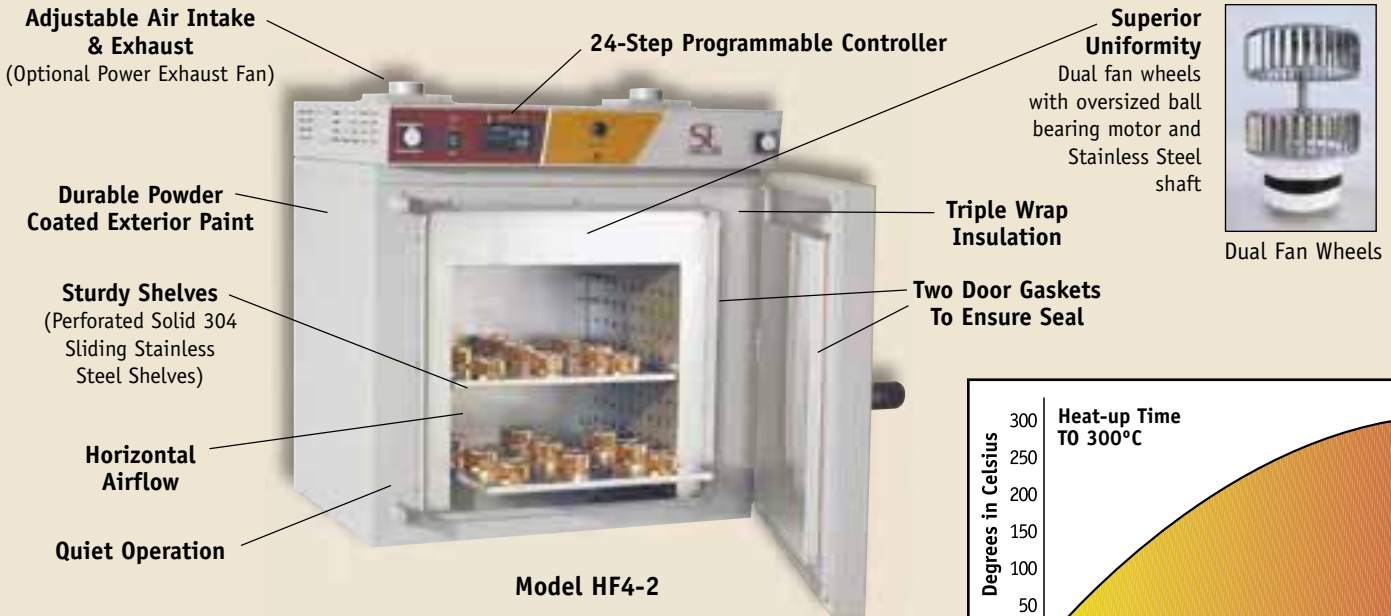
### Unique Shelf Design Sure Load System

Our unique shelf design is adjustable in seconds. Simply lift the solid, one piece shelf standard from the side wall and reposition. This non-tip, sliding shelf design is a first of its kind and our design team has positioned the shelving slots efficiently to ensure that the shelf standard will not hinder airflow within the chamber.



# High Performance Horizontal Airflow Ovens

## Benchtop Model: HF4-2



**True Horizontal Air Flow, One Pass.** A high volume blower system circulates air through stainless steel air ducts, providing horizontal *one pass* airflow. This horizontal airflow provides superior temperature uniformity and fast heat-up capabilities. Our precise horizontal airflow delivers performance regardless of oven load. See Page 3 for diagram and additional data.

**Efficient, Low Maintenance Motors.** We use a dual blower system to protect from motor burn out and minimize oven downtime. One blower is used to dissipate heat away from the motor and bearings, while the other is used to move the heated air throughout the chamber. Large motors with oversize bearings provide long-life and low maintenance. Because stainless steel does not efficiently conduct heat, a half-inch stainless steel wall separates the motor from the chamber to minimize heat transfer.

**Programmable, 24-Step Ramp and Soak Controller.** It provides a flexible and accurate Watlow temperature controller. The controller is microprocessor-based providing 24-step ramp and soak user capability or single setpoint operation. Ramping operations include ramp/time or time-based programming, guaranteed soak deviation, program looping and program status selection after power outages. A sealed membrane touch-pad control panel protects the electronics.

**The Innovation.** To maintain temperature and reduce heat loss, we utilize two layers of 3-1/2" thick insulation on all five sides of the chamber. The two layers eliminate a seam and ensure that the insulation does not settle from heat exposure. A chamber door gasket eliminates heated air leakage. In addition, the door hinges are user adjustable to maintain a positive seal over the life of the oven. Features include 3" air intake and exhaust ports, door latch and punched stainless steel shelves which are user adjustable to 1/2" increments for maximum end user customization. The independent overtemperature protection (OTP) and powder coated paint finish are detailed on Page 2. Accessory power exhaust and chamber stands are available.

