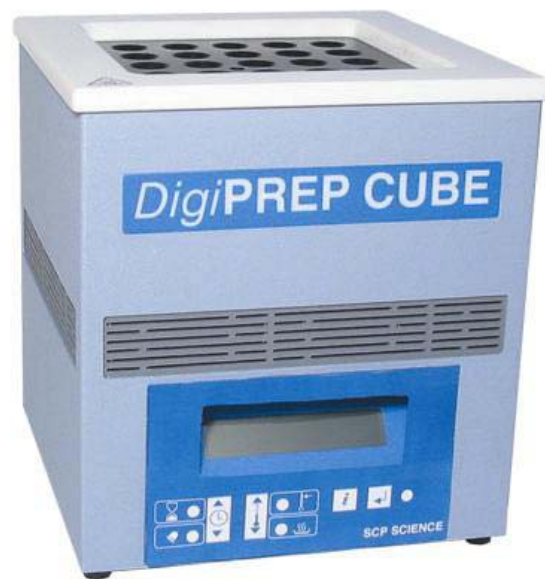


OPERATION MANUAL



*Digi***PREP CUBE** Digestion System

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Patents Pending

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OPERATIONAL PRECAUTIONS

DigiPREP CUBE must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electrical shock by providing an escape wire for electrical current. *DigiPREP CUBE* is supplied with an electrical cord having a grounding wire with a grounding plug. Ensure that the plug is plugged into an outlet that has been properly installed and grounded. Consult a qualified electrician if there is any doubt about the existence of proper grounding at the outlet.

DigiPREP CUBE is designed to be lifted from the bottom only. Do not attempt to lift the unit by the top white trim as damage may result.

DigiPREP CUBE is an elevated temperature digestion system with exposed hot surfaces. Attention must be given when working around the instrument during operation.

CAUTIONS AND NOTES

Cautions and notes are included throughout this manual and should be read thoroughly and strictly followed.



Caution: A Caution is used to emphasize essential information pertaining to procedures, which if not strictly followed, may result in damage or destruction to the instrument or improper instrument operation.



Warning: A Warning is used to emphasize essential information about dangerous or hazardous conditions, relating to the operation, cleaning and maintenance of the instrument, which may result in personal injury.



Note: A Note is used to emphasize procedures or conditions, which may otherwise be misinterpreted or overlooked, and to clarify possible confusing situations.

ACRONYMS / DEFINITIONS

COD	Chemical Oxygen Demand
DIN	Deutsches Institut für Normung
EPA	Environmental Protection Agency
LCD	Liquid Crystal Display

INTRODUCTION

The *DigiPREP CUBE* Digestion System is designed for laboratory use in digesting a wide variety of samples. Its primary purpose is in the digestion of closed vessel COD type digestion or other 16mm diameter sample digesting techniques.

To the best of our knowledge, the information contained herein is accurate. However, **SCP SCIENCE** cannot accept liability of any kind for the accuracy or completeness of the information contained in this manual. The final determination of the suitability and proper use of the instrument described herein, the accuracy of the information and data obtained from such use, and whether such use infringes any patents or the legal safeguards of others are the sole responsibility of the user.




SAFETY INFORMATION

Block digestion systems require that a minimum of safety considerations be followed in order to maintain good laboratory practice.

- Do not mount *DigiPREP CUBE* on a surface of flammable material.
- *DigiPREP CUBE* requires a clearance of 3 inches from all sides.
- *DigiPREP CUBE* should be located in an operable fume hood.
- *DigiPREP CUBE* must be plugged into a grounded outlet.

SYMBOLS

Symbol	Description
V	Voltage
~	Alternating Current
A	Current
Hz	Frequency
F	Fast Acting Fuse

Symbol	Description
I	Mains On
0	Mains Off
	Attention, Consult Accompanying Documents
	Caution, Hot Surfaces
	Protective Conductor Terminal

INSTALLATION

The *DigiPREP CUBE* Digestion System should be installed in a laboratory fume hood with proper fume evacuation.



