

Title	Strengthening of Central fertilizer Quality Control & Training Institute and its Regional Laboratories.
Type	Central Sector Scheme
Objectives	Drawl, inspection and analysis of Imported fertilizers on arrival at Indian Ports. Random checks of fertilizer sold within the country, training of State Fertilizer Inspectors and Analysts, Standardization/Development of methods of analysis. Acting as a Referee Laboratory technical advice on Fertilizer Quality Control to States.
Salient Features	Mainly engaged in statutory techno legal functions of inspection and analysis of fertilizer samples and training to State Fertilizer Inspectors/ Analysts under the provisions of FCO, 1985. Mainly a staff oriented scheme.
Pattern of Assistance	There is no provision for providing any financial assistance to any one.
Eligibility	Not applicable
Procedures to Apply	For training programmes of Analysts/Inspectors, the Institute invites the nomination of officials from the State Govts. & organizes the training. For orientation courses/dealers training, the programmes are organized in collaboration with State Govts. And CFQC&TI/Regional Labs incur the expenditure.
Persons to be contacted	Director, Central Fertilizer quality Control & Training Institute, NH.4, FARIDABAD Telefax:0129-2414712
Date of Start/Duration	Scheme under implementation from 1972-73 & is still continuing as Plan Scheme.
Implementation Status	-do-
Additional Information	The scheme has been subsumed under the CSS “National Project on Management of Soil Health & Fertility” during 11 th Plan w.e.f. 01.04.2009.

2. Centrally Sponsored Scheme on Balanced and Integrated Use of Fertilizers;

The main objective of the scheme were to encourage soil test based judicious application of chemical fertilizers in combination with organic manures and bio-fertilizers. Under the scheme, financial assistance is provided for setting up/strengthening of new soil testing laboratories for advising farmers on major and micro nutrient application, training and demonstration on balanced use of fertilizers and also for setting up of production units of useful organic manure from city waste/garbage. This scheme has since been subsumed under “Macro Management Scheme” with effect from October, 2000, State Governments have been requested to undertake all these activities through their Annual Work Plan.

In addition, CSS Scheme “National Project on Management of Soil Health & Fertility” has already been implemented since August, 2008 for 11th Five Year Plan period under which there is provision for providing financial assistance for setting up of new Soil and Fertilizer testing laboratories and strengthening of existing Soil and Fertilizer Testing Laboratories.

3. FERTILIZER CONTROL ORDER, 1985

Fertilizer is the most critical and costly input for sustaining agricultural production and ensuring food security of the country. Fertilizer Control Order (FCO), 1985 enacted under Essential Commodities Act, 1955 is being implemented to regulate, the trade, price, quality and distribution of fertilizers in the country. The State Governments are the enforcement agencies for implementation of the provisions of FCO, 1985 and are adequately empowered to take action against those who indulge in production and sale of non standard/spurious fertilizers. The FCO provides for compulsory registration of fertilizer manufacturers, importers and dealers, specifications of all fertilizers manufactured/imported and sold in the country, regulation on manufacture of fertilizer mixtures, packing and marking on the fertilizer bags, appointment of enforcement agencies, setting up of quality control laboratories and prohibition on manufacture/import and sale of non-standard/spurious/adulterated fertilizers. Accordingly 71 Fertilizer Quality Control Laboratories in the Country which includes 4 set up by Central Government namely Central Fertilizer Quality Control & Training Institute, Faridabad and its three Regional Laboratories have been set up in the country.. These laboratories have a total annual analyzing capacity of 1.31 lakh samples. The analytical capacity and the number of samples analyzed and found non standard during the last 5 years are as follows:

Year	No. of labs	Annual analytical capacity	No. of samples analysed	% Non standard samples
2004-05	67	124730	108859	6.0
2005-06	67	122488	111745	6.0
2006-07	68	129250	116142	6.0
2007-08	68	129331	95866	6.2
2008-09	71	132865	104792	5.5

The FCO has been recently amended to make it more user friendly and ensuring effective enforcement. This includes dispensing with Registration Certificate of Dealers; it has now been replaced with the simple system of Memorandum of Intimation in the new form A-I and its acknowledgement in Form A-2, provision of referee analysis under Clause 29 B of the FCO wherein a grievance redressal mechanism to the aggrieved party has been provided for reanalysis of sample under clause 32/ 32 A, tolerance limit for particle size and for moisture, inclusion of new grades of NPK 100% Water soluble fertilizers, mandatory conspicuous printing of words ‘Fertilizers’ on the containers, maintenance of minimum laboratory facilities in all Labs., reduction in time limit for sending samples to laboratories and communication of results from 97 days to only 52 days, changes in form ‘J’ & ‘K’ to maintain the secrecy of samples and methods of analysis of moisture and nutrients have been prescribed. The other important amendments include provision for repacking of fertilizer bags which are cut or torn

during transit and reprocessing of damaged fertilizers due to natural calamities etc. and provision for commercial trials of provisional fertilizers. Accordingly NFL has been permitted to manufacture Neem Coated Urea under Clause 20 A for commercial trials and M/s IFFCO permitted to manufacture fortified NPK complexes with Boron and Zinc. Printing of MRP on all fertilizers including Urea is now made mandatory and also the printing of month and year of manufacture/import of fertilizer on the bags.

4. Central Fertilizer Quality Control & Training Institute and its Regional Laboratories

The Central Fertilizer Quality Control & Training Institute (CFQC&TI), Faridabad was established in 1971-72 as a sub ordinate office in the end of 4th Plan and later its 3 Regional Fertilizer Control Laboratories (RFCLs) located at Navi Mumbai, Chennai and Kalyani were set up during 1988-89 with a total Sanctioned strength of 102. However, presently only 75 posts are filled in. It is continuing as Plan Scheme during 11th Plan with an outlay of Rs. 25 crores.

The main objectives are:-

- Drawal, inspection and analysis of both Indigenous and Imported fertilizers.
- Training of State Enforcement Officers and Analysts including Officers from Developing countries.
- Development of methods of analysis
- Acting as a Referee Laboratory besides an Advisory body on the issues relating to Fertilizer Quality Control.

The Institute & RFCLs have techno-legal functions and it is also notified as Recognized laboratory under clause 29 of FCO for analysis of samples for entire country and training of State Inspectors and Analysts under clause 27A/29A of FCO. The Fertilizer Inspectors of the Institute are authorized Inspectors under clause 27 of FCO having jurisdiction throughout the country. The Institute is also a Member of Central Fertilizer Committee constituted under clause 38 of FCO to advise the Central Government on all aspects of FCO. Based on the activities of the Institute, it has been recognized as a Scientific and Technological Institution by the Department of Science and Technology as early as in 1982.

