



EIE INSTRUMENTS PVT. LTD.

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Organization's ISO 9001:2015 Certificate

QUALITY MANAGEMENT SYSTEM

Certificate of Registration



This is to Certify That The Quality Management System of

EIE INSTRUMENTS PVT. LTD.

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ISO 9001:2015

for the following scope :

MANUFACTURER & SUPPLIER OF LABORATORY TESTING INSTRUMENTS.

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Initial Registration Date	: 14/10/2023	Date of Expiry*	: 13/10/2026
1st Surve. Due	: 14/09/2024	2nd Surve. Due	: 14/09/2025






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 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 2 of 12

Forward

Dear valued customer,


We are thankful of you for your keen interest in our company products. We hope you enjoy using them and find them to be helpful and reliable. We greatly appreciate your business and the opportunity you have provided us to assist you. You have joined a selected group of customers who have switched to the technologically superior and quality enhanced laboratory testing products.

Time has changed, so does the technology. Your purchase lists you on the cutting edge of the 21st century technology. To help you get the most out of your EIE Instruments Pvt. Ltd. products, we have created this instruction manual that is an excellent way of expressing and maintaining your trust in EIE's - superior quality testing products. Our continued efforts and commitment are to provide you with the best and efficient services after sales, prompt attention and the highest level of customer satisfaction. If for any reasons, you have questions or comments, we are delighted to hear from you. We welcome your feedback for further improvement in our product(s). We would be happy to help you in any way we can. You can contact us on **+91-9909903582** or send us an email at **service@eieinstruments.com/kunal@eieinstruments.com**. You can expect us to respond to your call or email within 24-48 working hours.

Once again, we would like to thank you for your trust and kind patronage. We look forward to serve you better in the future.

Yours sincerely,

EIE Instruments Private Limited


 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 3 of 12

List of Contents

Organization's ISO 9001:2015 Certificate	2
Forward	3
List of Contents	4
List of Figures	4
1. Introduction to EIE – Freezing Point Apparatus.....	5
1.1 Application.....	5
2. Technical Specifications	5
3. Reagents and Materials (OPTIONAL)	6
4. Component Diagram.....	7
5. Delivery and Installation of the Apparatus	8
5.1 How to Make Instrument Ready for the Use?.....	8
5.2 Safety Instructions	9
5.3 Precautions to be Observed	9
6. Standard Operating Procedure	10
Warranty Certificate	11

List of Figures

Figure 1: Jacketed sample tube	6
Figure 2: Component diagram	7

 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 4 of 12

1. Introduction to EIE – Freezing Point Apparatus


EIE – Freezing Point Apparatus is applicable for the determination of the temperature below which solid hydrocarbon crystals may form in aviation turbine fuels and aviation gasoline. If no crystallization point or freezing point can be measured, the test can be used to report the lowest measurable temperature reached before the crystallization point. In aviation fuels, the fuel temperature at which solid hydrocarbon crystals, formed on cooling, disappear when the temperature of the fuel is allowed to rise under specified conditions of test is called the freezing point. The temperature at which crystals of hydrocarbons first appear when the test sample is cooled is called the crystallisation point.

1.1 Application

The freezing point of an aviation fuel is the lowest temperature at which the fuel remains free of solid hydrocarbon crystals that can restrict the flow of fuel through filters if present in the fuel system of the aircraft. The temperature of the fuel in the aircraft tank normally falls during flight depending on aircraft speed, altitude, and flight duration. The freezing point of the fuel must always be lower than the minimum operational tank temperature.

2. Technical Specifications

- Jacketed Sample Tube—A double-walled, un-silvered vessel, similar to a Dewar flask, the space between the inner and outer tube walls being filled at atmospheric pressure with dry nitrogen or air. The mouth of the sample tube should be closed with a stopper supporting the thermometer and moisture-proof collar through which the stirrer passes.
- Collars—Moisture-proof collars should be used to prevent condensation of moisture.
- Stirrer—Should be made of 1.6-mm brass rod bent into a smooth three-loop spiral at the bottom. (NOTE—The stirrer may be mechanically actuated)
- DC motor 100 rpm with DC drive and rpm indicator
- Vacuum Flask—An un-silvered vacuum flask (Warning—Implosion hazard) having the minimum dimensions should be used to hold an adequate volume of cooling liquid and permit the necessary depth of immersion of the jacketed sample tube.
- Thermometer—A total immersion type, having a range from –100 to +50°C.