**Sure Load Shelf System.** Shelves adjust in seconds.

### Features/Benefits

- Programmable 24-Step Ramp and Soak Controller enables use at one temperature or complex ramp and soak settings
- Adjustable Air Intake and Exhaust Port gives user flexibility to dry, bake or cure
- Dual gasket door design for improved temperature uniformity and overall performance
- Triple wall construction offers superior uniformity
- Temperature to 300°C for versatility of applications
- Stainless steel interior shelves are highly corrosion-resistant

### Applications

- Batch Testing
- Sterilizing
- Electronic Burn-In
- Conditioning
- Preheating Process
- Aging Tests
- Components Processing
- Stability Testing
- Glassware Drying
- Asphalt Testing

# High Performance Horizontal Airflow Ovens

Large Capacity Models: HF10-2 | HF15-2 | HF25-2 | HF37-2

Model  
HF25-2



Model  
HF37-2



Model  
HF10-2



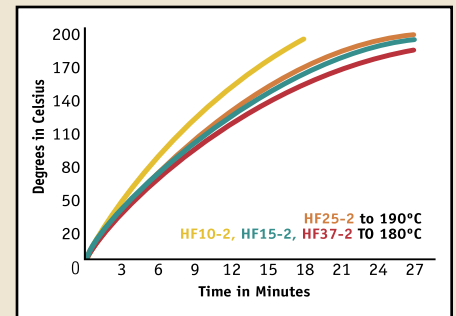
Model  
HF15-2



**Superior Uniformity**  
Dual fan wheels  
with oversized  
ball bearing  
motor and  
Stainless Steel  
shaft



Dual Fan Wheels



## Features/Benefits

- Programmable 24-Step Ramp and Soak Controller enables use at one temperature and complex ramp and soak settings
- Adjustable Air Intake and Exhaust Port for customized drying times
- Dual gasket door design for improved temperature uniformity and overall performance
- Triple wall construction offers superior uniformity
- Temperature to 260°C for versatility of applications
- Stainless steel interior shelves are highly corrosion-resistant

## Applications

- Batch Testing
- Sterilizing
- Electronic Burn-In
- Conditioning
- Preheating Process
- Aging Tests
- Components Processing
- Stability Testing
- Glassware Drying
- Asphalt Testing

### Programmable, 24-Step Ramp and Soak Controller.

It provides a flexible and accurate Watlow temperature controller. The microprocessor-based controller provides 24-step ramp and soak user capability or single setpoint operation. Ramping operations include ramp/time or time/based programming, guaranteed soak deviation, program looping and program status selection after power outages. A sealed membrane touch-pad control panel protects the electronics.

### True Horizontal Air Flow, One Pass.

A high volume blower system circulates air through stainless steel air ducts, providing horizontal *one pass* airflow. This horizontal airflow provides superior temperature uniformity, and fast heat-up capabilities. Our precise horizontal airflow delivers performance even under maximum capacity oven loads. See Page 3 for diagram and additional data.

### Efficient, Low Maintenance Motors.

To protect from motor burn out and oven downtime, we use a dual blower system. One blower is used to dissipate heat away from the motor and bearings, while the other is used to move the heated air throughout the chamber. Large motors with oversize bearings provide long-life and low maintenance. Because stainless steel does not conduct heat efficiently, a half inch stainless steel wall separates the motor from the chamber to minimize heat transfer.

### The Innovation.

To maintain temperature and reduce heat loss, we utilize two layers of 3-1/2" thick insulation on all five sides of the chamber. The two layers eliminate a seam and ensure that the insulation does not settle from heat exposure. A chamber door gasket eliminates heated air leakage. In addition, the door latch and hinges are user adjustable to maintain a positive seal over the life of the oven. Features include 3" air intake and exhaust ports, door latch and punched stainless steel shelves which are user adjustable to 1/2" increments for maximum customization.

### The

independent overtemperature protection (OTP) and powder coat paint finish are featured and described in detail on Page 2. Accessory power exhaust and chamber stands available.

**Sure Load Shelf System.** Shelves adjust in seconds.

# Humidity / Environmental Test Chambers

Models: HC5, HC5-R | HC9, HC9-R | HC30, HC30-R



Model HC30

The Humidity Test Chambers provide a controlled environment for a wide range of industrial and biotechnical testing applications. This line is designed to duplicate natural conditions, which allows you to determine the limitations of a sample when exposed to various temperature and moisture fluctuations.

**Vapor Generator for Humidity Control.** It offers an innovative, low-pressure water vapor generator to control chamber humidification. This process compresses moisture and injects it into the chamber. Our humidity controller system is more reliable than the nebulization used by other manufacturers. This process is preferable to steam generation because steam introduces additional heat to the chamber atmosphere which can compromise temperature control. The innovative vapor generator technology prevents the humidity generation components from vibrating, thus reducing maintenance and ensuring value.

Units are plumbed for standard water hookup and have a drain located in the bottom of the chamber. Operators can use a gravity feed water system or in-house water supply.

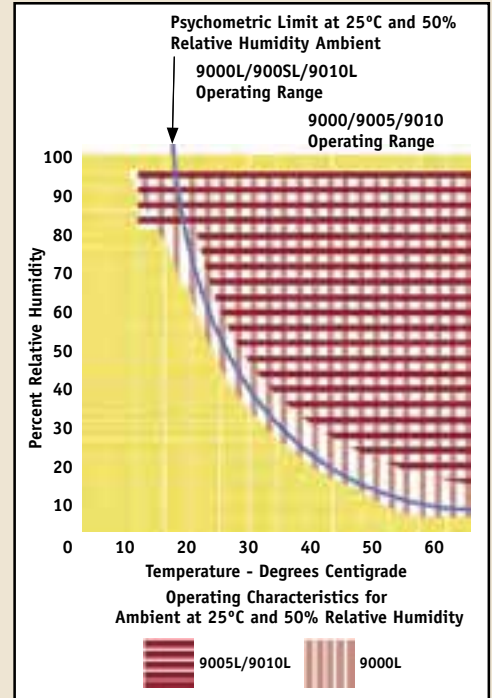
### Microprocessor Controls and Digital Display for both Temperature and Humidity.