Main Activities under the Scheme

- a. The Institute and the RFCLs analyzed a total 11667 samples, out of which 336 samples were found non standard during 2008-09.
- b. The Institute exclusively undertakes the inspection of all imported urea fertilizers coming at the various discharge ports on behalf of the D/o Fertilizers and any variation found in the ship against contractual specification, is liable for penalty by the D/o Fertilizers.

- c. The inspection of canalized fertilizers like DAP & MOP are also primarily done by the Institute and its Regional laboratories with the assistance of the Fertilizer Inspectors in addition to the State Governments and the report is communicated to the State Governments for necessary administrative/legal action under the provisions of FCO, 1985.
- d. All the shipments carrying imported fertilizers of Urea, DAP, MOP, NPK (100% water soluble) and Micronutrient fertilizers have been inspected by the Institute's Inspectors at different discharge ports and a total of 861 ships/containers had been inspected during 2008-09, out of which 10 ships/containers of 100% Water soluble fertilizers were failed in form of nutrient/physical parameter..
- e. Though the State Governments are the Enforcement Agencies for ensuring quality of fertilizers in the State, the Central Government assist them in supplementing their activities through random inspection and sampling by the Central Teams of the Institute from the manufacturing units and their retail outlets, providing training to their enforcement officers.

**CENTRAL FERTILIZER QUALITY CONTROL & TRAINING INSTITUTE,
FARIDABAD (HARYANA-INDIA)**

**CENTRAL FERTILIZER QUALITY CONTROL & TRAINING INSTITUTE ,
FARIDABAD**

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About us

In pursuance of the recommendations of the Fertiliser Distribution Committee (Patel Committee, 1960), Sivaraman Committee (1965) and Estimates Committee of Lok Sabha (1967-68) to provide a lead to the State Quality Control Laboratories and to deal with the matters related to fertilizer quality control, the erstwhile **Central Fertiliser Control Laboratory** was set up as a sub ordinate office of Ministry of Agriculture, Department of Agriculture and Cooperation in the end of 4th Five Year Plan (1971-72) to undertake inspection and analysis of indigenous and imported fertilizers, standardization of methods of analysis and providing technical guidance to the State Govts. on the subject.

The activities of the laboratory were further strengthened during successive Plan periods. Further in view of the increasing importance of fertilizer quality control and thrust on training to State Enforcement Officers, the laboratory was upgraded as an Institute and was renamed as **Central Fertiliser Quality Control & Training Institute (CFQC&TI)** in 1982-83. Based on the activities, the Institute was also recognized as a Scientific and Technological Institute by the Department of Science and Technology (DST) in 1982. During 7th Plan, 3 Regional Laboratories of the Institute were also set up at Mumbai, Kalyani and Chennai, which started functioning from 1988-89 and are called as Regional Fertiliser Control Laboratories (RFCLs). The Institute as well as Regional Laboratories have been notified as Recognized Laboratory under clause 29 of Fertiliser (Control) Order, 1985. The Fertiliser Inspectors of Institute & R.F.C.Ls. have been notified as authorized Fertiliser Inspector under clause 27 of FCO (1985) having jurisdiction throughout the Country. The Institute and RFCLs are also the notified training institutions for training of State Enforcement Officers & Analysts under clause 27 A/29A of the FCO and they are also

the Referee Laboratory for second analysis under clause 29 B of FCO, 1985. The functions of the Institute and RFCLs are statutory and techno legal in nature.

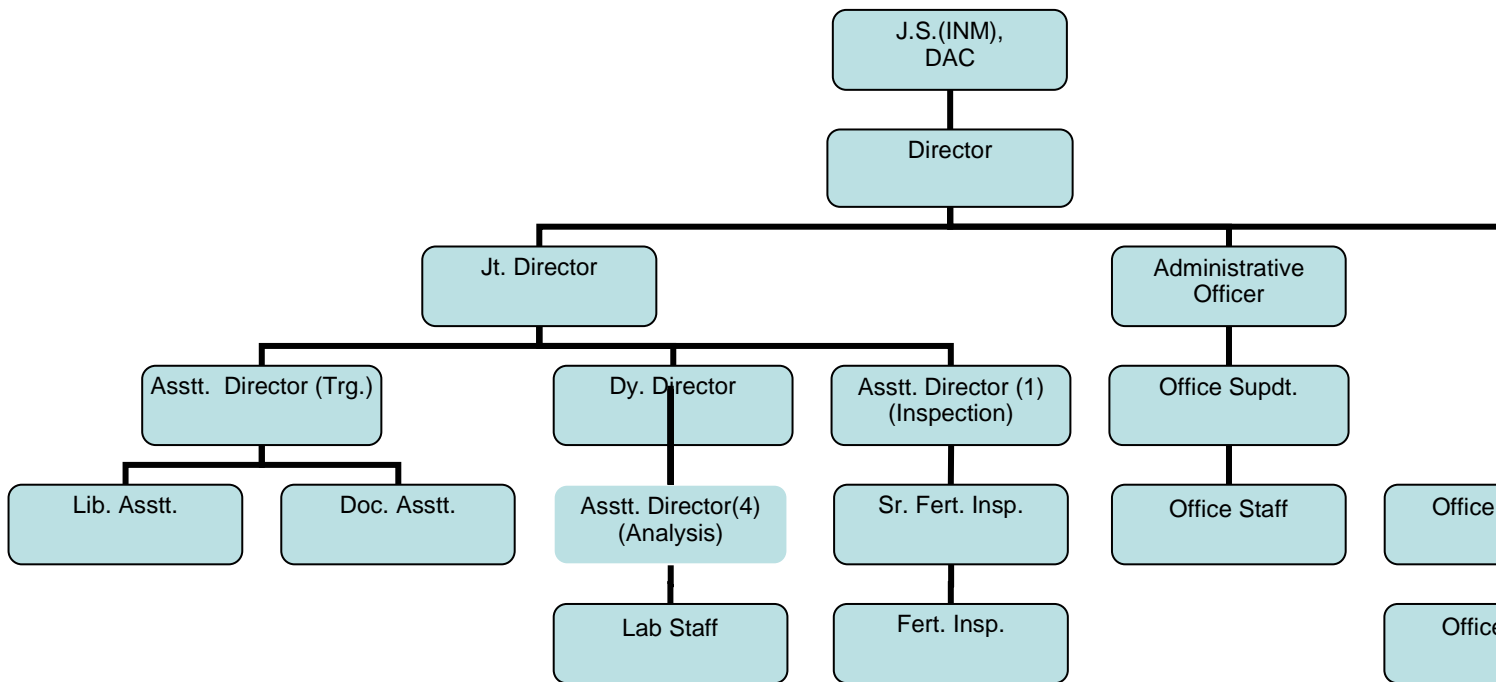
2. **Organizational Set Up:**

The Institute functions under the administrative control of INM Division of Union Ministry of Agriculture, Department of Agriculture and Cooperation as a subordinate office under the over all supervision of Joint Secretary (INM). The Director of the Institute has been notified as **Head of the Department** of the Institute since 1982-83 vide Notification No.10-9/82-Fert. Plg. dated 5.10.1982. The Regional Laboratories are headed by Sr. Analysts with supporting technical and administrative staff. The Institute has the total sanctioned strength of 91 posts which includes 17 Group A, 11 Group B, 40 Group C and 23 Group D officials. However, the presently only 67 posts are filled up as on 31.3.2009.