 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 5 of 12

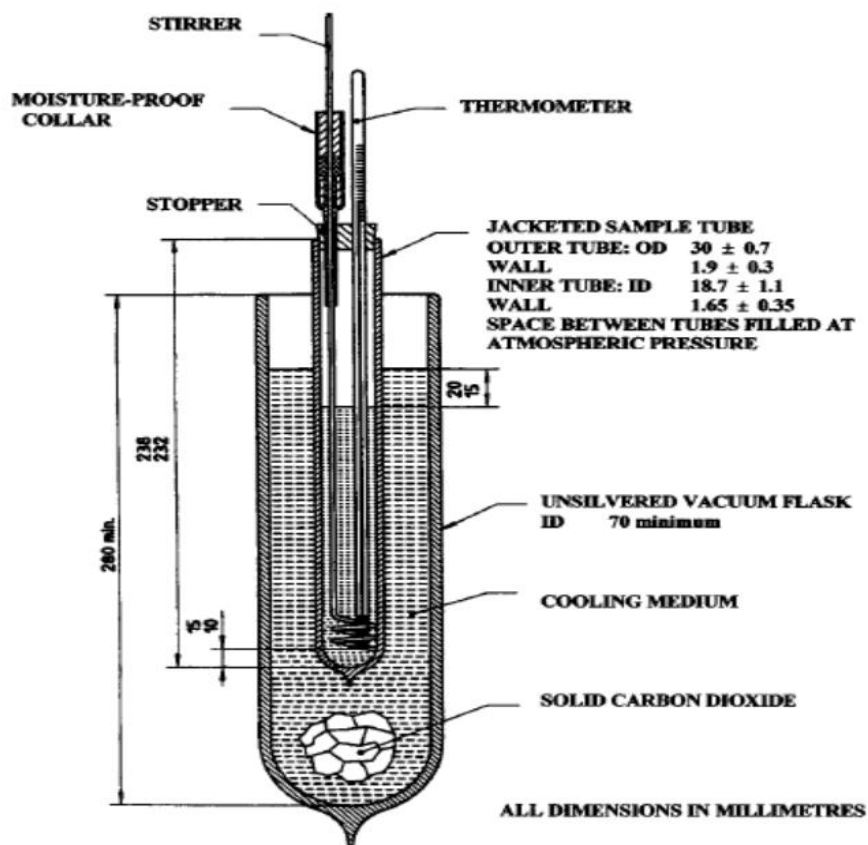



Figure 1: Jacketed sample tube

3. Reagents and Materials (OPTIONAL)

- Acetone—Technical Grade acetone is suitable for the cooling bath, provided it does not leave a residue on drying. (Warning—Extremely flammable.)
- Ethanol or Ethyl Alcohol—A commercial or technical grade of dry ethanol is suitable for the cooling bath. (Warning—Extremely flammable.)
- Isopropyl Alcohol—A commercial or technical grade of dry isopropyl alcohol is suitable. (Warning—Extremely flammable.)
- Methanol or Methyl Alcohol—A commercial or technical grade of dry methanol is suitable for the cooling bath. (Warning—Extremely flammable and toxic.)
- Carbon Dioxide (Solid) or Dry Ice—A commercial grade of dry ice is suitable for use in the cooling bath. (Warning—Extremely cold, -78°C .)
- Liquid Nitrogen—A commercial or technical grade of liquid nitrogen is suitable for the cooling bath when the freezing point is lower than -65°C . (Warning—Extremely cold, -196°C .)


 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 6 of 12

4. Component Diagram



SL. NO.	PART NAME	SL. NO.	PART NAME
1	Motor housing	5	Proxy switch
2	Adjustable link	6	Speed regulator
3	Sample tube housing	7	Digital Display
4	Mains switch		

Figure 2: Component diagram


 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 7 of 12

5. Delivery and Installation of the Apparatus

1. Inspect equipment and shipping crate immediately upon receipt. If any damage is apparent, immediately discuss it with the delivery person and contact the transportation company immediately. Make notes of any damages on the bill of landing.
2. Retain all shipping material for later inspection.
3. Check packing slip carefully and ensure all materials have been received as indicated in packing slip.
4. Remove packing strip from surroundings of the instrument and all its accessories. Please inspect and note whether any part of the instrument is damaged or any accessory is missing according to packing slip? If it is so, then immediately make note of it and report to the manufacturer.
5. Due to the vibration incurred during shipping and handling, it is possible that mechanical connection could become loose. Inspect all connection to ensure that they are secure.
6. After visual inspection, if everything is found to be okay, transit the instrument to suitable safe place where it is intended to install. **Caution: Handle with care.**
7. Recycle the packing material. Do not throw it away for environment protection.

5.1 How to Make Instrument Ready for the Use?

- a) Install the equipment on a plain, even and sturdy surface leaving 1 foot – 2 feet space away from the wall.
- b) Do not install unit in a corrosive environment. A corrosive environment may lead to poor performance and deterioration of unit.
- c) Do not place the equipment in a draft, sunlight or near a place of equipment, which emits heat as well as electromagnetic conduction emission.
- d) Provide a single phase, 230V, 50Hz, AC supply and stabilized power source with proper earthing.
- e) Keep the equipment in well ventilated place. A fume hood or exhaust system may be required while operating the unit.
- f) Clean the glass tube thoroughly before initiating the experiment.
- g) Plug the power cord only into a properly grounded outlet.


