



# PHARMA DEVILS

## QUALITY CONTROL DEPARTMENT

### STANDARD OPERATING PROCEDURE

<b>Department:</b> Quality Control	<b>SOP No.:</b>
<b>Title:</b> Operation, Cleaning and Calibration procedure of Conductivity meter	<b>Effective Date:</b>
<b>Supersedes:</b> Nil	<b>Review Date:</b>
<b>Issue Date:</b>	<b>Page No.:</b>

#### 1.0 OBJECTIVE:

To lay down procedure for operation, cleaning and calibration of Conductivity meter.


#### 2.0 SCOPE:


This SOP is applicable for operation, cleaning and calibration of Conductivity meter (Make: Inolab, Model: Cond 730).

**3.0 RESPONSIBILITY** – Execution- Executive QC  
Checking -Assistant Manager QC

**4.0 ACCOUNTABILITY** - Manager Quality Control

#### 5.1 OPERATING PROCEDURE:

5.1.1 Switch ON the Conductivity meter by pressing  key.

5.1.2 Select Conductivity mode I) Conductivity II) Salinity III) TDS by pressing  key


5.1.3 Wash the probe with Milli Q water And then wipe it with tissue paper to make it dry before use.

5.1.4 Transfer the 100 ml (or specified required amount of sample) to a clean 250 ml capacity beaker.

5.1.5 Temperature will be displayed on the screen of the instrument .If the temperature is not 25° C, maintain the temperature of sample at 25° C .Then Check the temperature of the sample with calibrated thermometer .


5.1.6 Dip the electrode in sample container & check the Conductivity simultaneously while gently stirring the sample .


5.1.7 Note down the reading when it shows a stable value

5.1.8 For taking the print out Press “ Off/ ON”  key and then “feed” key to take out the print out of the result.

#### 5.2 CALIBRATION PROCEDURE

**Frequency:** Once in a month.

5.2.1 Switch ON the meter by pressing  key.

5.2.2 Press the  key to select conductivity mode. Conductivity mode indicator appears in the Status display.

5.2.3 Rinse the probe thoroughly with Milli Q water.

5.2.4 Blot dry gently with a tissue paper.







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- 5.2.5 Dip the probe into the standard calibration conductivity solution. The probe must be properly immersed in to the sample. Stir the probe gently to create a homogeneous sample.
- 5.2.6 Press  key repeatedly until the LF CELL function display appears.
- 5.2.7 Immerse the electrode in 5 $\mu$ S/cm calibration standard solution.
- 5.2.8 Press  key.
- 5.2.9 Press  key repeatedly until CAL 0.100 cm<sup>-1</sup> appears.
- 5.2.10 Adjust the cell constant using UP and DOWN arrow keys till desired conductivity value (desired value at the temperature of the calibration solution using the chart given along with the calibration standard).
- 5.2.11 Return to measure mode by pressing  key.
- 5.2.12 There are two possibilities to perform calibration:
- 5.2.13 A) Calibration at 25<sup>0</sup>C  
It is strongly recommended to calibrate at 25<sup>0</sup>C. It is the accepted international reference temperature.
- 5.2.13.1 Switch off the temperature compensation of the instrument.
- 5.2.13.2 Wait until the temperature is 25  $\pm$  0.1<sup>0</sup>C and conductivity gives a stable reading.
- 5.2.13.3 Where appropriate adjust the cell constant to read the conductivity given in the certificate “actual value” (follow instrument Operation instructions).
- 5.2.13.4 Turn ON temperature compensation.
- 5.2.14 It is recommend to measure directly in to the bottle (opening diameter: 30mm, max. insertion depth: 120 mm):
- 5.2.14.1 Clean/rinse the conductivity cell thoroughly with Milli Q water before use. Shake the cell in order to remove any water droplets.
- 5.2.14.2 Pour approx. 50ml of the standard in to an appropriate container (e.g. graduated glass cylinder) that has been rinsed with Milli Q water.
- 5.2.14.3 Immerse the conductivity cell into this container, and stir the solution with the cell.
- 5.2.14.4 Remove the cell and shake the cell to remove any droplets. Put the rinse solution to waste.
- 5.2.14.5 Immerse the cell directly into the conductivity standard bottle. Immerse the cell to its minimum immersion depth. Check for air bubbles trapped within the cell. Stir the solution with the cell and move the cell up and down in the center of the solution. Take the reading when the solution is stagnant. Check the temperature reading and wait until temperature and



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conductivity reading have reached equilibrium. This may require more than 5 minutes. Cells that were stored dry may require additional time to achieve stable readings. If using a separate thermometer, be sure that it is calibrated, clean and dry.