Line voltage fluctuations greater than 10% will affect instrument performance.

Unpacking

1. Carefully open shipping carton, using caution to avoid puncturing or tearing the packaging.



Retain all packing material for use if returning the instrument to the manufacturer for service.

2. By lifting the system from the bottom with two hands, remove *DigiPREP CUBE* from the carton and place it in the laboratory fume hood.
3. Verify that all components listed on page 6 (see figure 1) have been included:
 - *DigiPREP CUBE* Digestion Block
 - Detachable Power Cord
 - Operation Manual

Carefully check the packing list(s) and the contents of shipping cartons to verify that all items listed are included. Please notify **SCP SCIENCE** or your local distributor of any discrepancies.

Components

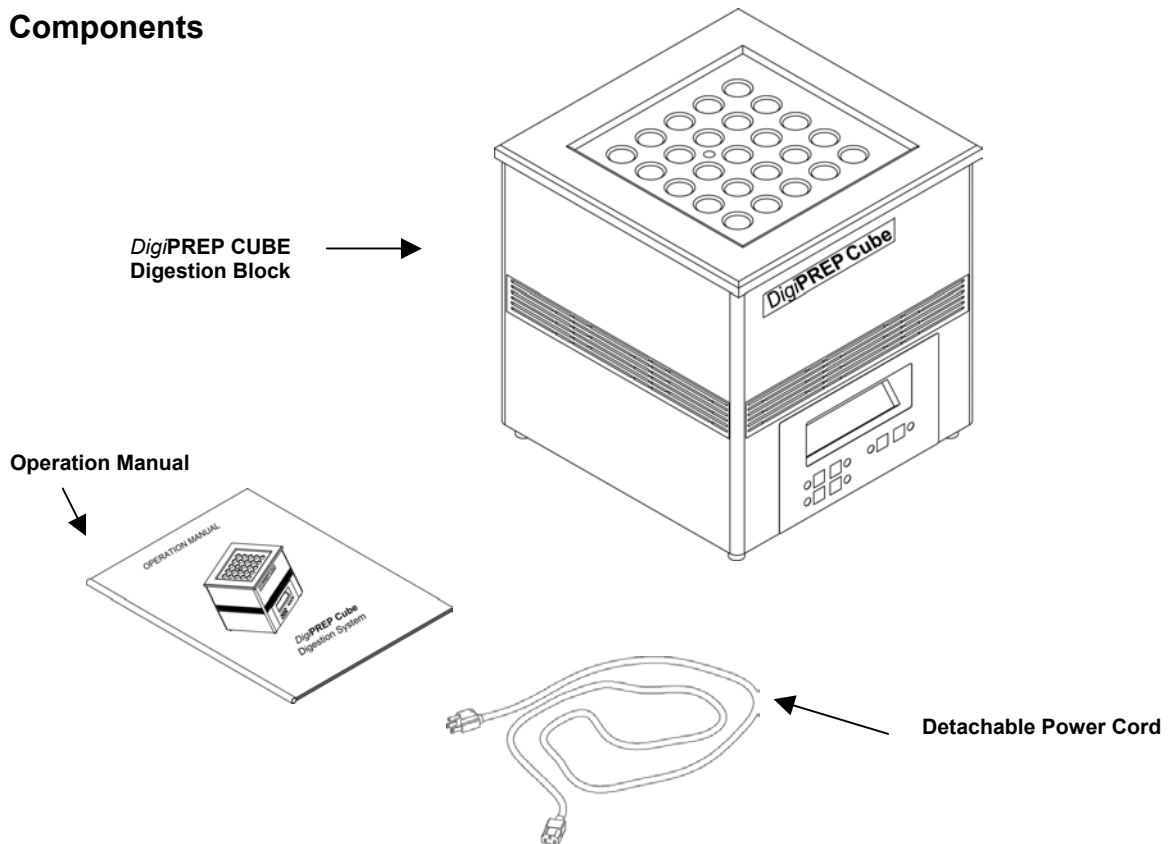


Figure 1: Components

Inspection

1. Inspect the instrument for any shipping damage in the graphite block or controller casing.
2. Inspect all of the cartons to verify a complete shipment.