 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 8 of 12

5.2 Safety Instructions

- Anyone working with, on or around this equipment should read this operating manual. Failure to read, understand and follow the instructions given in this documentation may result in the damage to the unit, injury to operating personnel, and/or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous materials in this equipment must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual. Before the individual process, the operator must thoroughly understand the installation procedures and take note of the environmental and electrical requirements of the equipment.
- In this operating manual, important safety related points will be marked with the symbol. If the equipment is used in a manner not specified by this operating manual, the protection provided by this equipment may be impaired.
- All **EIE** equipment are designed to be operated with the highest level of safety. This standard operating & maintenance manual issues note, caution and warning symbols throughout to draw your attention to provide you the important operational and safety information.
- Read and understand all instructions and safety precautions listed in this manual before installing or operating your unit. If you have any questions regarding operation of the unit or instructions in this manual, contact our service department.
- Thoroughly understand the safety features and operation of the equipment. This manual will provide operators with safety concerns and general procedures. Be familiar with correct operating principals and use good judgement. Also refer to the appropriate manuals for system component safety instruction manuals.
- Obey all national and local electric code requirements.

5.3 Precautions to be Observed


1. Always disconnect from power supply prior to the maintenance and services.
2. While cleaning the instruments, take care that the small parts does not get damaged and the sensor must not be disturbed.
3. Handle the glass accessories carefully as they are easily breakable.
4. To avoid electrical shock, equipment must always use a properly grounded electrical outlet with the correct voltage supply.
5. Keep the instrument tidy, clean and dry with mint cream. Before initiating the fresh day, use preferably clean soft cloth. Brush up the unit body as to maintain its finishing.

 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 9 of 12

6. Disassembly of the instrument is strictly limited to the qualified personnel and licensed engineers only.
7. In case of any difficulty, please do not try to repair without consulting the manufacturer, especially when the instrument is under the warranty period.

6. Standard Operating Procedure

1. Measure out 25 ± 1 mL of the fuel and transfer it to the clean, dry, jacketed sample tube. Close the tube tightly with the cork holding the stirrer, thermometer, and moisture proof collar and adjust the thermometer position so that its bulb does not touch the walls of the tube flask and is approximately in the centre. The bulb of the thermometer should be 10 to 15 mm from the bottom of the sample tube.
2. Clamp the jacketed sample tube so that it extends as far as possible into the vacuum flask (Warning—Implosion hazard) containing the cooling medium. The surface of the sample should be approximately 15 to 20 mm below the level of the coolant. Unless the medium is cooled by mechanical refrigeration, add solid carbon dioxide as necessary throughout the test to maintain the coolant level in the vacuum flask.
3. Turn ON the apparatus, set the speed regulator to 1.5 cycles/s (90 RPM).
4. Stir the fuel continuously, moving the stirrer up and down at the rate of 1.5 cycles/s (90 RPM), except when making observations, taking care that the stirrer loops approach the bottom of the flask on the down stroke and remain below the fuel surface on the upstroke (Note 6). Disregard any cloud that appears at approximately -10°C and does not increase in intensity as the temperature is lowered, because this is due to water. Record the temperature at which hydrocarbon crystals appear. Remove the jacketed sample tube from the coolant and allow the sample to warm, stirring it continuously at 1 to 1.5 cycles/s. Record the temperature at which the hydro carbon crystals completely disappear.

 <p>EIE INSTRUMENTS PVT. LTD.</p>	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 10 of 12


Warranty Certificate

Your EIE product is guaranteed to be free from defects in materials and workmanship for one (1) year under normal use from the date of purchase. This warranty does not apply to any product damaged by accident, misuse, mishandling, abuse, negligence, transit, improper line voltage, drop, fire, flood or if the products were altered or repaired by anyone other than the qualified service personnel. The liability of EIE Instruments is limited to repair or replacement and under no circumstances shall EIE be liable for any collateral consequential damages or loss. This guarantee specifically excludes the expendables and consumables. All warranty claims must be directed to your corresponding purchase organization that is responsible for the sale of this equipment. The users are responsible for shipping expense. The warranty cards which are not signed and stamped by the actual user will be treated as void. The warranty card should accompany the defective products sent for repair, without which no claims would be entertained. Please detach the below warranty card from following cut-line.

.....

Attributes	Details
Name of the company	
Address	
Telephone number	
Mobile number	
Email address	
Date of purchase	
Product model	
Serial Number	
Bill or cash memo number	

This card should be detached, filled in properly and posted within 15 days from the date of purchase otherwise the warranty becomes invalid.

 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 11 of 12

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If you have any note or queries,

Please write to us at info@eieinstruments.com, Thank you!

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Calibration Laboratory

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 EIE INSTRUMENTS PVT. LTD.	Operation & Maintenance Instruction Manual	
	Equipment Name: Freezing Point Apparatus	Equipment Serial Number:
	Document Number: EIE/OM/FRZPTA/02	Page Number: 12 of 12