



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



CORRIGENDUM TO TENDER

Date: 22 July 2021

Tender No: JMF-QA-Laboratory-Equipment/2021-22/023 published on leading News Paper on 24 June 2021 (Ref. PR 248443).

Tender Ref: Invitation for Supply, Installation & Commissioning of Laboratory Equipment's at Medha Dairy Plant, Hotwar, Ranchi for State Central Laboratory”

This is in reference to the aforesaid tender.

THE CORRIGENDUM /AMENDMENT TO BE READ AND FOLLOW AS BELOW:

Sl. No.	Current /Existing Clause / Terms	To be replaced/ revised with
1	Mfr./ Make/ Brand/Supplier (Specifically specified in the Tender Document for item Nos 1 to 10)	Mfr./ Make/ Brand/Supplier The Bidder must adhere/ follow the specifications of the items /equipment's mentioned in the tender document enclosed as Annex-II

The bidders are advised to take into account the following amendments/Corrigendum before submission of their bids against this tender. If any bidder has already submitted his/her bid, then he/she should re-submit his tender taking into account following amendments/Corrigendum. For convenience and clarity, the revised Tender Document including the formats are being uploaded in JMF website.



Managing Director
The Jharkhand State Coop Milk
Producers' Federation Ltd



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



Annexure-II

List of Equipment's / Machineries with referred specifications:

Sr. No.	Name of Equipment	Specifications to follow as enclosed:
1	FTIR Technology based Milk Analyser	Specification – 1 *
2	Bacterial and Somatic Cell Analyser	Specification – 2 *
3	LCMS/MS-Triple Quadrupole liquid chromatography/Mass spectrometer with accessories	Specification – 3 *
4	GCMS/MS-Triple quadrupole gas chromatography/Mass spectrometer with accessories	Specification – 4 *
5	Induced couple plasma mass spectrometer (ICP-MS) with accessories	Specification – 5 *
6	Laminar Air Flow	Specification – 6 *
7	Automatic Kjeldahl unit	Specification – 7 *
8	Sodium Potassium Analyzer	Specification – 8 *
9	Muffle Furnace	Specification – 9 *
10	B R Meter	Specification – 10 *

***Referred Specifications (to follow in next page)**



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION – 1

TECHNICAL SPECIFICATIONS FOR FTIR TECHNOLOGY BASED MILK ANALYSER

- A. The equipment should be used for Milk Standardization, Adulteration Screening and Quality determination of Raw, Intermediate and Processed Milk.
- B. The equipment should have Dedicated Inbuilt Calibrations for Milk, Cream, Whey and Yoghurt.
- C. The equipment should be able to monitor the following parameters in Milk

- Fat
- Protein
- Lactose
- Total Solids
- SNF
- FPD
- Total Acidity
- Density
- FFA
- Citric Acids
- Casein
- Urea
- Glucose
- Galactose



झारखण्ड राज्य सहकारी दुग्ध उत्पादक महासंघ लिमिटेड
The Jharkhand State Co-operative Milk Producers' Federation Limited



- D. Equipment should be provided with a standard pre-calibrated module for screening and Quantification of Adulterants like

1. Ammonium Sulphate
2. Detergent
3. Glucose
4. Maltose
5. Melamine
6. Salt
7. Sodium Carbonate
8. Sodium Citrate
9. Sorbitol
10. Starch
11. Sucrose
12. Urea
13. Vegetable Oils when mixed with Chemical Emulsifiers
14. Formaldehyde

- E. In other product equipment shall be able to analyze the following parameters:

- 1) Yoghurt : Fat, Protein, Total Solids
- 2) Whey : Fat, Protein, Total Solids, Lactose
- 3) Cream : Fat, Protein, Total Solids, Lactose, SNF

- F. Method Set Up: It would be responsibility of the bidder to set up all the methods in different products and standardize the instrument for work after proper verification.

- G. The equipment should be based on the proven FTIR technology and should follow IDF (International Dairy Federation) standard 141, ISO 9622 and AOAC Official Method 972.16.

- H. The equipment should provide fast measurements up to 120 measurements per hour and the analysis time including Milk Parameters and Adulterants should be 30 seconds per sample.

- I. The equipment should be easy to use with a single button operation on the main instrument.

- J. The instrument should be supplied with LIMS facility with a Networking Manager Software with



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



Data Networking facility through a cloud software service, providing update on instrument diagnostics, automatic backup of sample data, remote network management and central access to result and data.

K. The equipment should be provided with a software of Control chart for monitoring instrument stability and status.

- 1) Easy Slope & Intercept adjustment
- 2) Development of new calibrations
- 3) Outlier detection

L. The equipment should be CE labelled and should comply with international safety guidelines. Certificate of these shall be submitted.

M. Technical requirements

- 1) Accuracy : $\leq 1\%$ CV on major cow/buffalo or mix milk components
- 2) Repeatability : $\leq 0.25\%$ CV on major raw milk components
- 3) Analysis time : 30 seconds for milk and adulterants
- 4) Sample Volume : Less than 15 ml analysis
- 5) Sample Temp : Approx. 5 - 55° C
- 6) Cleaning : Should be Automatic and Programmable
- 7) Optical System : Should be Hermetically sealed and Humidity Controlled
- 8) Calibration range :
 - Fat: up to 50%;
 - Protein: up to 7%;
 - Lactose: up to 7%
 - Total Solid: up to 50%

N. Vendor should provide branded PC of configuration of along with a suitable printer suitable for equipment operation with sufficient data storage, speed and ease of operation. Sufficient port to for transferring online data and support data transmission.

- 1 GHz CPU speed (minimum)
- 8 GB RAM
- 64 GB free disk space
- NTFS File system
- 4 x USB connector
- 1 GB Ethernet
- DVD R/W Drive
- Windows 7, either 32 Bit or 64-Bit versions

O. Consumable and Accessories: Equipment should be supplied along with appropriate reagents, consumables, spares, preventive maintenance kits and accessories for routine operations of 2 years.

The requirement of these supplies for samples would be given to bidder on six monthly basis or on mutually agreeable dates.

P. Training: Basic training on operation/maintenance to be arranged by the bidder after installation of the equipment along with calibration development to be done for parallel/alternate milk products. The advance training on these should be conducted as per the request from end user, on mutually agreeable dates. The equipment should also be supplied with user manuals required for installation and training.

Q. **Warranty:** Equipment shall be supplied with minimum a warranty of one year from the date of installation. Bidder should undertake on site preventive maintenance visits - minimum 2 visits during the warranty period apart from the breakdown visits. Warranty would apply to all the accessories supplied by bidder.

R. **Warranty extension:** The warranty of equipment would be extended if equipment remains down during the warranty period, for more than period mentioned below: -

- If equipment has been down for more than 10 days in a year, warranty would be extended



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



by one Month,

- If equipment has been down for more than 30 days due to malfunctioning of the any part supplied by bidder or want of spares/ consumable, warranty would be extended by one Year.

- S. **Demonstration and Evaluation:** We reserve the right to verify the performance of equipment at any stage of purchase process. The bidder is requested to arrange all the pre-requisite timely for successful demonstration and evaluation.
- T. **Compliance:** The bidders are requested to provide point wise compliance for each point in specification along with documentary evidences. The reference of compliance information in submitted offer shall be clearly specified. The offer with incomplete/untraceable information may not be considered. Any type of unwarranted canvassing for selection of instrument may lead to rejection of the offer.
- U. No offering of refurbished/assembled/demo modules
No part of the offered instrument shall be refurbished or used in demonstration purpose. Kindly submit undertaking.
- V. **The AMC charges for two years shall be quoted after the expiry of warranty period.**
- W. It is the responsibility of vendor to supply a complete solution / unit for the analysis.
- X. Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.





THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION – 2

TECHNICAL SPECIFICATIONS FOR BACTERIAL AND SOMATIC CELL ANALYSER

1. The instrument should provide Integrated and Automatic Individual Bacteria Count (IBC) and Somatic Cell Count (SCC) in raw milk of cow and buffalo by using Flow-Cytometry as per the approved method of by IDF and comply with ISO 16297 & IDF 161 & IDF 196.
2. Instrument should be capable of analyzing raw milk samples without dilution or pre-heating. Equipment shall have the capability to handle cold raw milk samples.
3. Speed of Analysis:
 - Should be able to process minimum 14 samples/hour while doing both IBC and SCC measurements.
 - Should be able to process minimum 39 samples/hour for only SCC measurements.
4. Sample intake should be: less than 7.5 ml
5. Sample temperature: 2 – 4°C
6. Sample quality: Equipment shall analyser raw milk of normal composition, whether unpreserved or preserved. Bidder shall specify the list of preservative.
7. The instrument should be able to estimate IBC and SCC in a wide measuring range
 - IBC: 5000 to 20 million IBC/ml
 - SCC: 0 to 10 million cells/ml
8. The instrument should provide an accuracy in comparison to standard methods of analysis on the below criteria:
 - IBC: Typical Sy, $x < 0.25$ log units from SPC (plate counting)
 - SCC: <10% relative mean different from Direct Microscopic SCC
9. Repeatability:
IBC: $Sr \leq 0.07$ Log relative at 10 to 50 IBC / μ l $Sr \leq 0.05$ Log relative at 51 to 200 IBC / μ l
SCC: CV < 6 % at 100000 cells / ml CV < 4 % at 300000 cells / ml CV < 3 % at 500000 cells / ml
10. The instrument should be supplied with Bacterial Control Sample and appropriate reagents.
11. The instrument should have self-cleaning program to minimize carry-over contamination from previous samples.
12. The instrument should have appropriate software for IBC calculation.
13. System should be provided with Sensors in reagent bag to indicate the consumption of reagent and inform the remaining number of tests that can be performed.
14. Both, bacteria and somatic cell counts should be performed by doing individual cell counts and results should be given in IBC (Individual Bacterial Counts) and SCC (Somatic Cell Counts)
15. IBC and SCC should be performed simultaneously or individually.
16. The instrument should have an integrated
 - Touch screen with embedded software
 - Visual guides, for example, on installing a new reagent bag
 - Export of results to spreadsheet
 - Graphical interface for service operations
 - Barcode reader
17. The instrument should be supplied with PC based software, suitable branded PC and laser printer. There shall be a facility to transfer data from the equipment to PC in a suitable format, which could be transmitted to customer software.
18. Supplier should provide Installation, validation, and also the demonstration of the equipment performance



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



19. Consumable and Accessories: Equipment should be supplied along with appropriate reagents, consumables, spares, preventive maintenance kits and accessories for routine operations of 2 years.
The requirement of these supplies for samples would be given to bidder on six monthly basis or on mutually agreeable dates.
20. Training: Basic training on operation/maintenance to be arranged by the bidder after installation. The advance training on these should be conducted as per the request from end user, on mutually agreeable dates. The equipment should also be supplied with user manuals required for installation and training.
21. Warranty: Equipment shall be supplied with minimum a warranty of one year from the date of installation. Bidder should undertake on site preventive maintenance visits - minimum 2 visits during the warranty period apart from the breakdown visits. Warranty would apply to all the accessories supplied by bidder.
22. Warranty extension: The warranty of equipment would be extended if equipment remains down during the warranty period, for more than period mentioned below: -
 - If equipment has been down for more than 10 days in a year, warranty would be extended by one Month,
 - If equipment has been down for more than 30 days due to malfunctioning of the any part supplied by bidder or want of spares/ consumable, warranty would be extended by one Year.
22. Demonstration and Evaluation
Customer reserves the right to verify the performance of equipment at any stage of purchase process. The bidder is requested to arrange all the pre- requisite timely for successful demonstration and evaluation.
23. Compliance: The bidders are requested to provide point wise compliance for each point in specification along with documentary evidences. The reference of compliance information in submitted offer shall be clearly specified. The offer with incomplete/untraceable information may not be considered.
Any type of unwarranted canvassing for selection of instrument may lead to rejection of the offer.
24. No offering of refurbished/assembled/demo modules
No part of the offered instrument shall be refurbished or used in demonstration purpose. Kindly submit undertaking.
25. **The AMC charges for two years shall be quoted after the expiry of warranty period.**
26. It is the responsibility of vendor to supply a complete solution / unit for the analysis.
27. Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION – 3

Technical Specifications of Liquid Chromatography coupled with Triple Quadruple Mass detector (LC-MS/MS)

Sr. No.	Parameters	Technical specifications
1		Application
1.1	Instrument details	A bench top highly sensitive LC-MS/MS system with all accessories, consumables etc. required for the analysis of pesticide residues, mycotoxins, contaminants and veterinary drug residues. The instrument shall have capability to quantify at 1/4th of the Maximum Residue Limits of analytes set by FSSAI for milk and milk products.
2		Mass spectrometer
2.1	Mass range	Minimum 5-2000 amu
2.2	Scan speed	Minimum 12000 amu/sec
2.3	Ionisation source	The instrument should have Electrospray Ionisation source There should be a provision to divert the flow to waste/MS through software before/ during/after the analysis
2.4	Mass resolution	Less than 0.7 amu over the entire mass range in both the Quadruples.
2.5	Sensitivity	ESI +ve mode: Minimum S/N 5,00,000:1 without smoothening using 1pg of reserpine on column injection ESI -ve mode: Minimum S/N 5,00,000:1 without smoothening using 1 pg chloramphenicol on column injection
2.6	Collision cell	MS-MS capability must be available in Q2/MS2 via collision induced dissociation (CID) and the design should be specified and be such as to eliminate cross talk
2.7	MRM dwell time	1 ms or less
2.8	Dynamic range	Minimum 6 orders of magnitude
2.9	Polarity switching time	25 ms or less
2.10	Dessolvation temperature	Minimum 575°C
2.11	Minimum Operating modes	(I) Full scan (II) Product ion scan (III) Precursor ion scan (IV) Neutral loss scan (V) Multiple Reaction Monitoring (MRM)
2.12	Fluidics system	An infusion device must be integral to the instrument and must be controllable from the instrument software
2.13	Detector	Dynolite photomultiplier. If any other detector is offered, it shall have minimum 6 years life or sufficient no. of detectors for 6 years of operation should be offered
2.14	Nitrogen generator	Nitrogen Generator with noise free inbuilt compressor should be offered
3		Liquid Chromatography
3.1	UHPLC system	Analytical UHPLC system equipped with temperature-controlled auto sampler, thermostat column compartment and degasser shall be provided



