

Drying Oven Safety Guidelines – ECORe Autoclave Room 219

- Use PPE to protect against heat burns (hot gloves, eye glasses, lab coat) Always have a pair of hot gloves available near the oven for protection from hot surfaces. Hot glass looks just like cold glass. Do not test temperatures with fingers. Always wear BOTH hot gloves as a precaution.
- Inspect the oven prior to each use and ensure it is in good operating condition. Check the cord and outlet for any damage. Ensure any temperature sensing devices are properly installed and will turn off power in the event of overheating.
- If the oven is not operating within normal operating parameters, it must be taken out of service and not used until repairs are made. Place “DO NOT USE. OUT OF ORDER” sign on oven door to prevent use. Contact Biology Facilities Technician, Bob Hodge: bhodge@uwindsor.ca or xt3527
- Regularly check oven calibration to ensure the temperature read-out is accurate. This is normally performed with a thermometer. Never use a mercury thermometer.
- Consider the maximum temperature needed and the temperature range of the oven. Do not use the oven that will significantly exceed the maximum safe working temperature.
- Do not load the bottom of the interior workspace to avoid the risk of overheating any samples placed there.
- Arrange the samples evenly throughout the work space, making sure not to place them too closely to the interior walls to ensure a uniform temperature distribution.
- Do not load the oven with substances that exceed the capabilities of the available lab apparatus
- Check the door seal once a month for proper sealing performance and possible damage.
- Ensure that the oven is set to the proper temperature required for the experiment. This includes the high temperature shut-off set point.
- Do not heat closed containers unless using specifically authorized equipment that includes an approved pressure relief device.
- The oven should remain clean and free of chemical spills and residues. Glasswares to be used in oven should also remain clean and free of chemical spills and residues.

- Do not use materials in the oven that are flammable or can create flammable vapors. This presents a fire or explosion hazard.
- Use of plastics in the oven must be avoided due to the possibility of melting. Many plastics have melting points within the range of a drying oven. If plastic melts, it can cause a fire.
- Ensure that the heating process will not create any hazardous fumes.
- Do not store combustible materials such as plastics, paper and cardboard on top, under, behind, or next to the oven. Store flammable liquids and combustible materials away from hot surfaces.
- Open hot oven with care. Stand to one side when opening the door to avoid high temperature.

Emergency Response Plan:

- In case of emergency:
 1. If possible, turn off oven.
 2. Exit room immediately: if possible, ensure doors are closed.
 3. Follow the CORE shared emergency response plan protocols.
 4. In case of spill, follow the biological spill procedure. Spill kit is located inside room 219.
 5. If the oven is not operating, contact Biology Facilities Technician, Bob Hodge: bhodge@uwindor.ca or xt3527
 6. Do not re-enter the room or use oven unless it is cleared to do so.



**Gravity Convection Ovens
Models 89511-404/406/408**

**Forced Air Ovens
Models 89511-410/412/414**

50142848 Revision 00 November 2013



Safety Notes

Basic Operating Precautions

These operating instructions describe VWR ovens.

VWR ovens have been manufactured to the latest state of the art and been tested thoroughly for flawless functioning prior to shipping. However, the oven may present potential hazards, particularly if it is operated by inadequately trained personnel or if it is not used in accordance with the intended purpose. Therefore, the following must be observed for the sake of accident prevention:

- Never step into the unit.
- VWR ovens must be operated by adequately trained and authorized professional personnel.
- VWR ovens must not be operated unless these operating instructions have been fully read and understood.
- The present operating instructions, applicable safety data sheets, plant hygiene guidelines and the corresponding technical rules issued by the operator shall be used to create written procedures targeted at personnel working with the subject matter device, detailing:
 - the safety precautions to be taken when processing specific agents,
 - the measures to be taken in case of accidents.
- Repair work on the oven must be carried out only by trained and authorized expert personnel.
- The contents of these operating instructions are subject to change at any time without further notice.
- Concerning translations into foreign languages, the German version of these operating instructions is binding.
- Keep these operating instructions close to the oven so that safety instructions and important information are always accessible.
- Should you encounter problems that are not detailed adequately in these operating instructions, please contact VWR International, LLC immediately for your own safety.