Microprocessor temperature and humidity controls with digital display provides optimal stability and allow for accurate control. Controllers have easy-to-use keypad, touch pads and a calibration feature. Setpoints have memory capabilities in the event of power outages.

**Safety Features.** The safety controller is an independent, overtemperature protection (OTP) that operates independently from the main controller. The dual-control, fail-safe function means a second system will ensure that temperature setpoint is never exceeded. By operating independently, it will take over and control the heating function if the main temperature setpoint is exceeded.

**Water-Jacket Models Temperature Control.** The small size Models HC5 and HC5-R feature a 16-gallon water-jacket design for optimal thermal insulation. These units are well equipped with separate fill and drain ports for quick and easy use. Uniquely designed copper strips act as a natural deterrent to algae growth and the anti-fungal door gasket is easily removed for cleaning or replacement.

**Air-Jacket Models for Temperature Control.** Our other floor models feature large air-jackets, which evenly disperse air within the walls to maintain excellent uniformity and ensure proper insulation. A blower is located in the top of the chamber and air ducts are on the sides.



### Features/Benefits

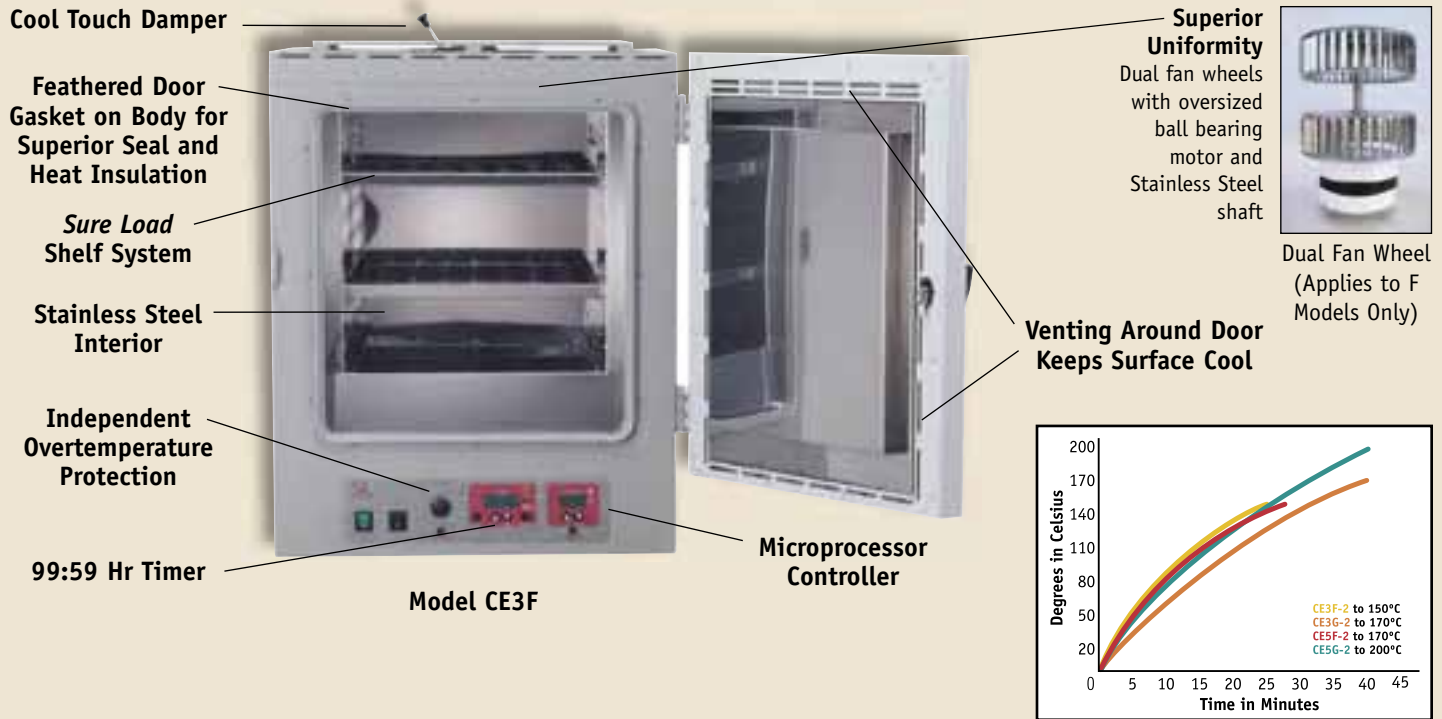
- Three sizes for versatility
- Stainless steel chambers are seamless for durability, corrosion-resistance and quality
- Low-pressure water vapor generator system provides humidification without generating additional heat
- Microprocessor controls and digital readout display both temperature and humidity values
- Refrigerated models provide extended performance for temperature and RH ranges
- Two layers of insulation to maintain temperature and reduce heat loss