OBJECTIVES:-

- (i) Drawal, inspection and analysis of both indigenous and imported fertilizers.
- (ii) Training of State Fertiliser Inspectors and Fertiliser Analysts.
- (iii) Standardization/Development of methods of analysis of fertilizers.
- (iv) Acting as a Referee Laboratory and advisory body on matters related to FCO.
- (v) Preparation of technical literature in the field of Fertilizer Quality Control.

ORGANISATIONAL CHART
Central Fertilizer Quality Control & Training Institute, Faridabad



Major Activities:-

1 **Analysis of Fertiliser Samples** : The annual analyzing capacity of Institute is 8500 samples which includes 4000 for Institute and 1500 for each of Regional Laboratories . The main source of samples receipt are imported fertilizer samples drawn by the Inspectors of Insitute/RFCLs (70%), State Governments (20%) and few samples from Central Teams and Miscellaneous samples (10%). During 2008-09, total 11667 samples were analysed, out of which 2.9% samples were found non-standard. The capacity utilization is 137.3 %, which is due to arrival of more imported ships of fertilizers. The source wise details of samples received, analysed and found non standard at CFQC&TI/RFCLs during 2008-09 are as under:-

Sl. No	Source of Samples	2008-09		
		Analysed	Non-std	% N.S.
1	Imported Fertilisers	10548	35	0.3
2	State Govt.	507	105	20.7
3.	Referee samples	512	166	32.4
4	Central Team	58	16	27.6
5	Misc.	42	16	38.1
	Total	11667	338	2.9

2 **Samples drawn by Central Teams** :- The Central Teams consisting of 2/3 technical officers including one notified Fertilizer Inspector randomly visit different States alongwith State Govt. officers during peak kharif and rabi season to inspect manufacturers' and their dealers network for sampling. The samples are analysed at Institute/RFCLs on reciprocal and random basis and reports sent to respective states for taking further follow up action. About 30 to 50% samples drawn by Central Inspectors have been found to be non standard against average 5% samples in States. The larger number of non-standard samples are because of drawing only suspected and adulteration prone fertilizers. During 2008-09 total 58 samples have been drawn from Punjab, Gujarat, Andhra Pradesh, Jharkhand & Bihar, out of which 27.6% samples were found non standard.

Year	NO. OF SAMPLES								
	COLLECTED			NON STANDARD			% NON STANDARD		
	Manu- facturer	Dealer	Total	Manu- facturer	Dealer	Total	Manu- facturer	Dealer	Total
2006-07	30	57	87	19	32	51	63.33	56.11	58.62
2007-08	6	36	42	4	14	18	31.25	40.45	42.85
2008-09	22	36	58	5	11	16	22.72	30.55	27.58

2.1 The product-wise details of non standard samples during 2008-09 are as under:-

S.No.	Name of Product	2008-09		
		No. of Samples		%
		Analysed	Non Std.	Non Std.
1	Urea/AS/ Amm. Chloride	0	0	0.0
2	CAN	2	1	50.0
3	DAP	5	0	0.0
4	SSP	10	6	60.0
5	TSP	2	0	0.0
6	NPK Complex	8	0	0.0
7	NPK mixture	4	4	100.0
8	MNF	23	4	17.4
9.	100% W.S. Complex	2	1	50.0
10.	Sulphur	2	0	0.0
	TOTAL	58	16	27.58

2.2 The productwise analysis indicates that 100% NPK mixtures, 17.4% of Micronutrients and 60% of SSP samples were found non standard (in 2008-09) against all India average of 21.2, 12.9 & 18.3% respectively.

3 **Inspection of Imported Fertilisers:-**

The inspection of canalized fertilizer i.e. Urea is primarily done by the Inspectors of CFQC & TI/RFCLs, who regularly visit the discharge ports on receipt of information from DOF and draw samples. The samples are analyzed as per contractual provisions and report sent to the DOF and handling Agency for further necessary action at their end. For decanalized items like DAP and MOP besides the Central Inspectors, the State Inspectors also draw samples from the discharge ports for analysis in the respective laboratories for quality testing. The Central Institute/RFCLs send their

report to the concerned State Director of Agriculture and also to D/O Fertilizers and DAC for further necessary action at their end on the non standard samples.

To ensure 100% coverage of all ships at discharge ports, provision has been made under clause 35(4) of FCO, which makes it mandatory for every importer to inform about the arrival of ships to State Govts. and also to D/O Fertilizers and the Institute/RFCLs. The RFCLs located at Navi Mumbai, Chennai and Kalyani take care of the states/ports located in the west, south and east zone respectively while the Inspectors of the Institute cover only Gujarat ports.

It is observed that the variation in imported fertilizers are mostly in the physical parameters like particle size and sometimes in moisture and rarely in nutrient content. Incidentally the tolerance limit in Moisture and particle size has been prescribed in January, 2003. During 2008-09 total 1019 ships were covered, out of which only 12 ships were found non standard (out of 4 ships of Non Standard DAP, 2 ships failed in particle size and 2 ships in forms of nutrients, out of 5 ships of Non Standard NPK (C), 3 ships failed in particle size and 2 ship in forms of nutrients, 1 ship of NPK (100% WS) failed in forms of nutrients, 1 ship of CAN failed in particle size and 1 ship of Urea Amm. Nitrate failed in forms of nutrients). The number of ships inspected and found non standard during 2008-09 are as under:

Fertiliser	2008-09		
	No. of Ships Inspected	Non Std.	Parameter
Urea	225	-	-
DAP	197	4	2 in Particle size and 2 in forms of nutrients
MOP/SOP	302	-	-
NPK (C)	20	5	3 in Particle size and 2 in forms of nutrients
Amm. Sulphate	1	-	
NPK 100% WS	191	1	1 in forms of nutrients
Sulphur	30	-	-
TSP	12	-	

CAN	2	1	1 in particle size
Urea Amm. Nitrate	1	1	1 in forms of nutrients
Pot. Schoenite	6	-	
MNF	31	-	
MFNM	1	-	
Total	1019	12	

4 **Training of Enforcement Officers :-**

The training is the prime activity of the Institute. It is an exclusive notified training Institution for training of State Fertilizer Inspectors and Fertilizer Analysts under clause 27 A/29 A of FCO, 1985. The first training was initiated on a miniature scale in the year 1978-79 and has since been continued and strengthened during subsequent Plan periods both in terms of course content and number. Since early 80s, 9-10 training programmes are being organized every year for State Enforcement Officers and State Fertiliser Analysts as detailed below.