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



4		Pump
4.1	Pump	Quaternary pump with low pressure mixing capable of switching between the solvents
4.2	Degasser	Vacuum degassing capability with minimum four channels
4.3	Flow rate	Operating flow rate range shall be 0.01 to 2 ml/minute
4.4	Operating pressure	Maximum Operating pressure shall be minimum 15000 psi or more
4.5	Flow rate precision	RSD \pm 0.075 % or less
4.6	Flow accuracy	\pm 1%
5		Autosampler
5.1	Vial capacity	Autosampler should be available with the capacity of placing minimum 90 vials of 1-1.5 ml volume
5.2	Injection volume range	1-10 μ l or better
5.3	Injection volume precision	Maximum RSD \pm 0.3 % झारखण्ड राज्य सहकारी दुग्ध उत्पादक महासंघ लिमिटेड The Jharkhand State Cooperative Milk Producers' Federation Limited
5.4	Autosampler Temperature	Temperature controlled autosampler compartment ranging from 4-20°C or better
6		Column compartment
6.1	Column oven	Ambient temperature to minimum 60°C
		Switching between two columns should be available for running two different methods one after another.
7		Computer system
7.1	System	Factory fitted Windows based computer system for Acquisition and processing should be offered
7.2	Minimum configuration of Acquisition PC	Latest model of computer with following specifications Monitor: Minimum 24" or better RAM: Minimum 32 GB or better as per the equipment requirement. Hard drive: Minimum 2 TB or better as per the equipment requirement. Wireless mouse and keypad should be supplied Laser jet automatic duplex printer should be provided
8		Software
8.1	Latest software	Software should have following features 1. Interrogate the data for peak quality, peak ratios, and other parameters. 2. Create and edit quantitation methods quickly 3. Should have algorithm that integrates chromatographic peaks with exceptional consistency and accuracy— especially in cases of low-level peaks and difficult baselines 4. Flagging of non-compliance
9		Basic utilities
9.1	Installation requirements	Pre-installation requirements in the form of tables, power points, LAN connections shall be indicated in the specifications. A suitable exhaust system with complete installation and testing charges should be included. Bidders are encouraged to visit the



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
 Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
 Email: purchase@jmf.coop



		site for actual assessment of work.
9.2	Installation	The installation to be done at NDDDB Anand, while ensuring all the criteria for compliance as per specification are met and demonstrated. All required accessories, columns, calibration solutions should be included for this activity.
9.3	IQ/OQ/PQ	Supplier shall perform and provide the required documents of IQ/OQ/PQ during these tests during the installation.
10		Warranty & AMC
10.1	Warranty	Supplier shall provide comprehensive warranty for one year from the date of installation covering all parts of offered solution including CPU and Monitor and conduct preventive maintenance during the period as per defined schedule The warranty of equipment would be extended by a month, if equipment has been down for more than 10 days in a year, whereas, warranty of equipment would be extended by 1 year, if equipment has been down for more than 30 days due to malfunctioning of any part supplied by bidder during warranty period.
10.2	AMC	4 years AMC charges should be quoted separately.
11		Training
11.1	Operation and Application training	One week training at State Central Lab after installation of LC-MS/MS on all software features, and instrument troubleshooting/maintenance and operation. One week application training within a month of installation on method development, tuning of new analyte, reading of the mass spectra and application of the advanced software features.
12		Service
12.1	Local service facility	The supplier shall have service facility and trained engineers to provide breakdown services within 24-48hrs of complaint registration. Supplier shall be responsible for providing the service during the warranty and AMC period for the instruments and accessories offered from other manufacturers.
12.2	Stock inventory	The supplier shall keep inventory of spares and consumables in India for the repair of equipment. Kindly submit the undertaking for the same.
12.3	Number of installations	The supplier shall provide a list of installations of quoted model in food testing laboratories from government and private sector during last three years with contact details.
13		Performance verification
13.1	Demonstration	We reserve the right to verify the performance of equipment with Check samples for accuracy, precision, speed, recovery etc. as per globally acceptable criterion through a demonstration at vendor's facility or at any installation to be arranged by vendor. The bidder has to arrange all the pre-requisite for the demonstration/performance verification which may involve analysis of reference

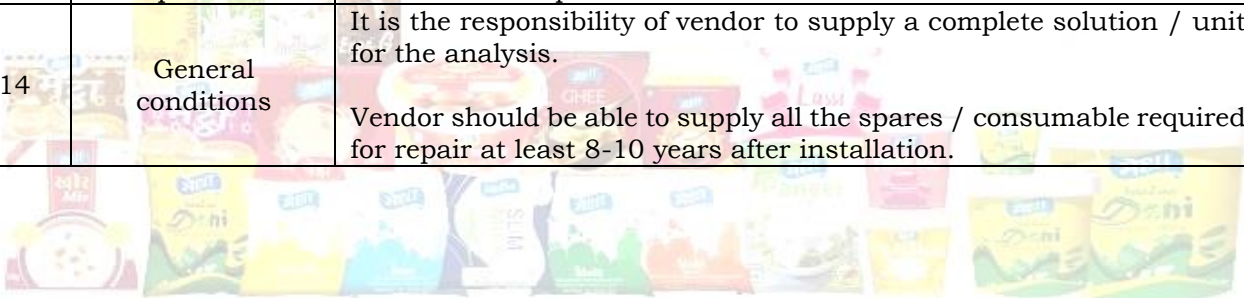


THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



		sample or spiked samples
		Travel expenditure for such a verification visit will be borne by us.
13.2	Compliance	<p>The bidders are requested to provide point wise compliance for each point in specification along with documentary evidences.</p> <p>The traceability of compliance information in submitted offer shall be clearly indicated.</p> <p>The offer with incomplete/untraceable information may not be considered.</p> <p>User list with minimum 3 performance certificate must be provided along with the contact details for the quoted model</p>
13.3	No offering of refurbished/assembled/demo modules	No part of the offered instrument shall be refurbished or used in demonstration purpose. Kindly submit undertaking.
13.4	Method set up and standardization	<p>Bidder shall depute the application personnel to standardize methods at 1/4 th the MRL for following analytes.</p> <p>A) pesticides and veterinary drug residues in milk and milk products as per FSSAI and EIC RMP (List of LC amenable compounds is attached).</p> <p>B) Aflatoxin M1 in milk at 0.1 ppb and B1 in Feed at 2 ppb respectively.</p> <p>C) Melamine in milk and milk products at 0.5 ppb</p>
13.5	Column requirement	The specific columns required for applications in Sr. no. 13.4 should be offered in duplicate.
14	General conditions	<p>It is the responsibility of vendor to supply a complete solution / unit for the analysis.</p> <p>Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.</p>





THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



Pesticides in Milk and Milk products as per FSSAI

Sr. No.	Name of the Insecticide	Food	Maximum Residue Limit (MRL) in mg/kg	Equipment
1	2,4-Dichlorophenoxy Acetic Acid	Milk and Milk products	0.05	LCMS
2	Acephate (expressed as mixture of Methamidophos and acephate).	Milk and Milk products	0.02	LCMS
3	Acetamiprid Azoxystrobin	Milk and Milk products	0.02	LCMS
4	Sum of benomyl and carbendazim expressed as carbendazim	Milk and Milk products	0.01	LCMS
5		Milk and Milk products	0.1 (F)	LCMS
6	Bifenthrin	Milk and Milk products	0.20	GCMS
7	Bitertanol	Milk and Milk products	0.05	LCMS
8	Buprofezin	Milk and Milk products	0.01	LCMS
9	Carbaryl	Milk and Milk products	0.05	LCMS
10	Carbendazim	Milk and Milk products	0.1 (F)	LCMS
11	Carbofuran (sum of carbofuran and 3-hydroxy carbofuran expressed as	Milk and Milk products	0.05 (fat basis)	LCMS
12	Chlorantraniliprole	Milk and Milk products	0.05	LCMS
13	Chlorothalonil	Milk and Milk products	0.07	GCMS
14	Chlorpyrifos Chlothianidin (Chlothianidin and its metabolites Thiazolymethylguanidine	Milk and Milk products	0.02	GCMS
15	Cypermethrin (sum of isomers) (Fat soluble residue)	Milk and Milk products	0.02	LCMS
16		Milk and Milk products	0.05	GCMS
17		Milk and Milk products	0.05	GCMS
18	Deltamethrin (Decamethrin)	Milk and Milk products	0.01	GCMS
19	Dichlorvos (DDVP) (content of dichloroacetaldehyde (D.C.A.) be	Milk and Milk products	0.02	GCMS
20	Difenoconazole	Milk and Milk products	0.05	LCMS
21	Dimethoate	Milk and Milk products	0.05	LCMS
22	Dinotefuran	Milk and Milk products	0.1	LCMS
23	(c) Mancozeb	Milk and Milk products	0.05	GCMS
24	(d) Metiram as CS2	Milk and Milk products	0.05	GCMS
25	Edifenphos	Milk and Milk products	0.01 (F)	LCMS
26		Milk and Milk products	0.01*	LCMS



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



26	Ethion (Residues to be determined as ethion and its oxygen analogue and	Milk and Milk products	0.5 (F)	LCMS
27		Milk and Milk products	0.02	GCMS
28	Ethofenprox (Etofenprox)	Milk and Milk products	0.1	GCMS
29	Fenvalerate (Fat soluble residue)	Milk and Milk products	0.01 (F)	GCMS
30	Fipronil	Milk and Milk products	0.02	GCMS
31	Flubendiamide	Milk and Milk products	0.1	LCMS
32	Flusilazole	Milk and Milk products	0.05	LCMS
33	Glufosinate Ammonium	Milk and Milk products	0.02	LCMS
34	Imidacloprid	Milk and Milk products	0.1	LCMS
35	Indoxacarb	Milk and Milk products	0.1	LCMS
36	Kresoxim Methyl	Milk and Milk products	0.01	LCMS
37	Methomyl	Milk and Milk products	0.02	LCMS
38	Methyl Chlorophenoxy Acetic Acid (MCPA)	Milk and Milk products	0.04	LCMS
39	Metolachlor	Milk and Milk products	0.01*	LCMS
40	Monocrotophos	Milk and Milk products	0.02	LCMS
41	Oxydemeton-Methyl	Milk and Milk products	0.01	LCMS
42	Paraquat dichloride (Determined as Paraquatcations)	Milk and Milk products (whole)	0.01	LCMS
43	Penconazole	Milk and Milk products	0.01	LCMS
44	Phenthoate	Milk and Milk products	0.01 (F)	LCMS
45	Phorate (sum of Phorate, its oxygen analogue and their sulphoxides and	Milk and Milk products	0.05 (F)	GCMS
46	Pirimiphos-methyl	Milk and Milk products	0.05 (F)	
47	Propiconazole	Milk and Milk products	0.01	LCMS
48	Pyraclostrobin	Milk and Milk products	0.03	LCMS
49	Tebuconazole	Milk and Milk products	0.01	LCMS
50	Thiacloprid	Milk and Milk products	0.05	LCMS
51	Thiamethoxam	Milk and Milk products	0.05	LCMS
52	Thiophanate-Methyl	Milk and Milk products	0.05	LCMS
	Trichlorfon	Milk and Milk products	0.05	LCMS



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



53		Milk and Milk products	0.05	LCMS
54	Triaccontanol	Milk and Milk products	0.01	LCMS
55	Triadimefon	Milk and Milk products	0.01*	LCMS

Antibiotics in Milk as per FSSAI

Sr. No.	Name of compound	MRL
		µg/kg
1	4-epi-chlortetracycline	100
2	4-epi-oxytetracycline	100
3	4-epi-tetracycline	100
4	Albendazole	100
5	Ampicillin	10
6	Apramycin	10
7	Cephacetrile	10
8	Ceftiofur	100
9	Clortetracycline	100
10	Diminazene	150
11	Doramectin	15
12	Febantel	100
13	Fenbendazole	100
14	Flunixin	10
15	Ivermectin	10
16	Lincomycin	150
17	Meloxicam	10
18	Monensin	2
19	Neomycin	1500
20	Oxfendazole	100
21	Oxyclozanide	10
22	Oxytetracycline	100
23	Parbendazole	10
24	Praziquantel	10
25	Spectinomycin	200
26	Sulfachlorpyridazine	10
27	Sulfadiazine	10
28	Sulfadimidine	10
29	Sulfanilamide	10
30	Sulfaquinoxaline	10
31	Tetracycline	100
32	Thiabendazole	100
33	Trimethoprim	10
34	Tylosin	100
35	Virginiamycin	10



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



Antibiotics in Milk as per EIC

Sr. No.	Name of compound	MRL/MRPL*
		µg/kg
1	3-amino-5-morpholinomethyl-2-oxazolidinone (AMOZ)	1*
2	4-epi-chlorotetracycline	100
3	4-epi-oxytetracycline	100
	4-epi-tetracycline	100
5	Albendazole	100
6	Albendazole 2-amino sulphone	100
7	Albendazole sulphone	100
8	Albendazole sulphoxide	100
9	Aminohydantoin (AHD)	1*
10	Amino-Oxazolidinone (AOZ)	1*
11	Amoxicillin	4
12	Ampicillin	4
13	Cefacetrile	125
14	Cefalexin	100
15	Cefalonium	20
16	Cefapirin	60
17	Cefoperazone	50
18	Cefquinome sulphate	10*
19	Ceftiazone	10*
20	Ceftiofur	100
21	Cefuroxime sodium	10*
22	Cephalosporin	10*
23	Chloramphenicol	0.3*
24	Chlorotetracycline	100
25	Ciprofloxacin	100
26	Cloxacillin	30
27	Dicloxacillin	30
28	Dihydrostreptomycin	200
29	Diminazene	10*
30	Doxycycline	10*
31	Enrofloxacin	100
32	Erythromycin A	40
33	Fenbendazole	10
34	Fenbendazole sulphone	10
35	Gentamicin	100
36	Ivermectin	1*
37	Kanamycin A	150
38	Meloxicam	15
39	Metronidazole	1*
40	Morantel	50
41	Nafcillin	30
42	Neomycin B	1500
43	Neospiramycin	200
44	Oxacillin	30
45	Oxfendazole	10
46	Oxytetracycline	100
47	Penicillin G	4



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



48	Phenyl Butazone	1*
49	Praziquantel	10*
50	Ronidazole	1*
51	Semicarbazide (SEM)	1*
52	Spectinomycin	200
53	Spiramycin	200
54	Streptomycin	200
55	Sulbactam	10*
56	Sulfachlorpyridazine	100
57	Sulfadiazene	100
58	Sulfadimethoxine	100
59	Sulfadimidine	100
60	Sulfadoxine	100
61	Sulfamethazine	100
62	Sulfamethiazole	100
63	Sulfamethoxypyridazine	100
64	Sulfamirazene	100
65	Sulfanilamide	100
66	Sulfathiazole	100
67	Taxobactam	10*
68	Tetracycline	100
69	Thiamphenicol	50
70	Tilmicosin	50
71	Tinidazole	10*
72	Trimethoprim	50
73	Tylosin A	50





THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
 Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
 Email: purchase@jmf.coop



SPECIFICATION – 4

Specification of GC-MS/MS with FID		
Sr. No.	Features/Particulars	Specification/Description
1	Application	
1.1	Equipment configuration	A. A Latest and highly sensitive Gas chromatograph with triple/Tandem quadruple mass spectrometer system required with software, auxiliary equipment, accessories and data base.
1.2	Area of analysis	The equipment shall have capability to quantify at 1/4th of the maximum residue limit set by national and international regulatory authority for milk and milk products. <ol style="list-style-type: none"> Analysis of pesticides in milk and milk products as per FSSAI. Milk fat purity by Triglycerides as per ISO 17678/2010 on GC-FID Fatty acids in milk and milk products.
2	Gas Chromatograph (GC)	
2.1	Compatibility/Capabilities	<ol style="list-style-type: none"> A bench top gas chromatograph system shall be compatible with offered mass spectrometer, Flame Ionization detector (FID), Auto sampler, Inlets (02 Nos.), columns (min 3 Nos.) and all other necessary consumables for operation of one year. Oven of Gas chromatograph shall have enough space to install two columns and other accessories.
2.2	Gas Supplies	<ol style="list-style-type: none"> The gases and flow rate requirements on 24hrs of continuous working shall be specified with the offer. The purification filters required for all the gases to be used in equipment shall be included. System shall have Electronic pneumatic/pressure controls of all the gasses.
2.3	Auto sampler	<ol style="list-style-type: none"> Auto sampler automatic injection devices with minimum 15 or more vial tray. It shall have reproducibility < 0.5% RSD when injected 1µl. Auto sampler shall have provision for minimising the carry over. It shall have facility to wash syringe with more than two solvents before and after the injections.
2.4	Inlet (2 No's)	<ol style="list-style-type: none"> System should be offered with two inlets <ol style="list-style-type: none"> MMI/PTV for pesticide analysis On Column injector for Triglyceride analysis or any other suitable inlet for triglycerides analysis as per ISO 17678: 2010 subject to successful demonstration. System shall have advanced electronic flow control modules with Pressure set points adjustable in increments of 0.01 psi or better, with typical control ± 0.01 or better for the range 0.000 to 140 psi for both injectors. System shall be easy to perform maintenance activities like removal of liner, changing of septa, o rings System shall have total flow setting range for N2 to be 0-200mL/min while He 1200mL/min
2.5	Column Oven	<ol style="list-style-type: none"> System shall have provision to install two columns



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
 Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
 Email: purchase@jmf.coop



		<p>simultaneously during routine work</p> <p>b. Operating temp range of oven from near ambient to 450°C</p> <p>c. Support 15 oven ramps or better in a single run</p> <p>d. Ramp rate shall go up to 100 °C/min or more</p> <p>e. Supplier shall supply</p> <ol style="list-style-type: none"> 1) Two suitable columns for pesticides (30 Meter Length) for use on GCMS/MS. 2) One suitable column for Fatty Acid - 100 M length. 3) One suitable column for Triglyceride analysis –5 Meter Length, 0.53 mm ID; 0.17 μM with non-polar stationary phase (as per ISO 17678:2010)
2.6		<p>a. GC should have facility of retention time locking / or other suitable equivalent mechanism to avoid change in retention times.</p> <p>b. The system should have independently heated GC-MS/MS interface to avoid loss in analytes due temperature gradient in after elution from column.</p>
3	Mass spectrometer	
3.1	Ion Source	<p>a. The equipment quoted with EI mode of ionisation.</p> <p>b. The system shall have ability to program ion source temperature up to 350 °C or better</p>
3.2	Mass filters/analyser	<p>a. Triple quadruple with suitable mechanism for calibration, auto tune, compound optimisation, quantitation and confirmation.</p> <p>b. Quadruple shall be made up of inert material to have better mass transfer efficiency and shall have provision for keeping quadruple clean from dirty matrix.</p> <p>c. Collision Energy must be selectable up to 60eV</p> <p>d. System shall analyse masses from 10 to 1050 AMU</p> <p>e. Scan speed up-to 20000 dalton/sec (u/s) or better.</p> <p>f. Mass stability should be up to 0.10 amu/24 hrs or better</p> <p>g. MRM speed (transitions/sec) 800 or more enabling automatically quantifying and confirming more targets in a single method run.</p> <p>h. Minimum MRM Dwell Time must be at least 0.5msec</p>
3.3	Detector	<p>a. System should have Electron multiplier detector or photo multiplier detector with long life and better sensitivity.</p> <p>b. It shall have digital dynamic range $\geq 1 \times 10^6$ or better</p>
3.4	Calibration of mass spectrometer	<p>a. Mass spectrometer shall have suitable mechanism for injecting the calibration solution for calibration system.</p> <p>b. Manufacturer shall provide calibration of the instrument quarterly during warranty period.</p>
3.5	Acquisition mode	System shall be capable of acquiring data in full scan, product ion scan, selected ion monitoring and multiple reaction monitoring.
3.6	Sensitivity	EI MRM Sensitivity: 1ul of 100 fg/ul octafluoronaphthalene (OFN) RMS S/N minimum 30,000:1 for MS/MS transition of m/z 272→222 or Numerically equivalent, if estimated by injecting different amount of concentration of OFN.
		a. The pumps in required numbers to be offered to



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



3.7	Vacuum System	meet the instrument vacuum requirement and sensitivity.
		b. All accessories required for the proper functioning of vacuum system shall be supplied.
		c. Vacuum system shall have proper venting/exhaust system to remove effluents from pumps and sample split out of laboratory.
4	Flame Ionisation Detector	
	FID	a. Compatible with capillary columns of different diameters.
		b. Shall have Flame out detection and automatic re-ignition facility
		c. Minimum Detectable Level (MDL): ≤ 1.5 pg C/s for tridecane
		d. Linear dynamic range: $\geq 10^7$
		e. Temperature: 440 °C or More
		f. Standard electronic pneumatic control for three gases i.e. Air; Hydrogen and Makeup gas (N ₂ or He) shall be available for operation.
5	Computer Work station with System Software	
5.1	Computer work station	Latest model of branded computer with preloaded software, laser jet duplex printer shall be offered. The monitor shall have large screen preferably of 24 inches or better.
5.2	Software	a. Preloaded fully automated data acquiring & processing software for with original Software CD and license number of Software shall be supplied with the system. b. Software shall have control over all operations of Auto sampler, gas chromatography, mass spectrometer and printer simultaneously or separately.
5.3	Software features	a. Software shall have necessary functions to carry out data acquisition peak integration, quantification for accurate quantitation and confirmations of the analytes of interest/indicating ion ratios. b. Software shall perform simultaneous SIM and SCAN mode of data acquisition. c. Software shall have auto flagging facilities in certain parameters as 1. Auto flagging for the ion ratio which falls out of the confirmation criteria 2. Auto flagging for the concentration which is falling below limit of quantitation 3. Auto flagging for recovery/ QC values which is falling out of the defined range of acceptance
5.4	Databases / Libraries	a. Bidder shall provide a database of GC amenable compounds like Pesticides, PCBs, PAH, Dioxins, other contaminants etc. Database should have information like molecular formula, mono isotopic mass, parent and daughter ions cone voltage, collision energy, and other parameters required to standardise analysis method for any compound.