Operational Safety Rules

The following rules must be heeded when working with VWR ovens:










- Do not load the bottom of the interior workspace to avoid the risk of overheating any samples placed there.
- Arrange the samples evenly throughout the work space, making sure not to place them too closely to the interior walls to ensure a uniform temperature distribution.
- Do not load your VWR oven with substances that exceed the capabilities of the available lab apparatus and Personal Protection Equipment to provide sufficient degrees of protection to users and third parties.
- Check the door seal once a month for proper sealing performance and possible damage.
- Do not process any samples containing hazardous chemical substances that may be released into the ambient air through defective seals or may cause corrosion or other defects on parts of the VWR oven.

Explanation of Safety Information and Symbols

Safety Notes and Symbols Used Throughout These Operating Instructions

	 <p>DANGER</p> <p>Indicates a hazardous situation which, if not avoided, will result in death or serious injuries.</p>
	 <p>WARNING</p> <p>Indicates a hazardous situation which, if not avoided, could result in death or serious injuries.</p>
	 <p>CAUTION</p> <p>Indicates a situation which, if not avoided, could result in damage to equipment or property.</p>
	 <p>NOTE</p> <p>Is used for useful hints and information regarding the application.</p>

Additional Symbols for Safety Information

	Wear safety gloves!
	Wear safety goggles!
	Harmful liquids!
	Electric shock!
	Hot surfaces!
	Fire hazard!
	Explosion hazard!
	Suffocation hazard!
	Danger of tipping!

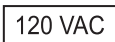
Symbols on the Oven



Observe operating instructions



Mark of conformity USA/Canada



120 Volts AC power socket

Intended use of the device

Correct Use

VWR ovens are laboratory devices for heating applications, equipped with precision temperature control.

They are designed for heat treating samples or materials at operating temperatures between 50 °C (122 °F) and 250 °C (482 °F), including - for example, drying, aging, analyzing, decomposing, burn-in, oxidizing, reducing, and preheating.

VWR ovens have been designed for installation and operation in the following environments:

- heat treatment;
- drying of material.

Incorrect Use

To avoid the risk of explosion do not load the oven with tissue, material, or liquids that:

- are easily flammable or explosive;
- release vapor or dust that forms combustible or explosive mixtures when exposed to air;
- release poisons;
- create a humid atmosphere;
- release dust;
- exhibit exothermic reactions;
- are pyrotechnical substances;
- exceed the specified hurdle load.

Operation

Preparing the Oven

- The door seal in the front frame must not be damaged.
- The shelving components must be installed safely.

Disinfecting the Oven's Work Space



Disinfect the work space according to the operator-specified hygiene guidelines.

Starting Operation


1. Turn the oven on using the control panel.
2. Adjust the temperature set value on the control panel.
3. The temperature controller starts adjusting the work space to the user-specified temperature set value now.



NOTE


Upon initial installation and subsequent heat-up, this appliance may produce an odor and trace evolution of non-toxic vapor that results from brake-out of the insulation binder. This condition is normal for factory-new products and will diminish with continued operation.

		To avoid any risk of explosion or fire
<ul style="list-style-type: none">• refrain from loading the oven with any of the substances listed in the section “Incorrect Use” on page 1-5• make sure that the ambient air is free of any solvents• do not operate the oven in areas with an explosion hazard		

4. Load the work space with samples.

	Risk of overloading
<p>Overloading may damage the shelves or cause the shelves and/or the oven to tilt when the shelves are being drawn out, ultimately destroying the samples. To avoid overloading the oven or its shelving be sure to observe the sample weight limits specified in see “Technical Data” on page 13-1.</p>	

		Hot surfaces
<p>After opening the door, this may swing back automatically.</p> <p>The interior panel of the outer door as well as the surfaces of the outer housing, the shelving and the work space become extremely hot while the oven runs through its heating cycles.</p> <p>When removing samples from a running or recently completed heating cycle, always wear safety gloves and other appropriate personal protection equipment to avoid burns on hot surfaces!</p>		

	Proper loading
<p>To ensure sufficient air circulation and uniform heating of the samples, do not use more than 70% of the maximum surface area of the work space. Bulky objects in the work space that dissipate heat may impair heat distribution.</p>	

Handling and Control

VWR gravity convection and forced air ovens come with a front panel mounted control unit consisting of a multifunctional display, four control buttons, and an on/off button. The four control buttons interact with the display window to let users access all of the user control functions and adjustments of the oven, including - for example, the temperature set value, timer, as well as a variety of other functions.