S. No	At CFQC&TI/RFCLs	Duration of the Programmes	No. of Training Programmes at	
			CFQC & TI	RFCLs
1	State Fertilizer Analysts	4 weeks	3	-
2	State Notified Authorities	1 week	1	1 at each RFCL
3	Incharge of Notified Laboratories	1 week	1	-
4.	State Fertilizer Inspectors	2 weeks	2-3	2 at each RFCL and 1 exclusive programme for NE Region at RFCL Kalyani
5	Foreign Participants	5 weeks	1	-
II. In States				
1	Fertilizer Dealers	1 day	5-8	3 at each RFCL A financial assistance of Rs.10000/- provided
2	Orientation Training Programmes	2 days	5-8	5-8 by each RFCL A financial assistance of Rs.25,000/- provided for each programme.

During 2008-09, total 16 training programmes for the Fertilizer Inspectors/Analysts and one for foreign participants have been organized in which 207 Indian Officers and 15 Foreign Participants have been trained. Besides 30 Orientation Training Programmes and 32 Dealers Training Programmes have been conducted. So far, 331 foreign officers from 62 developing countries have been trained by the Institute till 2008-09. The faculty mainly includes the technical officers of the Institute/RFCLs, however, the scientists from IARI, technical experts from M/o Agriculture, State Governments and Fertilizer Industry are periodically invited for delivering specialized lectures.

5 **Development of Methods:-**

The Institute has developed a number of new methods for analysis of zinc, chelated zinc and chelated iron and some micronutrients. Most of the existing methods for various nutrients have also been updated and accordingly FCO amendments have recently been made.

6. **Ensuring Quality of Quality Control Laboratories:-**

Since the tolerance limits in most of the fertilizers are very stringent and need precaution and expertise to keep the analytical errors within the narrow range, the Institute is working as a conscience keeper of the State quality control laboratories through periodical check samples of unknown composition sent to State laboratories to see its analytical accuracy and Check on analyzed samples where a certain percentage of the already analyzed samples are obtained by the Institute from each State quality control laboratory for cross check and in case of major deviations observed, the matter is taken up with the concerned laboratory for identifying the reasons and taking necessary corrective measures.

7. **Quick Test of Adulteration in Fertilisers :-**

The Institute besides its routine activities have developed the **Quick Testing Kit** for detection of adulteration in all major and micronutrient fertilizers on the spot. The tests are very simple and it is possible to be even adopted by the progressive farmers and the dealers after a short training. The chemicals and the other accessories are very common and easily available in any college laboratory or chemical dealers. This is only a qualitative test and does not have any legal sanctity. However, it is an easy

tool to detect the adulteration in the field conditions and to segregate the suspected stocks which can be subsequently analyzed by the state laboratories for quantitative tests and taking legal action against the offenders. The State Governments have, therefore, been advised for its popularization in the field.

8. Advisory Activities:-

The Institute being the premier technical organization to guide and advise on all aspects of fertilizer quality control in the country, the technical advice is given to the State Govts. on both administrative and technical aspects of the FCO. The Director of the Institute is also a member of the Central Fertiliser Committee constituted under clause 38 of FCO 1985 to advise the Government of India on the specification of the fertilizers, methods of analysis, inclusion of new products under FCO and providing technical advice to the Govt. periodically in the field.

9. Publication of Technical Literature:-

Ever since, the training programme was initiated by the Institute in 1978-79, the need for suitable literature in this specialized field was felt and the Institute took the responsibility for the preparation of literature in this field. A number of publications have since been issued and as a result many of them have since been revised and reprinted a number of times.

10. List of publications:-

- (i) Annual Reports
- (ii) Training Manual for Fertiliser Enforcement Officers (2003), updated in 2008
- (iii) Training Manual for Fertiliser Analysts (2003), updated in 2008
- (iv) Manual for Fertiliser Dealers (2000)
- (v) Handbook for Fertiliser Inspector, (1997).
- (vi) 25 years of CFQC&TI (1996).
- (vii) Handbook on Fertiliser Analysis.
- (viii) Manual for Fertiliser Inspectors

- (ix) Handbook on Fertiliser Quality Control (December 1984)
(Revised in November 1988).
- (x) Manual for Fertiliser Dealers (1984).
- (xi) Laboratory Handbook for fertilizer Analysts (1983).
- (xii) Operational Manual on CFCL Quick Fertiliser Testing Kit
(1982), updated in 2009.
- (xiii) Monograph on Fertiliser Quality Control for Fertiliser
Analyst/Inspectors (1982).

Besides a number of articles, papers have been published by the staff members of the Institute in various magazines in this field.

11. **Physical and Financial Targets & Achievements during XIth Plan**

S. No.	ACTIVITY	2007-08		2008-09		2009-10	
		Target	Achievement	Target	Achievement	Target	Achievement
1	Sample Analysis	8500	17673	8500	11667	8500	3069
2	Training Prog. For Inspectors & Analysts	16	16	16	16	15	3
3.	Dealers Trg.	30	30	30	32	15	4
4.	Orientation Courses	26	25	26	25	10	2
5	Foreign Trg. Programme	1	1	1	1	1	-
6	Financial (Rs. in lakhs)	340.00	276.00	600.00	351.00	604.00	123.63

12. Training Schedule for 2009-10:-

Training Programmes on Fertiliser Quality Control to be organised during 2009-10 at Central Fertiliser Quality Control and Training Institute, Faridabad and Regional Laboratories Mumbai, Chennai & Kalyani.

A. TRAINING COURSES AT C.F.Q.C. & T.I, FARIDABAD

1. TRAINING COURSES FOR FERTILIZER ANALYSTS:

Sr. No.	Course No.	Period	Seats Alloted To States	Total Seats
1	2	3	4	5
i.	87 th	01-26 June, 2009	Uttar Pradesh(2),Punjab(1), Rajasthan (3), Haryana (2), M.P. (3), Maharashtra (4), J.&K .(2) (one each from Jammu Division & Srinagar Division) Uttranchal (2), Himachal Pradesh (1)	20
ii.	88 th	06-31 July, 2009	Uttar Pradesh (1), Punjab (1), Rajasthan (1), Bihar (2), A.P. (5), Tamil Nadu (5), Gujarat (2), Chhatisgarh (2), Goa (1).	20
iii.	89 th	01-26 Feb., 2010	Andhra Pradesh (6), Pondicherry (1), Kerala (2), Karnataka (3).Tamil Nadu (2), Orissa (1), West Bengal (2), Jharkhand (1), Assam (1), Mizoram (1),	20
2. <u>TRAINING COURSE FOR FERTILIZER INSPECTORS :-</u>				
i.	122 nd	17-28 th Aug.,2009	Uttar Pradesh (2), Punjab (5), J & K (2), Himachal Pradesh (2), Haryana (5), Delhi (1), Uttranchal (3).	20
ii.	123 rd	07 -18 Dec.,2009	Uttar Pradesh (4), Punjab (4), J & K (2), Himachal Pradesh (2), Haryana (4), Delhi (1), Uttranchal(3).	20
3. <u>TRAINING COURSE FOR REGISTERING/NOTIFIED AUTHORITIES :-</u>				
i.	15 th	14- 18 Sept.,2009	Uttar Pradesh (5), Punjab (5), J & K (2), Himachal Pradesh (2), Haryana (3), Delhi (1), Uttranchal (2),	20
4. <u>TRAINING COURSE FOR FOREIGN PARTICIPANTS :</u>				
i.	25 th	21 Oct.-24 Nov.,2009	From developing countries covered under ITEC/SCAAP/COLOMBO PLAN	25