### Applications

- Shelf Life and Half-Life Testing
- Packaging
- Sterility Testing
- Mil-Specifications
- Component Burn-In
- Vapor Transmission

# General Purpose Ovens

**Benchtop Models:** CE3F | CE5F | CE3G | CE5G



## Features/Benefits

- Horizontal air flow for forced air models
- Electronic Timer for convenience of operation
- Stainless steel interior and shelves for durability and corrosion-resistance
- Three inch adjustable exhaust port for modifying airflow per applications
- Adjustable exhaust ports aid in venting oven and allow for flexibility in drying times and applications.
- Two layers of insulation to maintain temperature and reduce heat loss.
- Chamber door gasket along with positive door latch help prevent heated air leakage

## Applications

- Glassware Drying
- Sterilizing
- Aging Test
- Stability Testing
- Electronic Burn-in

**The New Standard in General Purpose Ovens.** Models are available in both Forced Air (F) and Gravity Convection (G) configurations. Two sizes-3 and 5 cubic feet are available.

**Microprocessor Controls and Digital Temperature Display.** Microprocessor temperature control with digital display provides optimal stability and allows for accurate control. Controllers have easy-to-use keypad, touch pads and a calibration feature. Setpoints have memory capabilities in the event of power outages.

**Electronic Timer for Convenience of Operation.** The digital, electronic timer provides the user with the ability to automatically turn off the oven at the end of an application cycle. The timer has a range of one minute to 99 hours/59 minutes and is activated by an independent power switch.

**Safety Features.** The safety controller is an independent, overtemperature protection (OTP) that operates independently from the main controller. The dual-control, fail-safe function means a second system will ensure that temperature setpoint is never exceeded. By operating independently, it will take over and control the heating function if the main temperature controller malfunctions.

The bottom of the chamber is solid, thus separated from the heating elements. This important design eliminates danger to the user and prevents damage to the oven from spills. Heating elements are non-contact and low watt density.

## Unique Shelf Design *Sure Load System*

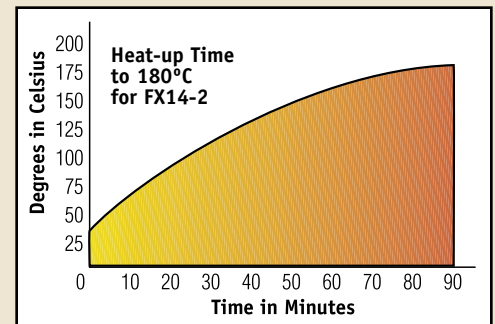
Our unique shelf design is adjustable in seconds. Simply lift the solid, one piece shelf standard from the side wall and reposition. This non-tip, sliding shelf design is a first of its kind and our design team has positioned the shelving slots efficiently to ensure that the shelf standard will not hinder airflow within the chamber.





## General Purpose

Large Reach-In Models: FX14-2 | FX28-2



**Large Capacity Chambers.** The FX14-2 features 14 cu. ft. of general purpose space. The FX28-2 at 28 cu. ft. is the largest general purpose oven on the market. These large capacity units are perfect for high volume sample processing and drying applications including production processes.

**Precise Temperature Control: Technology.** The independent overtemperature protection (OTP) control is user adjustable and provides added security against temperature overshoot. Other important standard features include a precision microprocessor controller, 99 hr./59 min. electronic timer and true forced air horizontal airflow.

**Precise Temperature Control: Construction.** We specify 3-1/2" of insulation, wrapped in two layers. This seamless construction eliminates a seam and ensures that the insulation does not settle as a result of extended heat exposure. A chamber door gasket eliminates heated air leakage. The door hinges are user adjustable to maintain a positive seal over the life of the oven.

**True Horizontal Airflow.** The blower-assisted airflow design facilitates temperature uniformity and fast recovery. A turbo blower and heavy-duty motor combine to direct heated air over the shelves and samples for even, constant drying, curing and baking.

### Features/Benefits

- Large capacity is efficient and accommodating
- True horizontal airflow provides excellent uniformity and faster heat-up
- Microprocessor control for precise temperature control
- Independent Safety Controller
- 99 hr./59 min Electronic Timer automatically turns off at selected time
- Adjustable exhaust port controls the rate of drying

### Applications

- Batch Testing
- Sterilizing
- Electronic Burn-in
- Aging Tests
- Glassware Drying
- Stability Testing

## Vacuum Ovens

Digital 1400 Series Models: 1425 | 1445 | 1465



Model 1445

### Cross-Flow Ventilation featured in all Vacuum Ovens

The vacuum ovens feature a unique cross-flow ventilation design to ensure superior performance. The vacuum port is located inside the chamber on the top, left side, while the vent port is located on the bottom right side of the chamber. During vacuum operation, heavy particles and condensation from the oven interior are not pulled into the vacuum pump. More importantly, Nitrogen or other inert gas is forced across the greatest distance inside the oven chamber, passing over your samples and purging the chamber. Corrosion resistant stainless steel tubing is used for the gas purge piping system.