If damage is noted, do not attempt instrument operation.

If the instrument has been damaged in shipping, contact the freight carrier to report damage and to file a damage report. Contact **SCP SCIENCE** Service Department or the local distributor to report damage and to request service information (See SERVICE DEPARTMENT on page 15).

INSTRUMENT DESCRIPTION

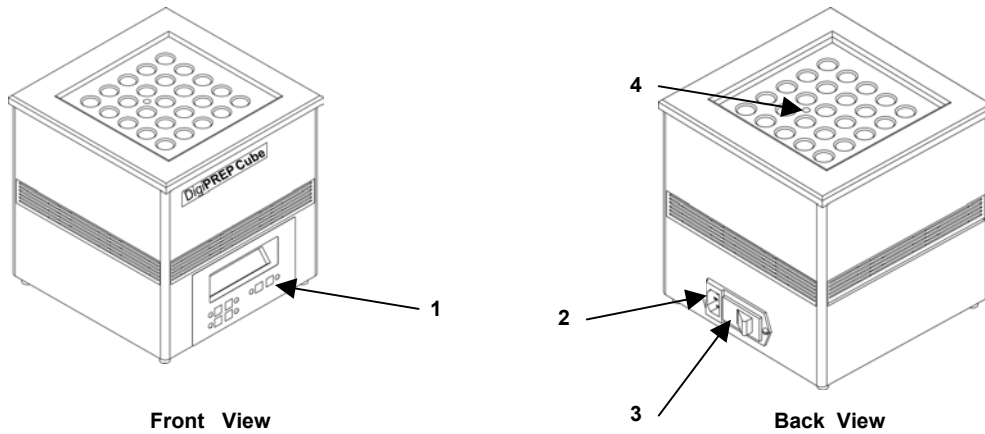


Figure 2: *Digi*PREP CUBE Front and Back Views

1. **User Interface** – allows operator to set digestion parameters and to initiate the digestion cycle.
2. **Power Cord Receptacle** – receives the female end of the power cord
3. **Power Switch** – On/Off switch – circuit breaker
4. **Thermometer well** – to verify block temperature for ISO Program.