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



		b. NIST library
6	Calibration solution/standards, consumables and accessories	
6.1	Toolkits/consumable kits/calibration kit/spares	The supplier shall include and specify the kits of relevant equipment parts and accessories along with tool kit.
6.2	Calibration solution/standards	All calibration standards for mass spectrometer / gas chromatograph / auto sampler shall be offered.
7	Installation	
7.1	Pre-installation	The party need to submit the pre-installation requirement with the offer
7.2	Installation	The installation to be undertaken while ensuring all the criteria for compliance as per specification are met and demonstrated.
7.3	IQ/OQ/PQ	Supplier shall perform all these tests during the installation.
8	Warranty	
8.1	Warranty	a. Supplier shall provide warranty for one year covering all parts of equipment.
8.2	AMC	a. Supplier shall optionally quote the charges for four year of annual maintenance contract (AMC).
9	Training	
	Operation and Application training	a. One-week operational training after installation covering GCMS/MS; GCFID, software features, instrument troubleshooting and maintenance. b. Supplier shall provide one week application training on method development and standardization.
10	Method Set Up	
	Bidder shall develop the methods as per application requirement of tender after installation. It shall Cover equipment optimization, and sample preparation. It shall meet the performance criteria.	a) Pesticides in two products i.e. Liquid milk and ghee or any product suggested by the end user as per FSSAI requirement for GC amenable pesticides (Refer Sr. no. 14). b) Standardisation of method for analysis of triglycerides profile as per ISO17678/2010 in milk, milk products. c) Standardisation of method for analysis of fatty acid profile as per AOAC 996.06
11	Service & Supply	
11.1	Local service facility	a. The supplier shall have service facility and trained engineers located in nearby metros to provide breakdown services within 24-48hrs of complaint registration.
		b. The supplier shall have application laboratory in India to support the application requirement and training needs.
		c. Supplier shall be responsible for providing the service during the warranty and AMC period for the instruments and accessories offered from other manufacturers also.
11.2	Stock inventory	The supplier shall keep inventory of spares and consumables in India for the repair of equipment.
11.3	Number of installations	The supplier shall provide a list of installations of GC-triple quadruple mass spectrometer in food testing laboratories from government and private sector during last three years with contact details.
11.4	Warranty extension	The warranty of equipment would be extended by a month, if equipment has been down for more than 10 days in a year, it would be extended by 1 year, if equipment has been down for more than 30 days due to malfunctioning



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



		of the any part supplied by bidder or want of spares.
12	Performance verification and compliance	
12.1	Demonstration and Evaluation	a) We reserve the right to verify the performance of equipment at any stage of purchase process. b. The bidder is requested to arrange all the pre- requisite and set up applications (as per Sr. no. 1.2a) at their facility for timely, successful demonstration and evaluation.
12.2	Compliance	a. The bidders are requested to provide point wise compliance for each point in specification along with documentary evidences. b. The reference of compliance information in submitted offer shall be clearly specified. c. The offer with incomplete/untraceable information may not be considered.
12.3	Canvassing	a. Any type of unwarranted canvassing for selection of instrument may lead to rejection of the offer.
12.4	No offering of refurbished/ assembled/demo modules	a. No part of the offered instrument shall be refurbished or used in demonstration purpose. Kindly submit undertaking.
13.0	General conditions	It is the responsibility of vendor to supply a complete solution / unit for the analysis. Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.

Reference to Sr. No. 10 .0 the list of Pesticides and LOQ to be set up.

Requirement of GC amenable pesticides as per FSSAI in milk and milk products			
Sr. No	Name Of compound	MRL (mg/kg) PPM	Limit of Quantification
1	Aldrin and dieldrin	0.01	1/4th of Maximum Residue limit
2	Chlordane	0.01	
3	DDT, DDD & DDE	0.01	
4	Fenithrothion	0.01	
5	Heptachlor	0.01	
6	Lindane	0.01	
7	Chlorpyrifos	0.02	
8	Cypermethrin	0.05	
9	Fenthion	0.01	
10	Fenvalerate	0.01	
11	Phorate	0.05	

12	Pirimiphos-methyl	0.05	
13	Endosulfan (sum of alpha, beta isomers and endosulfan sulfate expresses as endosulfan)	0.01	
14	Heptachlor Epoxide	0.01	



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



15	Diazinon	0.01
16	Parathion methyl (Sum of parathion-methyl and paraoxon-methyl expressed as parathion methyl)	0.01
17	Bifenthrin	0.2
18	Chlorothalonil	0.07
19	Deltamethrin	0.05
20	Dichlorvos	0.01
21	Etofenprox	0.02
22	Fenproprathrin	0.1
23	Triaccontanol	0.01
24	Metiram as CS2	0.05
25	Mancozeb	0.05
26	Phosphamidon	0.01
27	Captafol	0.01
28	Formothion	0.01
29	Simazine	0.01

Requirement of GC amenable pesticides as per EIC-RMP 2019-20 in milk products

Sr. No	Name Of compound	MRL ($\mu\text{g}/\text{kg}$) PPB	Limit of Quantification
1	Aldrin and dieldrin	6	1/3rd of Maximum Residue limit
2	Chlordane	2	
3	Endosulfan (Sum of Alpha, beta and Sulfate)	50	
4	Lindane	1	
5	Heptachlor (Sum of heptachlor and epoxide)	4	
6	Methoxychlor	10	
7	Diazinon	10	
8	Fenthion	10	
9	Malathion	20	
10	Parathion-methyl	20	
11	Phosalone	10	



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION - 5

Technical Specification of Inductively Coupled Plasma Mass Spectrometer (ICP-MS)

ICP-MS with accessories such as auto-sampler, microwave digestion system, chiller, exhaust fume hood, computer, printer, etc.; is required for the following application:

Application requirement:

A: The equipment should be able to analyze heavy metals in milk, milk products and food samples as per FSSAI and International regulation. Some of the typical limits to be quantified accurately in samples are given below:

Sr No.	Sample	Analyte	Concentration (ppb)
1	Liquid Milk	Lead	10
2	Sugar	Chromium	10
3	Infant food	Arsenic	25
4	Water	Aluminium	15
		Arsenic, lead, selenium	5
		Cadmium	1.5
		Mercury	0.5

Technical specification

The bidders are requested to provide point wise compliance for each point in specification along with documentary evidences. The reference of compliance information in submitted document shall be clearly specified. The offer with incomplete/untraceable information may not be considered.

Vendor should quote only one model which is latest, fastest in scanning and delivers high throughput without affecting accuracy. End user reserves the right to verify the performance characteristics of the equipment to check the accuracy, precision, speed and ease of operation.