### Features/Benefits:

- Cross-flow ventilation for extended applications
- True solid brass valves with Teflon seats to prevent leaks and extended longevity
- Stainless steel chambers provide durable construction and corrosion-resistance
- Double plenum design allows for cool outer surface
- Easily interchangeable door gaskets
- Microprocessor controlled for precise temperature stability
- Selection of gaskets available for special applications (see chart Page 15)

### Applications:

- Vacuum Drying and Curing
- Moisture Determination
- Out-gassing Solids and Liquids
- Aging Tests
- Electronic Process Control
- Vacuum Embedding
- Vacuum Storage
- Plating

The company has been an innovator with our vacuum oven lines being the first to bring square vacuum ovens to the industry. Vacuum ovens are used for a variety of applications such as drying, curing and moisture content testing.

**Cool Outer Surface.** Our double plenum design exceeds CE safety requirements.

**Introduced Gas Saturates Chamber Uniformly.** Our unique cross-flow ventilation forces inert gas to fill the entire chamber.

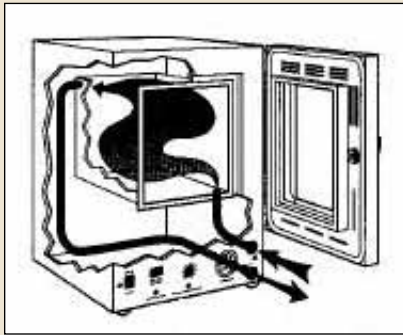
**Maintains Precise Temperature.** Our PID controller, combined with appropriately sized heating elements, maintains precise temperature stability with no overshoot.

**Won't Overheat.** Our independent overtemperature protection (OTP) control maintains chamber temperature in the event of a main control malfunction.

The **Innovation.** All of our vacuum ovens are built with a stainless steel chamber for exceptional durability. We use true brass vacuum valves built with 3/8" orifices to withstand heavy use and minimize downtime. The doors have positive latch handles with spring loaded glass to facilitate optimal vacuum seal without leaks. A selection of gaskets (for specific applications) and a small footprint increase the versatility of our ovens.

# Vacuum Oven Station

Model: VPX9-2



Inert Gas Flow Diagram



Power On/Off  
Vacuum Pump On/Off  
Pump/Vent Valve  
Purge/Vent Valve

Safety High Limit Control  
Digital Vacuum Gauge  
Ramp & Soak Microprocessor Controller  
Safety Reset Button

Model VPX9-2

**Unique Design.** The Model VPX9-2 is a general purpose vacuum oven specially designed for professional and industrial use. The combination of the oven and a ruggedly constructed mobile stand create an ideal vacuum application station. The stand is designed for mounting a vacuum pump at the base. All vacuum plumbing and KF25 connections are provided (vacuum pump not included).

**Precision Controllers.** The Watlow 981 temperature controller, programmable and microprocessor based, offers multiple ramp and soak capabilities, including storing and running up to 24 temperature profiles. A secondary independent high limit temperature controller provides overtemperature protection (OTP). The VPX9-2 is one of the largest capacity vacuum ovens commercially available. Controls are easily adjustable and feature a user-friendly interface. A digital vacuum gauge shows chamber vacuum level in measurements of Torr and m/Torr.

**Rugged Construction.** High grade stainless steel construction is used for the exterior and chamber interior. Vacuum valves incorporate 3/8" brass orifices to withstand heavy use.

**Introduced Gas Saturates Chamber Uniformly.** Our unique cross-flow ventilation design forces Nitrogen or other inert gases to fill the entire chamber. Gas is forced across the greatest distance of the chamber, purging the chamber as it passes over the samples. Corrosion resistant stainless steel tubing is used for the gas purge piping system. Use this feature to reduce effects of oxidation.

## Features/Benefits

- Large capacity is efficient and accommodating
- All stainless steel construction
- Programmable Controller
- Digital Vacuum Gauge for accuracy
- Cross-flow ventilation allows for a dry oxygen free environment.
- System ready to receive vacuum pump

## Applications

- Electronic Process Control
- Vacuum Drying and Curing
- Moisture Determination
- Aging Tests
- Vacuum Embedding
- Vacuum Storage and Plating

# OVEN SPECIFICATIONS

Specialty Ovens Model	CR1-2* pg. 4	HF2-2* pg. 4	HF4-2* pg. 5
System Type	Class 100 Cleanroom Mechanical Convection	Inert Atmosphere Cleanroom Mechanical Convection	High Performance Mechanical Convection
Controls/Display	24-Step Programmable	24-Step Programmable	24-Step Programmable
Chamber Capacity (Cubic Feet) (Liters)	3.7 cu. ft. 105 lit.	4.4 cu. ft. 124.6 lit.	4.4 cu. ft. 124.6 lit.
Temperature Range	Amb. +15 to 250°C	Amb. +15 to 300°C	Amb. +15 to 300°C
Temperature Uniformity	± 1.0°C at 110°C	± 1.0°C at 110°C	± 1.0°C at 110°C
High Limit Control	Yes	Yes	Yes
Heat-up time to 180°C (in minutes)	31 min.	20 min.	20 min.
Recovery time to 110°C (in minutes)	4 min.	4 min.	4 min.
Timer	Yes	Yes	Yes
External Dimensions in inches (wdh) (cm)	35 x 29 x 38" 89 x 73.7 x 96.5	35 x 29 x 38" 89 x 73.7 x 96.5	35 x 29 x 38" 89 x 73.7 x 96.5
Internal Dimensions in inches (wdh) (cm)	17 x 20.125 x 20.125" 43.2 x 51 x 51	17 x 20.125 x 20.125" 43.2 x 51 x 51	17 x 20.125 x 20.125" 43.2 x 51 x 51
Shelves Supplied	2 Shelves	2 Shelves	2 Shelves
Maximum Shelves	8 Shelves	8 Shelves	8 Shelves
Shipping Weight in pounds (kilograms)	250 lbs. 113.4 kgs.	240 lbs. 109 kgs.	240 lbs. 109 kgs.
Certifications	CE	CE	CE
Element Wattage	2200	2200	2200
Electrical Requirements Max. Amp draw at 120Vac Max. Amp draw at 220Vac Power Frequency/Phase	N/A 10 50-60 Hz/Single Phase	N/A 12 50-60 Hz/Single Phase	N/A 12 50-60 Hz/Single Phase