Under normal operating conditions the display presents user with the work space temperature. The display returns to its default mode upon completion of the adjustments or whenever no entries have been made for a period of 30 seconds.






The graphic below shows the control panel with all of its visualization elements and controls.

Figure 7-1 Control Panel for VWR gravity convection and forced air ovens



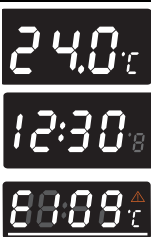



The table below contains brief descriptions of the buttons on the control panel (items K1 through K5 in [figure 7-1](#)).

Table 7-1 Control Buttons

Icon	Item	Function
	K1	<p>Menu/Enter button First key press: Activates the menu, highlighting the first menu item with a red border. Second key press: Selects the currently activated menu item (as highlighted by the red border). At the same time, pressing this button enables entries with item D1. Third key press (once a setting has been changed): Confirms a previous entry or selection.</p>
	K2	<p>Left button After the first press of the Menu/Enter button: - Moves the selection in the menu (see item D2) to the next icon on the left. Once a menu item has been selected: - Decreases an adjustable parameter value - for example, the temperature set value in D1. Holding this button depressed for a few seconds changes the selected value in quick run mode.</p>
	K3	<p>On/Off button Holding this button depressed for 2 seconds switches the oven off. The display window goes out, except for the readiness indicator icon in the status display area at item D3. The temperature display pane D1 provides as dimmed readout of the work space temperature, provided that the temperature exceeds 50 °C (122 °F).</p>
	K4	<p>Right button After the first press of Menu/Enter button: - Moves the selection in the menu (see item D2) to the next icon on the right. Once a menu item has been selected: - Increases an adjustable parameter value - for example, the temperature set value in D1. Holding this button depressed for a few seconds changes the selected value in quick run mode.</p>
	K5	<p>Escape button Returns to the previous level of the menu or standard display. Upon exiting from the current menu item the user may be prompted to save any previously made settings.</p>

The table below contains brief descriptions of the display features of the control panel (items D1 through D3 in [figure 7-1](#); the identifiers K1 through K4 refer to the buttons shown in that figure).

Table 7-2 Display Features

Feature	Item	Function
	D1	<p>Display pane showing a permanent readout of the actual temperature in the work space either in °C or °F (depending on the user's preferences, see “Toggling the Temperature Display Unit” on page 7-11).</p> <p>A flashing time entry prompt of the general format hh:mm (hours:minutes, both with two digits) appears in this place while the user is setting up a timer.</p> <p>Upon occurrence of an error condition, the current error code flashes in this area. Additionally, the red alarm icon at D3 flashes.</p>
	D2	<p>Menu bar with iconized representations of adjustable parameters. A red border is used to highlight the current menu item, as selected using the Menu (K1) and arrow buttons Left (K2) and Right (K4). Brief descriptions of the individual menu items are given in table 7-3 below.</p> <p>Note If a menu item cannot be selected, then the function it represents is not part of the equipment configuration of your unit.</p>
	D3	<p>Alarm icon: Upon occurrence of an error condition, the red alarm icon will be illuminated. At the same time the current error code will flash in the display pane D1. The alarm may be acknowledged by pressing the  button.</p>

The table below contains brief descriptions of the menu bar icons (item D2 in [figure 7-1](#)).

Table 7-3 Menu Bar Icons





Icon	Function
	<p>Temperature Set Value</p> <p>Allows for changing the temperature set value within the permissible temperature range. The set value can be changed by pressing the Left and Right (item K2 or K4) and you can, after confirming your changes with the Menu/Enter button (item K1), track the impact on the actual temperature in the display pane at D1.</p> <p>Instructions: “Temperature Set Value” on page 7-6.</p>
	<p>Timer</p> <p>Allows for having the oven turn on and/or off upon expiry of a user-specified countdown period. When the user enables an “on timer” the oven goes out. A rotating in the Timer icon and the illuminated readiness indicator icon in the status display area indicates that the timer is running.</p> <p>Instructions: “Timer” on page 7-7.</p>
	<p>Settings</p> <p>Invokes a submenu with the following functions:</p> <ul style="list-style-type: none"> - Read access to error log - Calibrating the oven - Toggling the temperature display unit between °C and °F - Entering a configuration control code <p>(Instructions: “Settings” on page 7-9)</p>