B. TRAINING COURSE AT REGIONAL LABORATORIES :-				
REGIONAL FERTILIZER CONTROL LABORATORY, KALYANI :				
1. TRAINING COURSE FOR FERTILIZER INSPECTORS:				
I	35 th	13-24 July, 2009	West Bengal (10), Orissa (5), Bihar (3), Jharkhand (2)	20
II.	36 th	07-19 December, 2009	Sikkim (2), Assam (4), Manipur (2), Nagaland (2), Tripura (4), Mizoram (2), Arunachal Pradesh (2) Meghalaya (2).	20
2. TRAINING COURSE FOR REGISTERING/NOTIFIED AUTHORITIES :-				
I.	9 th	24-28 August,2009	West Bengal (5), Orissa (4), Bihar (1), Jharkhand (1), Sikkim (1), Assam (3), Nagaland (1), Mizoram (1), Arunachal Pradesh (1), Tripura(2).	20
REGIONAL FERTILIZER CONTROL LABORATORY , NAVI MUMBAI :				
1. TRAINING COURSE FOR FERTILIZER INSPECTORS				
I	32 nd	7-18 Sept., 2009	Maharashtra (8), M.P. (3), Gujarat (2), Rajasthan (3), Goa (1), Daman & Due (1), Chhatisgarh (2).	20
II	33 rd	08-19 Feb.,2010	Maharashtra (8), M.P. (4), Gujarat (3), Rajasthan (3), Chhatisgarh (2).	20
2. TRAINING COURSE FOR REGISTERING/NOTIFIED AUTHORITIES :-				
I.	9 th	16-20 Nov., 2009	Maharashtra(5), M.P.(4), Gujarat (3), Rajasthan (4), Goa (1), Daman (1), Chhatisgarh (2).	20
REGIONAL FERTILIZER CONTROL LABORATORY , CHENNAI				
1. TRAINING COURSE FOR FERTILIZER INSPECTORS :-				
I	33 rd	03-14 Aug., 2009	Tamil Nadu (8), Andhra Pradesh (5), Karnataka (5), Kerala (1), Pondicherry (1).	20
II.	34 th	7-18 Dec.,2009	Tamil Nadu (10), Andhra Pradesh (5), Karnataka (5)	20
2. TRAINING COURSE FOR REGISTERING/NOTIFIED AUTHORITIES :-				
I.	9 th	05-09 Oct.,2009	Tamil Nadu (9), Andhra Pradesh (5), Karnataka (5), Kerala (1).	20

**STATEWISE TENTATIVE SCHEDULE FOR ORIENTATION TRAINING
COURSES TO BE ORGANISED DURING 2009-2010**

S. NO.	STATE	NO. OF Trg. Prog.	PLACE	TENTATIVE DATES
1.	PUNJAB	1	LUDHIANA	2-3 JULY,2009
2.	HARYANA	1	ROHTAK	11-12 AUGUST,2009
3.	UTTAR PRADESH	1	LUCKNOW	3-4 DECEMBER,2009
4.	UTTRANCHAL	1	NAINITAL	26-27 NOVEMBER,2009
5.	BIHAR	1	MUZAFFARPUR	15-16 SEPTEMBER, 2009
6.	GUJARAT	1	GANDHI NAGAR	5-6 NOVEMBER,2009
7.	MAHARASHTRA	1	AURANGABAD	27-28 AUGUST,2009
8.	WEST BENGAL	1	MIDNAPUR(W)	13-14 OCTOBER,2009
9.	TAMIL NADU	1	VIRUDHU NAGAR	23-24 JULY,2009
10.	KARNATAKA	1	GULBARGA	24-25 SEPTEMBER., 2009
	TOTAL	10.		

**STATEWISE TENTATIVE SCHEDULE FOR DEALERS TRAINING COURSES
TO BE ORGANISED DURING 2009-2010**

S. NO.	STATE	NO. OF Trg. Prog.	PLACE	SPONSORING CO.	TENTATIVE DATES
1	HIMACHAL PRADESH	1	UNA	NFL	25.08.09
2	HARYANA	1	KARNAL	CHAMBAL FERT. & CHEM. LTD	03.07.09
3	UTTAR PRADESH	2	BULANDSHAHR KANPUR	KRIBHCO INDO GULF	04.08.09 23.09.09
4	PUNJAB	1	AMRITSAR	GNVFC LTD	09.09.09
5	UTTRAKHAND	1	U.S. NAGAR	IFFCO	08.10.09
6	RAJASTHAN	1	ALWAR	SHRI RAM FERT. & CHEMICALS	11.12.09
7.	MAHARASHTRA	1	PUNE	IPL	11.06.09
8.	MADHYA PRADESH	1	SATNA	CHAMBAL FERT. & CHEM. LTD	26.11.09
9.	WEST BENGAL	1	VARDHMAN	TATA CHEM. LTD.	09.10.09
10	ORISSA	1	PURI	ZUARI	17.11.09
11	ASSAM	1	GUWAHATI	IFFCO	26.11.09
12	TAMIL NADU	1	PERAMBALUR	MFL	10.06.09
13	ANDHRA PRADESH	1	ONGOLE	CFL	13.07.09
14	KARNATAKA	1	HASSAN	IPL	16.10.09
	Total	15			

**ADDRESSES OF CENTRAL FERTILIZER QUALITY CONTROL &
TRAINING INSTITUTE , FARIDABAD AND REGIONAL FERTILIZER
CONTROL LABORATORIES**