\*-2 denotes 220V. NOTE: HEPA filter may be weakened if oven is operated above 200°C.

Humidity/Env. Test Chambers Model	HCS HCS-2* pg. 7	HC5R HC5R-2* pg. 7	HC9 HC9-2* pg. 7	HC9R HC9R-2* pg. 7
System Type	Humidity Test Cabinet	Humidity Test Cabinet	Humidity Test Cabinet	Humidity Test Cabinet
Controls/Display	Single Setpoint mProc.	Single Setpoint mProc.	Single Setpoint mProc.	Single Setpoint mProc.
Jacket Type	Water Jacket	Water Jacket	Air Jacket	Air Jacket
Chamber Capacity (Cubic Feet) (Liters)	5 cu. ft. 141.5 lit.	5 cu. ft. 141.5 lit.	10 cu. ft. 283.3 lit.	10 cu. ft. 283.3 lit.
Temperature Range	Amb. +15 to 70°C	Amb. +15 to 70°C	Amb. +15 to 70°C	Amb. +15 to 70°C
Temperature Uniformity	± 0.35°C at 37°C	± 0.35°C at 37°C	± 0.5°C at 37°C	± 0.5°C at 37°C
RH Control Range	Amb. +10 to 95% at 25°C	Amb. +10 to 95% at 25°C	Amb. +10 to 95% at 25°C	Amb. +10 to 95% at 25°C
External Dimensions in inches (wdh) (cm)	25 x 26.25 x 46.25" 63.5 x 66.76 x 117.5	25 x 26.25 x 46.25" 63.5 x 66.7 x 117.5	44 x 29 x 60" 111.8 x 73.7 x 152.4	44 x 29 x 60" 111.8 x 73.7 x 152.4
Internal Dimensions in inches (wdh) (cm)	19.5 x 18.5 x 24.25" 49.5 x 47 x 61.6	19.5 x 18.5 x 24.25" 49.5 x 47 x 61.6	30 x 20 x 30" 76.2 x 50.8 x 76.2	30 x 20 x 30" 76.2 x 50.8 x 76.2
Shelves Supplied	6 Shelves	6 Shelves	3 Shelves	3 Shelves
Maximum Shelves	12 Shelves	12 Shelves	8 Shelves	8 Shelves
Shipping Weight in pounds (kilograms)	410 lbs. 186 kgs.	425 lbs. 193 kgs.	640 lbs. 290 kgs.	660 lbs. 299 kgs.
Certifications	CE	CE	CE	CE
Electrical Requirements Max. Watts at 120Vac Max. Watts at 220Vac Max. Amp draw at 120Vac Max. Amp draw at 220Vac Power Frequency/Phase	1200 990 10 4.5 50-60 Hz/Single Phase	1920 1870 16 8.5 50-60 Hz/Single Phase	1560 1430 13 6.5 50-60 Hz/Single Phase	1920 1870 14 8.5 50-60 Hz/Single Phase

\*-2 denotes 220V, R = Refrigerated. NOTE: Use distilled water only. Operating Specifications may vary depending on ambient conditions.