#### 5.2.15 B) Calibration at a temperature other than 25<sup>0</sup>C:

Note: the table contains the nominal values, which may differ slightly from the actual values.

5.2.15.1 Switch OFF the instrument temperature compensation (The temperature coefficient of your own solution may differ significantly from the standard solution.

5.2.15.2 Read the temperature (wait for equilibrium).

5.2.15.3 Read the corresponding conductivity at that temperature from the table.

5.2.15.4 Where appropriate adjust the cell constant to read this conductivity (follow instrument instructions).

5.2.15.5 Turn ON temperature compensation.

5.2.15.6 Temperature dependence:

Conductivity is strongly influenced by temperature. To obtain the certified accuracy, temperature must be kept at a constant value  $\pm 0.1^{\circ}\text{C}$ , preferably with water bath.

Temperature [ $^{\circ}\text{C}$ ]	5	10	15	18	20	22	25	30	35	40	45	50
Value [ $\mu\text{S}/\text{cm}$ ]	1.5	2.1	2.9	3.4	3.8	4.3	5.0	6.4	8.0	10.0	12.1	14.7

### 5.3 CLEANING PROCEDURE:

**Frequency:** Daily or after each use.

5.3.1 Open the front part of the instrument .

5.3.2 Wipe out any material in the sample holder assembly by means of tissue paper.

5.3.3 Clean all the sampling accessories with tissue paper after analysis and keep them in proper place.

5.3.4 Clean the outer surface of the instrument with dry cotton cloth.

5.3.5 Wash the probe with Milli Q water And then wipe it with tissue paper to make it dry before and after every use.

### 6.0 SAFETY & PRECAUTIONS:



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- 6.1 Wash the probe with Milli Q water And then wipe it with tissue paper to make it dry before and after every use.
- 6.2 The probe must be properly immersed in to the sample.
- 6.3 Stir the probe gently to create a homogeneous sample.

#### 7.0 REVISION HISTORY:

Revision No.	Reason for Revision	Superseded from & Date

#### 8.0 DISTRIBUTION:

Copy No.	Issuance Record				Withdrawal Record		Destruction Record	
	Date	Dept. issued	Name / Signature of receiver	Issued By Name / Signature	By	Sign/ Date	By	Sign/ Date

#### 9.0 REFERENCES:

Not Applicable

#### 10.0 ABBREVIATIONS & ANNEXURES:

SOP : Standard Operating Procedure

No. : Number

QC : Quality Control

**Annexure I :** Calibration Record of Conductivity meter



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#### ANNEXURE-I CALIBRATION RECORD OF CONDUCTIVITY METER

PERFORMANCE DATE	DATE OF LAST PERFORMANCE DONE	NEXT DUE FOR PERFORMANCE

#### INSTRUMENT DETAILS

INSTRUMENT NAME	INSTRUMENT MAKE	INSTRUMENT IDENTIFICATION NO.

#### OBSERVATION

Read the 5  $\mu\text{S}/\text{cm}$  solution after calibration and result in the following Table :

Table

S.No.	Temperature found	Standard Solution	Results	Acceptance criteria (Conductivity) $\pm 2\%$

**Remarks :** Satisfactory/Not Satisfactory

**Calibration done by:**

**Date:**

**Checked by :**

**Date:**



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#### CONCLUSION

INSTRUMENT WORKING SATISFACTORY

INSTRUMENT NOT WORKING  
SATISFACTORY

PERFORMED BY			CHECKED BY		
NAME	SIGN	DATE	NAME	SIGN	DATE