Table 7-3 Menu Bar Icons

Icon	Function
	<p>Readiness Indicator: Illuminated when the oven has been switched off using the On/Off button (item K3 in figure 7-1). Unlike other menu items, this icon cannot be selected. (Instructions: “Switching the Oven Off / Powering Down” on page 7-5)</p>

	<div style="background-color: #0056b3; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">NOTE</div> <p>Button Inactivity Monitoring</p> <p>When no button is pressed for more than 30 seconds in any selected menu item, the display exits from the selected screen and returns to default display mode.</p>
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Powering Up

1. Plug the power plug of the oven into a suitable protection-earthed AC power outlet.



In the display window on the front panel the readiness indicator icon (top right item at D3 in [figure 7-1](#) on [page 7-1](#)) is illuminated.



2. Keep the **On/Off** button depressed for two seconds.

An initialization routine will be run after the oven has been powered up. Once initialization has been completed, the display will light up and the current work space temperature will appear in the temperature display pane (item D1 in [figure 7-1](#) on [page 7-1](#)). The oven is ready for use now.

Switching the Oven Off / Powering Down



1. Keep the **On/Off** button depressed for two seconds.



The display window goes out, except for the readiness indicator icon (rightmost icon in the top right item at D3 in [figure 7-1](#) on [page 7-1](#)) and a residual heat temperature readout in case the work space temperature is still higher than 50 °C/122 °F. The oven is switched off now.



Temperature Set Value

VWR ovens allow for setting the desired work space temperature directly using only a few button presses. After confirming the new temperature set value, you may trace the resulting temperature change in the temperature display pane (item D1 in [figure 7-1](#) on [page 7-1](#)).

You can also use the temperature set value to speed up cool-down subsequent to a drying or heating process. Temperatures as low as ambient +10 °C can be selected, this requires open damper and no additional heat in unit. You can set the oven to a set temperature of 0 °C (32 °F), though, to speed up cool-down. This is achieved in one single step, as described further below.

Table 7-4 Adjusting the Temperature Set Value

	<p>Press to activate the menu bar, then use to select the Temperature icon and press to confirm.</p>
	<p>In the temperature display pane, press or to adjust a new temperature set value, then press to confirm your settings.</p>
	<p>The display returns to its default mode. The actual temperature measured in the work space and shown in the temperature display area starts to change until it reaches the newly adjusted set value.</p>

Table 7-5 Using the Temperature Set Value to Speed Up Cool-Down

	<p>At the end of the drying or heating process, press to activate the menu bar, then use to select the Temperature icon and press to confirm.</p>
	<p>In the temperature display pane, press to lower the temperature set value to 50 °C/122 °F, then on to 0 °C (32 °F) in one additional step. When the display reads 0 °C (32 °F), press to confirm your settings.</p>
	<p>The display returns to its default mode. The actual temperature measured in the work space and shown in the temperature display area starts to drop, showing the progress of the cool-down process.</p>



Timer

The **Timer** feature from the menu bar enables the user to set a “countdown-type” on or off timer that switches the oven on or off after a preset period of time. Instructions for setting an off timer are given in [table 7-6](#) (see below), while its use as an on timer is described in [table 7-7](#) on [page 7-7](#).

Programming a turn-on time causes the oven to shut down until it is scheduled to restart, while a turn-off time keeps it running before it shuts down at the user-specified time. The timer starts running immediately as soon as the user confirms his or her entries.