High Performance Model	pg. 6 HF10-2*	pg. 6 HF15-2*	pg. 6 HF25-2*	pg. 6 HF37-2*
System Type	Horizontal Forced Air Mechanical Convection	Horizontal Forced Air Mechanical Convection	Horizontal Forced Air Mechanical Convection	Horizontal Forced Air Mechanical Convection
Controls/Display	24-Step Programmable	24-Step Programmable	24-Step Programmable	24-Step Programmable
Chamber Capacity (Cubic Feet) (Liters)	10 cu. ft. 305 lit.	13.8 cu. ft. 392 lit.	28 cu. ft. 972 lit.	33 cu. ft. 934 lit.
Temperature Range	Amb. +15 to 260°C	Amb. +15 to 260°C	Amb. +15 to 260°C	Amb. +15 to 260°C
Temperature Uniformity	± 1.5°C at 110°C	± 1.5°C at 110°C	± 1.5°C at 110°C	± 2°C at 110°C
High Limit Control	Yes	Yes	Yes	Yes
Heat-up time to 180°C (in minutes)	18 min.	22 min.	20 min.	28 min.
Recovery time to 180°C (in minutes)	5 min.	10 min.	8 min.	15 min.
Recovery time to 110°C (in minutes)	4 min.	6 min.	4 min.	12 min.
Timer	Yes	Yes	Yes	Yes
External Dimensions in inches (wdh) (cm)	44 x 28.25 x 55" 112 x 72 x 142	54.5 x 28 x 55.625" 138 x 71 x 141	42.5 x 33.375 x 84.75" 108 x 85 x 215	68 x 33.125 x 78.375" 173 x 84 x 199
Internal Dimensions in inches (wdh) (cm)	30 x 19.75 x 30.187" 76 x 50 x 77	20.125 x 19.75 x 30.187" 51 x 50 x 77	31.625 x 26 x 61" 80 x 63.5 x 155	21.875 x 24 x 54.25" 56 x 61 x 138
Shelves Supplied	3 Shelves	6 Shelves	6 Shelves	12 Shelves
Maximum Shelves	6 Shelves	12 Shelves	12 Shelves	24 Shelves
Shipping Weight in pounds (kilograms)	435 lbs. 198 kgs.	545 lbs. 247 kgs.	660 lbs. 300 kgs.	980 lbs. 445 kgs.
Certifications	N/A	N/A	N/A	N/A
Element Wattage	5500	5500	11000	11000
Electrical Requirements Max. Amp draw at 120Vac Max. Amp draw at 220Vac Power Frequency/Phase	N/A 26 50-60 Hz/Single Phase	N/A 26 50-60 Hz/Single Phase	N/A 50 50-60 Hz/Single Phase	N/A 50 50-60 Hz/Single Phase

\*-2 denotes 220V

pg. 7 HC30 HC30-2*	pg. 7 HC30R HC30R-2*
Humidity Test Cabinet	Humidity Test Cabinet
Single Setpoint mProc.	Single Setpoint mProc.
Air Jacket	Air Jacket
30 cu. ft. 850 lit.	30 cu. ft. 850 Lit.
Amb. +15 to 70°C ± 0.5°C at 37°C	Amb. +15 to 70°C ± 0.5°C at 37°C
Amb. +10 to 95% at 25°C	Amb. +10 to 95% at 25°C
43 x 35 x 85" 109 x 89 x 216	43 x 35 x 85" 109 x 89 x 216
31 x 27.5 x 61.5" 78.7 x 69.8 x 156.2	31 x 27.5 x 61.5" 78.7 x 69.8 x 156.2
6 Shelves	6 Shelves
16 Shelves	16 Shelves
660 lbs. 299 kgs.	680 lbs. 309 kgs.
CE	CE
1440 1430 12 6.5 50-60 Hz/Single Phase	1680 16500 14 7.5 50-60 Hz/Single Phase



Model HC5

General Purpose Model	CE3F CE3F-2* pg. 8	CE5F CE5F-2* pg. 8	CE3G CE3G-2* pg. 8	CE5G CE5G-2* pg. 8
System Type	Mechanical Convection	Mechanical Convection	Gravity Convection	Gravity Convection
Controls/Display	Single Setpoint mProc.	Single Setpoint mProc.	Single Setpoint mProc.	Single Setpoint mProc.
Chamber Capacity (Cubic Feet) (Liters)	3 cu. ft. 85 lit.	5 cu. ft. 142 lit.	3.4 cu. ft. 96 lit.	5.4 cu. ft. 153 lit.
Temperature Range	Amb. +15 to 240°C	Amb. +15 to 240°C	Amb. +15 to 240°C	Amb. +15 to 240°C
Temperature Uniformity	± 1.5°C at 110°C	± 1.5°C at 110°C	± 2°C at 110°C	± 2°C at 110°C
High Limit Control	Yes	Yes	Yes	Yes
External Dimensions in inches (wdh) (cm)	25 x 26.8 x 33.5" 64.8 x 68 x 85	30 x 26.8 x 38" 76.2 x 68 x 96.5	25.5 x 26.8 x 33.5" 64.8 x 68 x 85	30 x 26.8 x 38" 76.2 x 68 x 96.5
Internal Dimensions in inches (wdh) (cm)	16.5 x 19.5 x 16.5" 42 x 49.5 x 42	21 x 19.5 x 21" 53.3 x 49.5 x 53.3	16.5 x 19.5 x 16.5" 42 x 49.5 x 42	21 x 19.5 x 21" 53.3 x 49.5 x 53.3
Shelves Supplied	2 Shelves	2 Shelves	2 Shelves	2 Shelves
Maximum Shelves	8 Shelves	8 Shelves	8 Shelves	8 Shelves
Shipping Weight in pounds (kilograms)	170 lbs. 77 kgs.	258 lbs. 117 kgs.	160 lbs. 72.5 kgs.	248 lbs. 112 kgs.
Certifications	UL, CE (220Vac only)	UL, CE (220Vac only)	UL, CE (220Vac only)	UL, CE (220Vac only)
Element Wattage	1100	1500	1100	1500
Electrical Requirements Max. Amp draw at 120Vac Max. Amp draw at 220Vac Power Frequency/Phase	10 5 50-60 Hz/Single Phase	13 7 50-60 Hz/Single Phase	10 5 50-60 Hz/Single Phase	13 7 50-60 Hz/Single Phase