S. No	Name of Laboratory & Address	Name of Incharge	Tel. No. (Office)	E Mail Address
1	Central Fertilizer Quality Control & Training Institute, N.H.IV, FARIDABAD-121001 (HARYANA)	Dr. G. Chakraborti Director	0129-2414712	cfqcti@nic.in
2	Regional Fertilizer Control Laboratory, Plot No.28 & 29, Sector-24, Turbhe, P.O. Vashi, Navi Mumbai-400703	Sh K.K. Dhingra Deputy Director	022-27838425	Fqctmh01@nic.in
3	Regional Fertilizer Control Laboratory, P.O. Kalyani- Distt. Nadia-741235 (WB)	Sh. S. Singh Deputy Director	033-25829291	Fqctwb01@nic.in
4	Regional Fertilizer Control Laboratory, Near Main Gate, Madhavaram Milk Colony, Chennai-600051	Sh. G.N. Deo, Deputy Director	044-25552744	Fqcttn01@nic.in

13.Related References:- Fertilizer Quality Control

FERTILIZER QUALITY CONTROL IN INDIA

- > Objectives
- > Penal Provisions
- > Definition of Important terms & Major Problems of FQC
- > Enforcement Agencies & Status of Quality Control in India
- > Salient features of FCO Amendments, 2003
- > Forms Prescribed under FCO
- > Specifications of Fertilizers & Tolerance Limits
- > Addresses of State Fertilizer Quality Control Labs. & Referee Labs.
- > Important Guidelines issued by Govt. of India on FCO.
- > New on Fertilizer Quality Control (Blink)



OBJECTIVES :- *To ensure adequate availability of right quality of fertilizers to farmers at right time and at right price.*

Fertilizer is the key input for sustainable agriculture. In the Post Green Revolution period, more than 50% of additional foodgrains production has been contributed by the fertilizer alone. To ensure adequate availability of right quality of fertilizers at reasonable price to the farmers in the country, the '**Fertilizer**' was declared as an Essential Commodity in March, 1957 and the **Fertilizer Control Order (FCO)** was promulgated by the Central Government under section 3 of the Essential Commodities Act (ECA), 1955 to regulate the trade, price, quality and distribution of Fertilizers in the Country.

The Fertilizer Control Order provides for compulsory registration of fertilizer manufacturers, importers and dealers, specification of all fertilizers manufactured/imported and sold in the country, regulation on manufacture of fertilizer mixtures, packing and labeling on the fertilizer bags, appointment of enforcement agencies, setting up of quality control laboratories and prohibition on manufacture/import and sale of non-standard/spurious/adulterated fertilizers. The order also provides for cancellation of authorization letter/registration certificates of dealers and mixture manufacturers and also imprisonment from 3 months to 7 years with fine to offenders under ECA. The FCO offence has also been declared as cognizable and non bail able.

The FCO has been amended periodically to keep it abreast with the changing scenario. A number of amendments have been made during last 4 decades and a few recently in 2003, which includes replacement of Dealers Registration Certificate with Authorization letter, providing grievances redressal mechanism through Referee Analysis and tolerances in Moisture and particle size, for the first time prescribing specification of provisional fertilizers for commercial trials, specification of new grades of 100% water soluble NPK fertilizers, maintaining of minimum laboratory facilities for all Fertilizer Control Laboratories for ensuring accuracy of results, reduced time limit from sampling to communication of results, provision for secrecy of samples, reprocessing of damaged stock during transit in special situation and methods of analysis of different fertilizers etc.

2. PENAL PROVISIONS :-

The FCO provides for administrative action against offenders while ECA provides for penal provisions. The offenders of FCO are prosecuted under Section 7 of ECA, 1955. The following penalties have been prescribed under ECA :-

- i) 3 months to 7 years imprisonment with fine under Section 7(i)(a)(ii).
- ii) Making any false information is punishable up to 5 years imprisonment.
- iii) The fertilizer stock and also its receptacle can be forfeited under section 7(i)(ii).
- iv) The FCO offences are treated as cognizable and non bailable offences under section 10 A.
- v) All offences are to be tried by the Courts of 1st Class Magistrate only, who can impose imprisonment upto 2 years and fine.
- vi) The Authorization letter of dealers can be suspended/cancelled/debarred under clause 31 of FCO and no fresh dealers authorization is issued within one year of the cancellation of their Authorization Letter or upto 3 years if the dealer has been convicted by the Court.

3. Definition of Different Terms under FCO, 1985	
	Definition
Certificate of source	A certificate given by a State Government, Commodity Board, manufacturer, importer, pool handling agency or -- as the case may be, wholesale dealer indicating therein the source from which Fertilizer for purpose of sale is obtained

Fertilizer	Any substance used or intended to be used as a Fertilizer of the soil and/or crop and specified in Part A of Schedule I and includes a Mixture of Fertilizer and Special Mixture of Fertilizers.
Compound or complex Fertilizer	A Fertilizer containing two or more nutrients during the production of which chemical reaction takes place
Controller	The person appointed as controller of Fertilizers by the Central Government and includes any other person empowered by the Central Government to exercise or perform all or any of the powers, or as the case may be, functions of the Controller under this order
Dealer	A person carrying on the business of selling Fertilizers whether wholesale or retail or industrial use and includes a manufacturer, importer and a pool handling agency carrying on such business and the agents of such person, manufacture, importer or pool handling agency
Grade	The nutrient element contents in the Fertilizer expressed in percentage
Granulated mixture	A mixture of Fertilizers made by intimately mixing two or more Fertilizers with or without inert material and granulating them together, without involving any chemical reaction
Importer	A person who imports Fertilizer in accordance with the Export and import policy of the Central Government, as amended from time to time
Inspector	Inspector of Fertilizers appointed under clause 27
Industrial dealer	A dealer who sells Fertilizers for industrial purposes
Industrial purposes	The use of Fertilizer for purposes other than fertilization of soil and increasing productivity of crops

Manufacturer	A person who produces Fertilizers or mixtures of Fertilizers
Mixture of Fertilizer	A mixture of fertilizers made by physical mixing two or more Fertilizers with or without inert material in physical or granular form and includes a mixture of NPK Fertilizers, a mixture of micro nutrient Fertilizers and a mixture of NPK with micro nutrient Fertilizers
Notified Authority	An Authority appointed under Clause 26 A
Physical mixture	A mixture of Fertilizer made by physically mixing of two or more Fertilizers with or without inert material necessary to make a required grade, without involving any chemical reaction
Registering Authority	An Authority appointed under Clause 26 in respect of Mixture of Fertilizers and Special Mixture of Fertilizers
Retail dealer	A dealer who sells Fertilizer to farmers or plantations for agricultural use such as for fertilization of soil and increasing productivity of crops
Special mixture of Fertilizers	Any mixture of Fertilizers prepared for experimental purposes in pursuance of a requisition made by any person (including a person engaged in the cultivation of tea, coffee or rubber) for sale to that person in such quantity and within such period as may be specified in such requisition
Wholesale dealer	A dealer who sell Fertilizer otherwise than in retail for agricultural use such as for fertilization of soil and increasing productivity of crops

4. About 20 grades of various fertilisers are produced in 58 Major N & P manufacturing units and over 78 SSP Manufacturing units. About 44 million tonnes of fertilizer material (22.57mt nutrients) are distributed through a network of 2.89 Lakh dealers of both private and institutional channel. The occasional shortage of some fertilizers in sporadic pockets and

high cost of fertilizers especially after decontrol of phosphatic and potassic fertilisers, are often exploited by the unscrupulous elements for adulteration/misbranding.