Sr. No.	Technical specification ICP MS with required accessories			
1	Basic configuration of equipment			
A	A complete unit consisting of mass spectrometer with inductively coupled argon plasma to quantify heavy metals at ½ of MRL of FSSAI levels in milk, milk products and food samples is required.			
B	ICP MS should have reaction and collision cell technology to reduce the influence of polyatomic ions and suitable gas ports and gas flow controller should be available. The equipment should have a complete provision to use various gases such as argon, helium, hydrogen, oxygen etc. simultaneously for the analysis of heavy metals in different modes to remove interferences in a single method.			
C	Bidders are required to submit application note or data by using quoted model on the following samples with the offer. I. Recovery of heavy metals in milk or milk products or food samples.			
2	Detector			
A	The detector should have linear dynamic range up to 9 order of magnitude or more.			
B	The mass range of the equipment should be 3-260 AMU or wider.			
C	The equipment should meet following guaranteed or typical performance criteria.			
	Sr No	Characteristics	Criteria	Requirement
	I	Sensitivity (mcps/ppm)	Li (7) or Be(9)	≥6
			Y (89) or In (115)	≥100
			Tl (205) or U(238)	≥ 80
II	Oxide ratio (%)	CeO+/Ce+	≤ 3	
III	Doubly charged ratio (%)	Ce++/Ce+ or Ba++/Ba+	≤ 3	
IV	Background (cps)	Measured at mass 9 or m/z 4.5 or Mass 220	≤ 1	



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



	V	Detection limit (ppt)	Be (9)	≤ 0.5
			In (115)	≤ 0.25
			U (238) or Bi (209)	≤ 0.25
	VI	Isotope ratio precision (%RSD)	Ag (107)/Ag (109)	≤ 0.1
3	Sample Introduction system			
A	Suitable nebulizers, injectors and spray chambers for the analysis of various analytes in milk and food matrix should be supplied along with equipment.			
B	Equipment should have peltier cooling facility to control the temperature.			
C	High precision peristaltic pump with at least 3 channels 10 rollers should be available.			
D	Auto-sampler consisting of suitable sample trays to analyse at least 50 samples at a time should be supplied with complete software package.			
4	Plasma			
A	The equipment should have suitable RF generator. It should have variable power range from 500- 1600 watt.			
B	Suitable quartz torch for food samples should be available.			
5	Interface			
A	Suitable sampler and skimmer nickel cones should be supplied with the equipment to meet different application requirements.			
6	Software of equipment			
A	The equipment should be supplied with all required software for instrument optimization, sample analysis, data analysis, auto sampler and data export to excel.			
7	Basic consumables, kits and spares			
A	All required solutions, kits, spares to optimize and check the performance of equipment should be supplied.			
B	Individual standards (1000 ppm -100 ml size) such as arsenic, cadmium, lead, mercury, copper, tin, zinc, chromium, aluminium, selenium bismuth, yttrium, scandium, germanium etc. should be supplied.			
8	Recirculating chiller, gas lines and exhaust system			
A	A suitable recirculating chiller should be supplied.			
B	A suitable exhaust system should be included. Bidders are encouraged to visit the site for actual assessment of work.			
9	Basic utilities			
A	A suitable factory configured computer system with CPU and a monitor minimum 24-inch flat panel with pre-loaded with latest Windows operating system, MS Office and other required software should be supplied.			
B	Laser jet automatic duplex printer should be provided.			
10	Installation and training			
A	The pre-installation requirement should be submitted with the offer.			
B	The supplier has to perform IQ and OQ of the system at the site.			
C	The bidder will provide 5-7 days operational and application training.			
D	The bidder has to undertake complete validation for application. It includes sample preparation, digestion, extraction, analysis and interpretation of the results.			
11	Microwave digestion system:			
A	Vendor has to supply a latest model of microwave digestion system capable of digesting minimum 10-12 milk, milk products and food samples together for heavy metal analysis.			
B	The volume of TFM/PTFE vessels should be minimum 50 ml. The vessels should be light in weight to keep them on analytical balance for weighing and easy			



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



	handling.
C	It should be able to reach temperature up to 250 °C with 40 bar pressure. Installed microwave power should be minimum 850 watt.
D	Filling volume should be 3-25 ml.
E	Equipment should be able to digest sample up to 2 g per vessel.
12	Warranty and Service
A	Minimum one year warranty including all parts from the date of installation should be given.
B	The supplier should have inventory of spare parts and consumables in India.
C	The warranty of equipment would be extended by a month, if equipment has been down for more than 10 days in a year, whereas, warranty of equipment would be extended by 1 year, if equipment has been down for more than 30 days due to malfunctioning of any part supplied by bidder or want of spare.
D	The bidder shall have service facility and trained engineers located in the state /region to provide the breakdown service within 24 – 72 hours of complaint registration.
E	The supplier shall have application laboratory in India to support the application requirement and training needs.
F	Bidder shall provide a list of factory trained service/application engineers/experts of the model quoted and submit a certificate.
G	The bidder should have minimum 15 installation of quoted model in last financial year in India and should provide list of users.
H	General conditions It is the responsibility of vendor to supply a complete solution / unit for the analysis. Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.





THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION - 6

SPECIFICATION FOR LAMINAR AIR FLOW UNIT

1. UV sterilization system with high density UV-decontamination (Min 975 Lux and lamp min 250 nanometer 10-15-watt).
2. Laminar airflow velocity of minimum 0.30 m/s (60 fpm.)
3. Low noise level (<58 dBA) with low power consumption.
4. HEPA filter efficiency 99.999% /at 0.3 um along with Pre-Filter.
5. LED display (microprocessor control) with digital timer, light on- off...etc.
6. Alarm for filter replacement and maintenance if any.
7. Interlock function: UV lamp only can be switched on when the front window is closed ensuring operator safety.
8. UV light protection (Front & Side windows: Toughened glass, Manual front window, and anti-UV).
9. UV timer (1-99 minutes): when the set time expires, the UV lamp automatically switches off in preparation for the next experiment.
10. Waterproof power socket for power supply (min two sockets).
11. Material: main body: electrogalvanized steel with epoxy-polyster powder coating (antimicrobial coating) and work table: 1.2 mm (0.05") 18 gauze stainless steel grade 304 (minimum).
12. Size: External Size (W*D*H)- 1035 x 617 x 950 mm, Internal Size (W*D*H)- 935 x 538 x 550 mm and Work Surface Height-750mm
13. Plug type- Indian
14. Essential standard accessories along with the equipment
15. Revolving base table with Adjustable height. Adjustable height range 660-940 mm (26.0"- 37.0"), adjustable in 25.4 mm (1.0") increments.
16. Instrument should comply with worldwide standard in the regards of Air Quality, Filtration and Electrical Safety.
17. Calibrated in laboratory as per ISO-17025.
18. Commissioning and installation will be done by the party.
19. It is the responsibility of vendor to supply a complete solution fit for use.
20. Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION - 7

TECHNICAL SPECIFICATIONS FOR AUTOMATIC KJELDAHL UNIT

1.0 Quantity

Number of unit's required-01 with all the required accessories

2.0 Functional Requirement

Estimation of protein content in milk and milk products. The offered equipment shall have digestion and distillation unit with automatic addition of reagents for efficient operation. Titration would be undertaken manually.

3.0 Technical Specification

3.1 Digestion Unit

- 3.1.1 Six place block digestion system able to hold 250 ml borosilicate glass tubes.
- 3.1.2 Operational temperature: Ambient to 4500 C or higher.
- 3.1.3 Display should show set value and current value of temperature and timer.
- 3.1.4 It must have auto heating cut off on completion of digestion cycle.
- 3.1.5 Efficient exhaust manifold system for removing acid fumes.
- 3.1.6 Material of construction: Corrosion resistant

3.3 Scrubber unit

- 3.3.1 Unit should have fume trap condensation unit followed by water and alkali neutralization.
- 3.3.2 Alkali and water container capacity: 2 lit (Minimum)
- 3.3.3 Operation pump must be made up of non-corrosive material.
- 3.3.4 Unit shall have a mechanism to remove acid from exhaust air through dissolution in water tank / carbon filter / any other suitable technique.