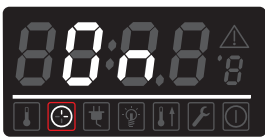


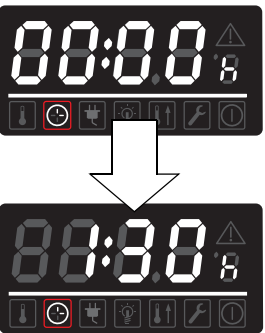





Table 7-6 Setting a Countdown-type Off Timer

	<p>Press to activate the menu bar, then use to select the Timer icon and press to confirm.</p>
	<p>The word OFF appears in the multifunctional display pane. Choose the off timer with .</p>
	<p>Set the hours and minutes until the oven is supposed to shut down by pressing or , then press to confirm.</p>
	<p>The display returns to its default mode. In the menu bar, the Timer icon is illuminated and a is rotating on the icon's face.</p>

Table 7-7 Setting a Countdown-type On Timer

	<p>Press to activate the menu bar, then use to select the Timer icon and press to confirm.</p>
	<p>The word Off appears in the multifunctional display pane.</p>

Table 7-7 Setting a Countdown-type On Timer

	<p>Press  to select the On timer option and confirm the selection with .</p>
	<p>Set the hours and minutes until the oven is supposed to turn on by pressing  or , then press  to confirm.</p>
 	<p>The oven switches off. The display goes out, the Timer icon is illuminated in the menu bar with a hand rotating on its face. Additionally, the readiness indicator icon is illuminated.</p>

Stopping a Timer

Table 7-8 Stopping an Off Timer Before It Expires













	<p>Press  to activate the menu bar, then use  to select the Timer icon and press  to confirm.</p>
	<p>Confirm the OFF by pressing , then press  to return to the main menu.</p>
	<p>In the menu bar, the Timer icon  will go out. The display returns to its default mode.</p>

Table 7-9 Stopping an On Timer Before It Expires

	<p>To cancel a pre-programmed on timer while the oven is switched off, hold the On/Off button depressed for a few seconds.</p>
	<p>In the menu bar, the Timer icon  will go out. The display returns to its default mode.</p>

Temperature Display Unit

The **Settings** ->°C / °F menu item allows for toggling the unit used for displaying temperatures between degrees Centigrade and Fahrenheit.

Table 7-12 Toggling the Temperature Display Unit








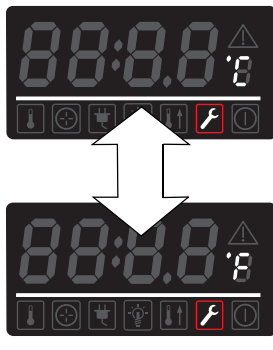





	<p>Press  to activate the menu bar, then use  or  to select the Settings icon and press  to confirm.</p>
	<p>Press  to switch to the C - F menu item. The text C - F is flashing in the display pane.</p>

Table 7-12 Toggling the Temperature Display Unit

	<p>Press the  button.</p> <p>The currently unused temperature unit °C or °F is flashing in the display pane. (The factory default setting is °F.)</p> <p>Press  or  to switch to the desired temperature unit and confirm the selection with .</p>
	<p>The temperature unit to the right of the temperature display field (item D1 in figure 7-1 on page 7-1) has changed according to your selection.</p> <p>The display returns to its default mode.</p> <p>The Settings icon in the menu bar will go out.</p>

Configuration

The **Settings -> Configuration** menu item enables the user to enter a four-digit code that loads a specific set of operating parameters for the oven.

Table 7-13 Entering the Four-digit Code









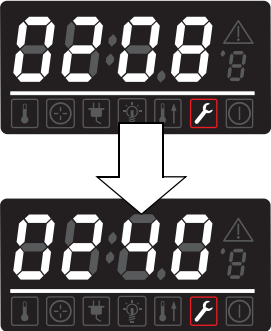





	<p>Press  to activate the menu bar, then use  or  to select the Settings icon and press  to confirm.</p>
	<p>Press  to switch to the ConF(iguration) menu item. The word ConF will be flashing in the multifunctional display pane.</p> <p>Press the  button.</p>

Table 7-13 Entering the Four-digit Code

	<p>The multifunctional display pane will present a prompt similar to the example shown at left, with the first digit of the four-digit configuration code flashing.</p> <p>Set the first digit of the configuration code using  (or ) and confirm your setting with .</p> <p>Set the remaining three digits exactly as described above.</p> <p>Enter code "1234" to reset the user calibration.</p> <p>By confirming your entry for the last digit with , the new configuration is activated immediately.</p>
	<p>The display returns to its default mode.</p> <p>The Settings icon in the menu bar will go out.</p>