CONTROLLER DESCRIPTION

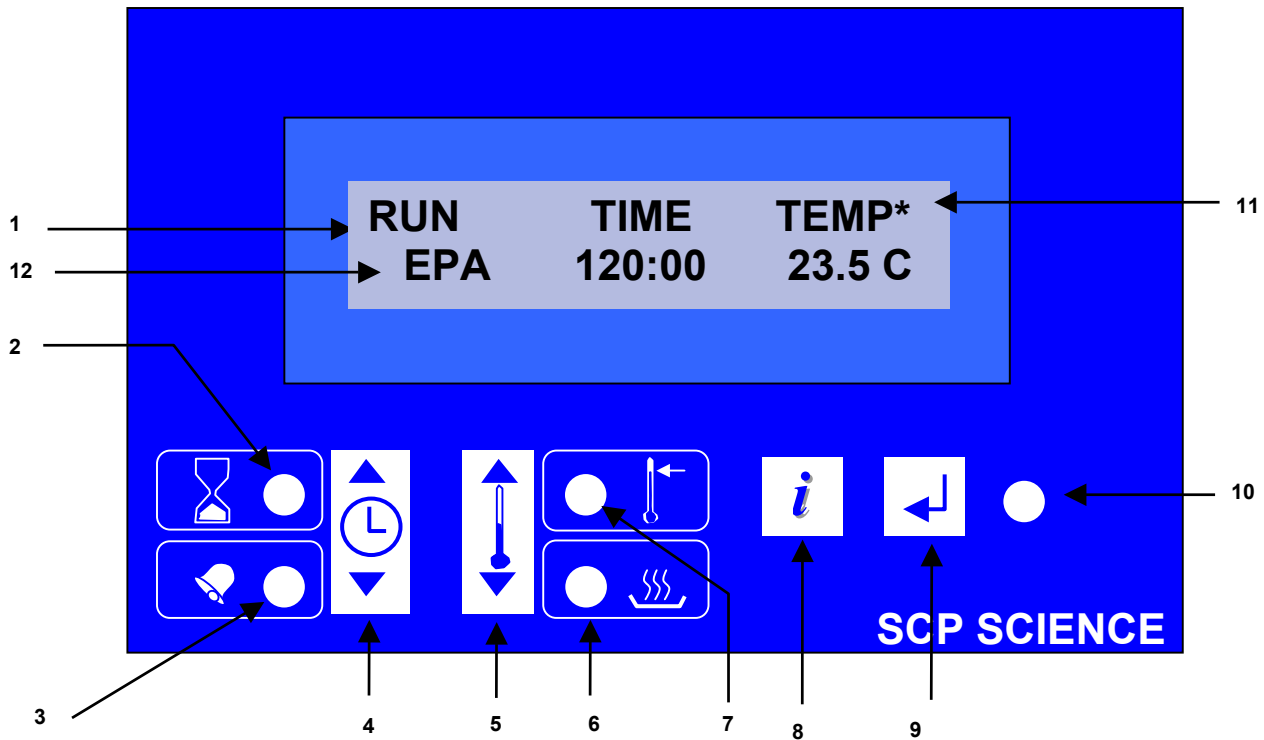









Figure 3: Controller Display

1. LCD Display – The LCD display can be cycled through many different “Screens”. The title of the screen is shown in the upper left corner of the screen. Figure 3 shows the *DigiPREP CUBE* displaying the RUN Screen. The Run screen is the default screen, which displays the time remaining, and the current temperature.


NOTE Depending on which screen is being shown, each button may have slightly different functions.


2.  Alarm Indicator – This light flashes when the alarm is activated. The alarm will be activated if the timer has expired, and the Alarm is set. (Alarm Set Indicator is on). The symbol is an hourglass with the sand in the bottom.
3.  Alarm Set Indicator – This light is on if the Alarm is set. The symbol is that of a bell. For information about setting the alarm, see ALARM Screen in the INSTRUMENT OPERATION Section.

4.  Time Input Buttons – there are two buttons, one above, and one below the Clock symbol. These buttons have two functions depending on the screen being shown.
- On the RUN screen, these buttons are deactivated
 - On the EDIT screen they control the amount of time in the timer.
 - On all other screens, they are used to scroll the “>” cursor up and down.
5.  Temperature Input Buttons – there are two buttons, one above and one below the thermometer symbol. These buttons have two functions depending on the screen being shown.
- On the RUN screen, these buttons are deactivated.
 - On the EDIT screen they control the setpoint temperature
 - On all other screens, they are used to scroll the “>” cursor up and down
6.  Heater Indicator – This light is on if the heater is set to stay on at the end of the digestion. If the light is off, then the block will cool down after the desired time has elapsed.
7.  Setpoint Reached Indicator – This light comes on if the setpoint temperature has been reached (within +/- 0.2 deg accuracy).
8.  Information Button. This button advances to the next screen in the sequence (shown below) and allows you to examine the various settings of the **DigiPREP CUBE**.

Screen Sequence:

RUN → EDIT/VERIFY → ALARM → HEATER → MENU → LANGUAGES → RUN..

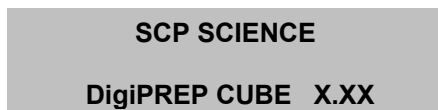
If any changes were made on either the menu or language screen, pressing  again will cancel the changes and advance to the next screen.