3.4 Distillation unit

- 3.4.1 Unit shall have automatic steam injection.
- 3.4.2 Unit shall have automatic water addition / dilution.
- 3.4.3 Unit shall have automatic alkali and boric acid / acid addition.
- 3.4.4 Unit shall give warning / indication for open door during operation and hold/ deactivate the process.
- 3.4.5 Unit shall have facility for adjustable steam power.
- 3.4.6 Material of construction: Corrosion resistant.
- 3.4.7 Chemical storage tanks shall be provided with minimum 2.5 lit capacity
- 3.4.8 Auto cut off sensor for water circulation shall be provided

4.0 Equipment shall be supplied with minimum 1 year warranty

5.0 Unit shall be supplied with 12 borosilicate tubes (250 ml), required accessories, water connection pipes required for installation, demonstration and routine operations for at least 300 analyses.

6.0 Demonstration:

- 6.1.1 Vendor must optimize digestion and distillation method for liquid milk and dried milk samples.
- 6.1.2 Vendor must provide training to end user.
- 6.1.3 Vendor must provide demonstration to end user including manual titration and verify the distillation recovery of >99%.

7.0 Others:



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



- 7.1.1 All the pre-requisite required for installation of the equipment shall be indicated by the vendor.
- 7.1.2 AMC charges for the 2nd and 3rd year shall be indicated separately.**
- 7.1.3 It is the responsibility of vendor to supply a complete solution / unit for the analysis.
- 7.1.4 Vendor should be able to supply all the spares / consumable required for repair at least 8-10 years after installation.



झारखण्ड राज्य सहकारी दुग्ध उत्पादक महासंघ लिमिटेड
The Jharkhand State Co-operative Milk Producers' Federation Limited





THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2543062, MOB: 7544003404/7544003412,
Email: purchase@jmf.coop



SPECIFICATION - 8

SODIUM POTASSIUM ANALYSER

Name of Equipment	Flame Photometer
Application	Measurement of Sodium and Potassium content in milk

Equipment specifications		
Sr. no.	Parameter	Description
1	Unit of measurement	System shall display results directly in ppm.
2	Range of Measurement	should measure Na, K in the range of : 2 -200 ppm or better on both sides.
3	Sensitivity	Na: 2 ppm; K: 1 ppm
4	Linearity	3% or lower
5	Reproducibility	Less than 2 % Coefficient of Variation
6	Calibration	Minimum 5-point calibration facility should be present in the instrument. Relevant set of chemicals for calibration standards of Na (min. 100 ml of 100 ppm) and K (min. 100 ml of 100 ppm) should be provided by bidder.
7	Detector	Silicon photodiode or equivalent or better detection system
8	Auto flame ON/ OFF detection	Facility should be present in the system
9	Ignition System	Automatic ignition
10	Flame System	LPG/PNG & Dry Oil Free Air,
11	Gas Control	Provision for gas control should be available
12	Filter selection	Provision for filter selection should be available
13	Atomiser	Axial Flow Type
14	Display	Alphanumeric LCD display or digital LED display
15	Power Supply	Standard Indian - single phase
16	Air supply unit	The instrument should be supplied with air compressor unit to supply required gases.
17	Data storage and Printing	System shall be able to store data of at least 500 analysis. RS 232 port for data transfer. All cables/software for data transfer to be offered along with a suitable printer.
18	Accessories to be provided	Following accessories should be provided with the instrument: Two filters (Na and K) , calibration standards (as indicated at Sr. No. 6) , Atomizer Tube, Gas Lighter, Sample Beaker (Min.6 No), USB interface cable, LPG Tube, Airline PU Tube, power cord etc. All the other accessories required for smooth installation, demonstration and operation of the equipment for above application should be provided.
19	Other	At the time of installation, the performance of the equipment should be demonstrated as per the provided specifications or OEM catalogue, whichever is better. The accessories required for commissioning of the equipment shall be in the scope of supplier.
20	Training	Training to end user to be provided
21	Demonstration & Method Set up	Bidder has to standardize and optimize the for analysis of Sodium and Potassium at the installation site.



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
 Ph.: +91-(0651) 2270046, MOB: 7544003404/7360035219,
 Email: purchase@jmf.coop



SPECIFICATION - 9

Name of Equipment	Muffle Furnace
Application	For analysis of ash content in milk and milk product samples

Equipment specifications		
Sr.	Parameter	Description
1	Power supply	200-240V, 50 Hz
2	Temperature range	300 - 850 °C or higher. Muffle should have microprocessor based digital temp controller cum indicator.
3	Dimensions	The minimum size (Width*Height*Depth) of inner chamber should be 15 * 15 * 30 cm
4	Temperature control Accuracy	±5 °C or better.
5	Temperature uniformity	±5 °C or better.
6	Heating element	Shall be made of high-quality Nichrome/Kanthal or suitable material. Heating element should be wounded with high grade insulation material.
7	Display	It should have digital LED/LCD display to show actual and set point temperature.
8	Safety	System should have the facility to give electronic alarm / warning in case of temperature exceeds ± 5°C from the set temperature.
9	Material	The inner chamber should be of ceramic pot or other suitable material and outer shell of thick mild steel sheet
10	Other requirements	The unit should work under Indian environmental conditions (Temperature, humidity). It should meet electric power requirements (230 V) and should be supplied with suitable power cable and plug
		The unit should have minimum 1 year warranty from the date of installation.
		The firm shall submit necessary catalogues and product data sheet along with the offer.
11	Other	At the time of installation, the performance of the equipment should be demonstrated as per the provided specifications or OEM catalogue, whichever is better.
		The accessories required for the commissioning of the equipment shall be in the scope of supplier.



THE JHARKHAND STATE COOPERATIVE MILK PRODUCERS' FEDERATION LTD.

FTC CAMPUS, SEC-2, DHURWA, RANCHI – 834004
Ph.: +91-(0651) 2270046, MOB: 7544003404/7360035219,
Email: purchase@jmf.coop



SPECIFICATION – 10

Name of Equipment	B R Meter
Application	Butyro Refractometer reading of milk fat for purity

Equipment specifications		
Sr.	Parameter	Description
1	Power supply	200-240V, 50 Hz and Battery Operated
2	Display	Digital LED/LCD display of Butyro Scale and Refractive Index (RI)
3	Minimum Resolution	Butyro Scale- 0.1 BR and RI- 0.0001
4	Minimum Range	BR Value:- Between 0.1 BR and RI:- Between 1.4450 to 1.4850 or wider
5	Accuracy	± 0.5 BR value at 40°C and ± 0.0005 RI at 40°C
6	Measurement temperature	10 to 50 °C (Automatic temperature compensation)
7	Temperature Compensation	Output BR and RI reading shall be at the temperature compensated scale of 40°C
8	Sample volume	Less than 0.5 ml
9	Other feature	System to have in-built mechanism to detect the intense light penetrating the prism which may interfere with the accuracy of the result temperature.
10	Other	At the time of installation, the performance of the equipment should be demonstrated as per the provided specifications or OEM catalogue, whichever is better. The accessories required for the commissioning of the equipment shall be in the scope of supplier.

DECLARATION

I hereby certify that the information furnished above are correct to the best of my knowledge. I understand that in case any deviation is found in the above statement at any stage, the firm shall be blacklisted and will not have any dealing with JMF future.