5. **MAJOR PROBLEMS OF QUALITY CONTROL** : -The major problems in quality control are :-

I. **ADULTERATION/MISBRANDING - (Major PROBLEM)**

1. NPK(Mixtures)/SSP (Granular) -----DAP/NPK Complexes
2. Magnesium Sulphate -----Zinc Sulphate
3. Common Salt/sand -----MOP
4. Gypsum/Fly ash/Clay -----SSP/DAP/Complexes.

II. **DELIBERATE MANUFACTURING OF LOW QUALITY FERTILISERS** :

- SSP
- Micronutrient Fertilisers

III. **SHORT WEIGHT OF BAGS**

IV. **Black marketing or Charging price higher than the notified price**

6. **ADULTERATION PRONE FERTILIZERS:-**

The quality of fertilizers being sold to the farmers are often exploited by the unscrupulous elements. However, certain fertilisers are more prone where adulteration/mixing of cheap foreign material having physical similarities is quite easily possible without detection by the ordinary means or where the inputs/ingredients can be easily manipulated for affecting the finished product to a lower quality. These are called as Prone Fertilisers.

At Macro level, based on the samples found Non-standard in different states, the following prone fertilisers have been identified in order of severity:-

- I) Fertilizer Mixtures
- ii) SSP
- iii) Micronutrient fertilizers
- iv) DAP & Complexes (normally due to adulteration)

The main reasons for non standard material in fertilizer mixtures and micronutrient fertilizers are due to use of lesser quantity of ingredients/raw

material or their lower quality, the non standard sample in SSP is either due to this account or inadequate curing or use of the excess quantity of fillers and non homogenous mixing..

5. ENFORCEMENT AGENCIES:

The State Govts. are primarily responsible for implementing the FCO provisions through appointment of Enforcement agencies like Fertilizer Inspectors, Registering Authority/Notified Authority and Appellate Authority, who have been given adequate powers under the Order. They also set up quality control laboratories for testing of samples.

The Central Govt. only oversee the activities and assist the State Govts. through periodical executive guidelines, making necessary amendment in FCO provisions as and when required and training of their Enforcement Officers at the Central Fertilizer Quality Control & Training Institute & its 3 Regional Laboratories located at Navi Mumbai, Chennai and Kalyani (Near Kolkata).

The Fertilizer Inspectors, who are the back bone for implementing the FCO provisions, are notified by the State Govts. under clause 27 of FCO. They are empowered to draw samples from importers, manufacturing units, distribution network and dealers, seek any information about manufacture, import and sale of any fertilizer, enter upon and search any premises where fertilizer is manufactured or sold, seize any fertilizer and also books of accounts in case any contravention of FCO provisions is anticipated and also to stop the sale of fertilisers. They are also empowered to check the illegal inter-state movement of fertilizers under Fertiliser Movement Control Order (FMCO).

The Registering Authorities/Notified Authority are notified by the State Govts. under clause 26 and 26A for issuance and renewal of Registration Certificates for manufacture of fertilizer mixtures and special mixtures and dealers respectively. They are also empowered to suspend/cancel/debar these certificates in case of violation of FCO provisions. The Appellate Authority is also notified by the State Govts. to hear appeal against the orders of Registering Authority/Notified Authority about refusal to grant or renew Registration Certificates/Authorization Letter and its suspension/cancellation/debarment. The order of the Appellate Authority is considered final under FCO.

The State Fertilizer Inspectors regularly draw samples of all imported and indigenous fertilisers and send to State Quality Control Laboratory, who test as per prescribed procedure and communicate the result to Inspector within 30 days, if the sample meets prescribed specification or not (standard or non standard). If sample is found Non-standard the administrative/legal action is taken against offender by Registering Authority/Fertiliser Inspector.

The Central Govt. has also notified a limited number of Fertilizer Inspectors posted at Central Fertilizer Quality Control & Training Institute and its 3 Regional Laboratories and defined their area of jurisdiction as throughout the country. They mainly inspect the imported fertilizers at the discharge ports and randomly the indigenous manufacturing units and their distribution network to supplement the activities of State Govts. samples are analysed in the Central Institute and Regional Laboratories and the reports are sent to the State Govts. for further follow up action on non standard samples as per provisions of FCO, 1985.

6. QUALITY CONTROL LABORATORIES:-

With the sustained efforts of Government, the number of laboratories have increased from 27 during 5th Plan to 44 by the end of 6th Plan (1984-85) and 47 during 7th Plan. Now, there are 71 Fertilizer Quality Control Laboratories in the country, which includes 4 laboratories of Govt. of India with total annual analyzing capacity of 131365 samples. This is inadequate in view of the minimum requirement of 5.78 lakhs samples capacity to cover each dealer's shop once during Kharif and Rabi. Most of the States have one or more labs. However, 7 States namely : Arunachal Pradesh, Sikkim, Manipur, Tripura, Meghalaya, Delhi, Goa and al U.Ts.(except Pondicherry) do not have any laboratory and they are presently being catered from Govt. of India Laboratories. The number of laboratories and analytical capacity during 1995-96 to 2008-09 are as under :-

Year	No. of Lab.	Analytical Capacity	Sample Analysed	Percent Non-Standard
1995-96	51	106475	93144	5.1
1996-97	63	107430	96450	5.5
1997-98	63	107920	96292	5.9

1998-99	63	113150	92963	6.6
1999-2000	64	117365	123329	6.0
2000-01	66	120315	104037	5.3
2001-02	66	119415	108425	5.7
2002-03	67	125480	109504	5.4
2003-04	67	124778	104647	5.5
2004-05	67	124730	108859	6.0
2005-06	67	122488	111745	6.0
2006-07	68	129250	116142	6.0
2007-08	69	129331	95866	6.2
2008-09	71	132865	104792	5.5

7. INADEQUACY OF LABORATORY CAPACITY :

The optimal laboratory capacity should cover all fertilizers and all dealers at each Kharif and Rabi season, which means 17.34 lakh samples (2.89 lakh dealers x 3 fertiliser x 2seasons). However, the minimum capacity should be doubled the number of dealers to cover each dealer during each Kharif and Rabi season and need 5.78 lakh samples but the existing capacity is only 1.33 lakhs. This needs strengthening/Setting up minimum 40 laboratories in different states especially in U.P., Punjab and West Bengal.