9.  Enter Button – This button has two functions depending on the screen being shown
- On the RUN screen, pressing this button advances to the next operating mode. There are 3 operating modes “Temperature triggered timer” mode “Timer Mode”, and “standby”. Check the Mode Indicator to determine which mode the **DigiPREP CUBE** is currently in
 - On all other screens, the enter button is used to accept the changes made on the screen and advance directly to the RUN screen

10. Mode Indicator – The Mode Indicator shows you which operating mode the *DigiPREP CUBE* is in.
 - a. If the light is off, then the *DigiPREP CUBE* is in “Standby Mode”. The heater has been deactivated, and the block will cool down to room temperature
 - b. If the light is flashing, then the *DigiPREP CUBE* is running in “Temperature-Triggered Timer” mode. The *DigiPREP CUBE* is heating but the timer will not start until the setpoint temperature has been reached. Once this is reached, the *DigiPREP CUBE* automatically advances to Timer Mode.
 - c. If the light is on, then the *DigiPREP CUBE* is running in Timer Mode. The block is heating and the timer will count down until the time has elapsed. If the timer has reached 0:00 then the *DigiPREP CUBE* may continue to heat unless the HEATER > AUTO-OFF has been selected (see the HEATER screen under INSTRUMENT OPERATION below).
11. Heater indicator – The “*” symbol that is occasionally visible in the display indicates the heater status. If the “*” is visible, then the heater is firing.
12. Method Name – This text will indicate which method has been selected from the MENU screen.

INSTRUMENT OPERATION

The BANNER Screen




This screen should be visible upon power-up and indicates that a proper initialization has been made. The *DigiPREP CUBE* introduces itself and displays its software version number. The X.XX represents the software version number.




The banner screen will advance to the RUN screen after a 5 second delay.


The RUN Screen

RUN	TIME	TEMP *
EPA	120:00	25.9 C

From the RUN screen you can watch the time remaining and the current temperature of the block. In the figure above we have a time remaining of 120 minutes (and zero seconds) and a current temperature of 25.9 degrees Celsius.

The RUN screen also enables changes to operating mode using the  button as follows:

- Press the  button. This causes the mode indicator to flash. The **DigiPREP CUBE** is now running in “Temperature-Triggered Timer Mode”. This means that the heater will be activated and bring the block up to temperature. If you look at the upper right-hand corner of the display, you can also monitor the heater output. A small “*” will be displayed whenever the heater is firing, but the timer will not start to count down until the block has reached the setpoint temperature.
- Once the setpoint temperature has been reached, the Setpoint Reached Indicator will light up. At this time, the **DigiPREP CUBE** will automatically change modes to the “Timer Mode” and the timer will begin to count down.
- A choice can be made to enter Timer Mode immediately by pressing the  button again. Otherwise, the **DigiPREP CUBE** will remain in Temperature Triggered Timer Mode until the setpoint has been reached.
- The **DigiPREP CUBE** is now running in “Timer Mode”. The Mode Indicator stops flashing and stays on. In Timer Mode, the **DigiPREP CUBE** will heat the block to the target temperature and count down the timer as well.
- A final press of the  button will put the **DigiPREP CUBE** into Standby Mode. The timer will be reset to the target time, and the heater will shut off.

To go to the EDIT / VERIFY screen, press the  button. Remember that the RUN screen is the default screen. This means that the **DigiPREP CUBE** will always return to this screen after a short delay no matter what screen you have chosen.


The EDIT/VERIFY Screen

EDIT	TIME	TEMP
1	35:00	95.9 C

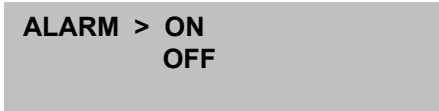
VERIFY	TIME	TEMP
EPA	120:00	150.0 C

There are two possible versions of this screen depending on the method being run. If you have previously selected a method, such as COD EPA, then this screen is entitled “VERIFY”. The only purpose of the screen is to verify the target time and the setpoint temperature for the method selected.

If you have selected one of the custom methods “MY METHOD1” or “MY METHOD2” from the MENU screen, then this screen will be entitled “EDIT”. You can verify your custom settings and return to the run screen by pressing “enter” or you can modify the settings with the time and temperature input buttons. Pressing enter accepts any changes made.