\*-2 denotes 220V

Vacuum Ovens Model	1425 1425-2* pg. 10	1445 1445-2* pg. 10	1465 1465-2* pg. 10
System Type	Vacuum Oven	Vacuum Oven	Vacuum Oven
Controls/Display	Digital mProc.	Digital mProc.	Digital mProc.
Chamber Capacity (Cubic Feet) (Liters)	0.6 cu. ft. 16 lit.	1.7 cu. ft. 47 lit.	4.5 cu. ft. 127.5 lit.
Temperature Range	Amb. +15 to 240°C	Amb. +15 to 240°C	Amb. +15 to 240°C
Temperature Uniformity	± 3.5% of Setpoint	± 3.5% of Setpoint	± 3.5% of Setpoint
High Limit Control	Yes-Independent	Yes-Independent	Yes-Independent
External Dimensions in inches (wdh) (cm)	23 x 19 x 17" 58.4 x 48.3 x 43.2	26 x 27 x 20" 66 x 68.6 x 50.8	32 x 31 x 26" 81.3 x 78.7 x 66
Internal Dimensions in inches (wdh) (cm)	9 x 12 x 9" 23 x 30.5 x 23	12 x 20 x 12" 30.5 x 50.8 x 30.5	18 x 24 x 18" 45.7 x 61 x 45.7
Vacuum Gauge	Analog	Analog	Analog
Standard Gasket Material	Silicon	Silicon	Silicon
Shelves Supplied	3 Shelves - Aluminum	3 Shelves - Aluminum	3 Shelves - Aluminum
Maximum Shelves	3 Shelves	3 Shelves	3 Shelves
Shipping Weight in pounds (kilograms)	145 lbs. 65.8 kgs.	250 lbs. 113.4 kgs.	450 lbs. 204 kgs.
Certifications	UL, CE	UL, CE	UL, CE
Electrical Requirements Max. Watts at 120Vac Max. Watts at 220Vac Max. Amp draw at 120Vac Max. Amp draw at 220Vac Power Frequency/Phase	750 750 7.0 3.5 50-60 Hz/Single Phase	1150 1150 10.0 5.25 50-60 Hz/Single Phase	1500 1500 13 7 50-60 Hz/Single Phase

\*-2 denotes 220V

General Purpose Model	pg. 9	
	FX14-2*	FX28-2*
System Type	Mechanical Convection	Mechanical Convection
Controls/Display	Single Setpoint mProc.	Single Setpoint mProc.
Chamber Capacity (Cubic Feet) (Liters)	13.6 cu. ft. 385 lit.	28 cu. ft. 793 lit.
Temperature Range	Amb. +15 to 200°C	Amb. +5 to 200°C
Temperature Uniformity	± 3°C at 110°C	± 3°C at 110°C
High Limit Control	Yes	Yes
External Dimensions in inches (wdh) (cm)	37 x 34 x 47" 94 x 86.4 x 119.4	37 x 34 x 78.5" 94 x 86.4 x 200
Internal Dimensions in inches (wdh) (cm)	31 x 25 x 31" 78.74 x 63.5 x 78.74	31 x 25 x 62" 78.74 x 63.5 x 147.48
Shelves Supplied	3 Shelves	6 Shelves
Maximum Shelves	8 Shelves	16 Shelves
Shipping Weight in pounds (kilograms)	340 154	450 204
Certifications	N/A	N/A
Element Wattage	2000	4000
Electrical Requirements		
Max. Amp draw at 120Vac	N/A	N/A
Max. Amp draw at 220Vac	10	19
Power Frequency/Phase	50-60 Hz/Single Phase	50-60 Hz/Single Phase

\*-2 denotes 220V



Vacuum Oven Station Model	pg. 11	
	VPX9-2*	
System Type	Vacuum Oven Station	
Controls/Display	Digital mProc.	
Chamber Capacity (Cubic Feet) (Liters)	9.0 cu. ft. 255 lit.	
Temperature Range	Amb. +15 to 220°C	
Temperature Uniformity	± 3.5% of Setpoint	
High Limit Control	Yes-Independent	
External Dimensions in inches (wdh) (cm)	36.25 x 45 x 62" 92 x 114.3 x 157.5	
Internal Dimensions in inches (wdh) (cm)	28 x 24 x 24" 71 x 61 x 61	
Vacuum Gauge	Digital-m/Torr Scale	
Standard Gasket Material	Viton	
Shelves Supplied	3 Aluminum	
Maximum Shelves	3 Shelves	
Shipping Weight in pounds (kilograms)	980 lbs. 445 kgs.	
Certifications	N/A	
Element Wattage	3500	
Electrical Requirements		
Max. Amp draw at 120Vac	N/A	
Max. Amp draw at 220Vac	16	
Power Frequency/Phase	50-60 Hz/Single Phase	

\*-2 denotes 220V

Vacuum Oven Optional Gasket Chart				
Application	Max Temp	Gasket	Model	Part #
General & High Temp	300°C	Black Silicone	1425	100029
General & High Temp	300°C	Black Silicone	1445	100037
General & High Temp	300°C	Black Silicone	1465	310028
Acidic	250°C	FlouroSilicone	1425	3450610
Acidic	250°C	FlouroSilicone	1445	3450611
Acidic	250°C	FlouroSilicone	1465	3450612
Solvent	150°C	Buna Gaskets	1425	100049
Solvent	150°C	Buna Gaskets	1445	100038
Solvent	150°C	Buna Gaskets	1465	891054