If you do not wish to save your changes, you may press the  button and proceed to the next screen, or wait until the RUN screen returns automatically. The changes will not be saved.

The ALARM Screen




ALARM > ON
OFF

This screen allows you to set the alarm. If the “>” points to ON then the alarm is set to go off when the timer has elapsed. The Alarm Indicator will light up as well.

To turn off the alarm, press any button

The HEATER Screen



HEATER > ON
AUTO-OFF

The heater screen allows you to select whether you would like the heater to automatically turn off when the time has elapsed. If you plan on running consecutive samples you may want to leave the heater on to keep it warm for the next batch. If the “>” points to ON then the heater is set to remain on after the timer has elapsed. The Heater Indicator will light up as well.



The block could be accidentally left on overnight if this mode is used without the alarm.

The MENU Screen

**MENU > MY METHOD2
COD EPA**

From the MENU screen, one of 5 methods may be selected:

	<u>TIME (min)</u>	<u>TEMP (°C)</u>
MENU > MY METHOD1	variable	variable
MY METHOD2	variable	variable
COD EPA	120:00	150.0
COD DIN	120:00	148.0
FAST COD	15:00	150.0

The Temperature or Time Input Buttons are used to move up and down through the list, and the enter button is used to select the method. If either of the custom methods “MY METHOD1” or “MY METHOD2” is chosen, then the time and temperature can be verified and edited on the EDIT screen.

The LANGUAGE Screen

**LANGUAGE > English
Francais**

From the LANGUAGE screen, one of 7 languages may be selected. The names for each language are spelled as they are spelled in the corresponding language. This is intended to make it easier to find one’s own language in the list.



Be careful not to change into a language that you do not understand, since it may be difficult to find your way back to your own language.

LANGUAGE > English	(English)
Francais	(French)
Deutsch	(German)
Italiano	(Italian)
Espaniol	(Spanish)
Nederlands	(Dutch)
Nihongo	(Japanese – Romaji)

CLEANING

Cleaning of Minor Surface Spills

When instrument cleaning is required, due to accidental spillage on the surface, turn the instrument off and unplug the unit from the power supply. Sponge up any excess liquid, then dilute the area with clean water and wipe dry with a paper towel.



The surface may be hot. The hot surface and liquid will create steam and may scald very easily. It is recommended to allow the instrument to cool before proceeding with clean up.

Cleaning of Digestion Wells

If the solution has run into the wells of the *DigiPREP CUBE*, turn off power to the system and unplug from the power supply. Allow the instrument to cool to ambient temperature. Suction the solution out of the well with an eyedropper, squeeze bottle, or pipette. Dilute any remaining spillage two or three times with water and aspirate as much solution out as possible. With a paper towel, sponge the remaining residue and discard the solution in an appropriate manner. Allow the system to dry completely before reusing the instrument.

Cleaning of a Major Spill

This is where solution has run down around the white top ring of *DigiPREP CUBE*. Turn instrument off and unplug *DigiPREP CUBE* from the power source. Allow the unit to cool prior to proceeding further. *DigiPREP CUBE* must be disassembled and dried out thoroughly prior to running again.



Please consult factory or your distributor for help if required.

The top white ring pops off by gently prying up on all four corners. Gently grab the insulation on the side with tweezers and remove. The graphite block may be removed and placed carefully on its side to obtain access to the bottom insulation. Lift the graphite block gently as the heater is attached to the block. If a replacement set of insulation is required, contact the factory or your distributor.

Ensure all components are cleaned and dry prior to reassembling. Reassemble the unit by placing new insulation in the cavity first. Then the graphite block, with the heater attached, is placed in the cavity of *DigiPREP CUBE*. Ensure the over temperature safety switch is placed in the appropriate position. Ensure the graphite block is carefully lowered into position and wires are not pinched.

WARRANTY

SCP SCIENCE warrants this product free from defect in workmanship and materials for one (1) year from date of purchase.

1. Should the unit malfunction, call the factory (number located in the front of this manual) and a service representative will provide instructions on how to proceed.
2. There are no user-serviceable parts in this unit. The warranty is void if the unit shows evidence of misuse, subject to tampering, excessive moisture, heat or corrosion.
3. **SCP SCIENCE** shall not be responsible for any damage or losses, however caused, which may be experienced as a result of the installation or use of this product.

SERVICE DEPARTMENT

SCP SCIENCE Service Department

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SPECIFICATIONS

Environmental

Relative Humidity	30% to 80%
Altitude	up to 2000m
Installation	Category II
Pollution	Degree 2
Ambient Operating Temp.	-5 °C to 40 °C

Electrical

Model number	<i>DigiPREP CUBE</i>
Voltage	230 volts / 115 volts
Current	3 amps / 6 amps
Internal Fuse	1 fuse, 1/2 Amps 250V
Frequency	50 Hz / 60 Hz
Operating Temperature	Ambient- 180 °C



Power cord must be connected to a grounded circuit. Main supply cord is constructed of heat resistant material and should only be replaced by an equivalent or better cord. Specifications are subject to change without notice.

ACCESSORIES

Cat. Number	Description
250-130-006	COD Digestion Tubes (0-150 mg/L)
250-130-016	COD Digestion Tubes (0-1500 mg/L)
250-130-026	COD Digestion Tubes (0-15000 mg/L)
250-130-550	COD Standard (100 mg/L O ₂) 500ml bottle
250-130-551	COD Standard (100 mg/L O ₂) 1L bottle
250-130-600	COD Standard (1000 mg/L O ₂) 500ml bottle
250-130-601	COD Standard (1000 mg/L O ₂) 1L bottle
250-130-650	COD Standard (10000 mg/L O ₂) 500ml bottle
250-130-651	COD Standard (10000 mg/L O ₂) 1L bottle
250-130-150	Ferrous Ammonium Sulfate (0.00282 N) 500ml bottle
250-130-151	Ferrous Ammonium Sulfate (0.00282 N) 1L bottle
250-130-152	Ferrous Ammonium Sulfate (0.00282 N) 4L bottle
250-130-200	Ferrous Ammonium Sulfate (0.05 N) 500ml bottle
250-130-201	Ferrous Ammonium Sulfate (0.05 N) 1L bottle
250-130-202	Ferrous Ammonium Sulfate (0.05 N) 4L bottle
250-130-250	Ferrous Ammonium Sulfate (0.01 N) 500ml bottle
250-130-251	Ferrous Ammonium Sulfate (0.01 N) 1L bottle
250-130-252	Ferrous Ammonium Sulfate (0.01 N) 4L bottle
250-130-300	Ferrous Ammonium Sulfate (0.25 N) 500ml bottle
250-130-301	Ferrous Ammonium Sulfate (0.25 N) 1L bottle
250-130-302	Ferrous Ammonium Sulfate (0.25 N) 4L bottle
250-130-350	Ferrous Ammonium Sulfate (0.4 N) 500ml bottle
250-130-351	Ferrous Ammonium Sulfate (0.4 N) 1L bottle
250-130-352	Ferrous Ammonium Sulfate (0.4 N) 4L bottle
250-130-400	Ferrous Ammonium Sulfate (1.0 N) 500ml bottle
250-130-401	Ferrous Ammonium Sulfate (1.0 N) 1L bottle
250-130-402	Ferrous Ammonium Sulfate (1.0 N) 4L bottle
250-130-450	Ferrous Ammonium Sulfate (20% w/v) 500ml bottle
250-130-451	Ferrous Ammonium Sulfate (20% w/v) 1L bottle
250-130-452	Ferrous Ammonium Sulfate (20% w/v) 4L bottle
250-130-500	Sulfuric Acid for COD Test, 500ml bottle
250-130-501	Sulfuric Acid for COD Test, 1L bottle
250-130-502	Sulfuric Acid for COD Test, 5L bottle
	<i>*Sulfuric Acid for COD Test also available in 10L / 20L</i>

ELECTRICAL SCHEMATIC