8. CAPACITY UTILISATION :-

Though on All India basis, 74.1% of the capacity is being utilized, however, the utilization in the State of Assam, Jharkhand, Mizoram, J&K, Kerala, Uttaranchal and Tamil Nadu are below 50% while in some states, it is nearly 100% or more e.g. U.P., Punjab & Puducherry. The capacity of each Laboratory is also very variable from only 250 in Mizoram, 500 in Assam and 700 in Puducherry, 1250 in Tamil Nadu to 3000 in A.P.

9. SAMPLING PATTERN:-

In view of very scanty laboratory facility available in the country (only 20% of the minimal requirement), specific attention needs to be given on the problem or prone fertilizers. Though the situation has improved over a period of time, however, yet substantial number of samples are still being drawn from the non prone fertilizers in the different states at the cost of

prone fertilizers. During 2007-08, on all India basis about 22.8% samples had been drawn and analyzed from Urea but only 0.8% of these samples were found Non-Standard. About 5.6% samples of total samples were drawn from the NPK mixtures, out of which 26.6% samples were found Non-Standard. The number of samples drawn from SSP were about 11.5% of total samples and 13.5% of these samples were found Non standard. This non judicious sampling pattern is very conspicuous in some states like Bihar, Orissa, Gujarat, Rajasthan, Kerala and Tamil Nadu where large number of samples are being drawn only from Urea. This needs to be corrected for providing analytical facilities for the problem fertilizers.

10. NON STANDARD SAMPLES :-

The percentage of Non standard samples on All India basis is hovering around 6% during last 5 years. However, it varies from State to State from 21.2 % in M.P., 20.5% in Maharashtra, 6-8% in Assam, Karnataka, UP, Chhatisgarh & West Bengal & around 2-5% in Orissa, Rajasthan, Haryana, J&K, Punjab, Uttaranchal, AP, Kerala. &Tamil Nadu and around 1 % in Bihar, Jharkhand, Gujarat and Puducherry during 2007-08.

On all India basis 26.6 % NPK (Mixtures) followed by 13.5% of SSP, 9.2% MNF, 6.1% NPK Complexes, 3.6% DAP & 1.1% MOP/SOP was found Non standard during 2007-08, but its magnitude vary from State to State.

11. SALIENT FEATURES OF FCO AMENDMENTS 2003

- (i) Dispensing with registration certificate of dealers as it has now been replaced with the simple system of memorandum of intimation in the new format A1 and its acknowledgement in form A2 as the authorization letter for carrying out business of fertilizer trade by all categories of dealers.
- (ii) Provision of Referee analysis which was a long standing demand from the State Governments as well as industry. This new provision has been made under clause 29 B and 32 of FCO, wherein a grievance redressal mechanism to the aggrieved dealer has been provided. The order provides that the State Appellate

Authority may permit the referee analysis of a fertilizer sample in a notified laboratory of any other State Government or Central Government. It also provides for Referee analysis in respect of samples drawn by the CFQC&TI and its Regional Laboratories by the Controller of Fertilisers (namely, Joint Secretary(INM), Department of Agriculture & Cooperation, Krishi Bhavan, New Delhi).

- (iii) Prescribing tolerance limits for particle size at 3 units and for moisture at 0.3 units under Schedule II B.
- (iv) Prescribing specification of provisional fertilizers for commercial trials under the newly introduced clause 20A of FCO. Also the Government has permitted the commercial trials of two grades of NPK fertilizer complexes fortified with Zinc for two years to be manufactured by M/s IFFCO (i.e. for 10:26:26- 0.5% Zn and 12:32:16-0.5% Zn) vide notification issued under SO (50(E) dated 16.1.2003 and DAP 18:46:0 -0.3B, NPK 12:32:16- 0.3 B, NPK 10:26:26- 0.3 B vide SO 539 (E) dated 12.5.2003.
- (v) Notification of 6 new grades of NPK 100% water soluble fertilizers and also Boric acid.
- (vi) Disposal of non standard fertilizers imported by Central Government will now be only by the Central Government to the manufacturers of complex fertilizers and mixtures of fertilizers etc. (Clause 23(4)).
- (vii) A new provision for appeal to Central Government in case of any dislocation of ECA allocation made by Central Government.
- (viii) Increased validity period of special mixtures (Clause 16) from 3 months to 6 months and its further extension upto 12 months.
- (ix) Mandatory printing of words 'Fertilizers' on the containers (Clause 21) and month and year of manufacture/import.
- (x) Maintenance of minimum laboratory facilities by each State Fertilizer Quality Control Laboratory under clause 29 (2).
- (xi) The time limit for sending samples to laboratories and its communication of results is being reduced from existing 97 days to only 52 days which includes reduced period for analysis of samples in the laboratory as 30 days and communication of results to dealers to only 15 days.
- (xii) The prior approval of Central Government for prescribing the fees under Clause 36 by the State Governments has now been dispensed with.

- (xiii) Some changes in the nomenclature of fertilizers in Schedule I A has been made including providing specific sub heading for 100% Water soluble NPK fertilizer.
- (xiv) Some changes in the form 'J' to maintain the secrecy of samples have been made & also a new Form 'P' introduced.
- (xv) Providing changes or updating methods of analysis of moisture, total, ammoniacal, nitrate and urea nitrogen, phosphates, potassium, zinc, magnesium, calcium nitrate and particle size. Further method of analysis of micronutrient fertilizer mixtures by AAS has been prescribed in addition to the sampling procedure for drawal of samples from hatches or the discharging ships.
- (xvi) A new grade NPK 15:15:15, Boric Acid, Di-Sodium Octaborate Tetrahydrate ($\text{Na}_2\text{B}_4\text{O}_{13}\cdot 4\text{H}_2\text{O}$), Zincated Phosphate (Suspension).
- (xvii) Prescribing heavy metals like Cd and As in Zinc Sulphate. H_2O and $7\text{H}_2\text{O}$.
- (xviii) Provision for affixing product details on small packs of 5 kg bags.
- (xix) Provision for reprocessing of damaged material during transit due to natural calamities. A detailed guidelines have already been issued .
- (xx) Prescribing specification of 'S' content in all S containing fertilizers.

Forms Prescribed under FCO, 1985

Form	Detailed Description
A	Application for Registration (Ref.Cl.8)
B	Certificate of Registration (Ref. Cl.9)
A1	Memorandum of Intimation (Ref. Cl.8(2))
A2	Acknowledgement (Ref. Cl.8(3))
C	Renewal of certificate of Registration (Ref. Cl.11)
D	Application for obtaining certificate of manufacture for Fertilizer mixtures/Renewal (Ref.Cl.14 (2) & 18(1))
E	Application for obtaining certificate of manufacture of special mixture (Ref.Cl.14(2)(b))
F	Certificate for manufacture of mixture of fertilizers (Ref. Cl.15(2) & 18(2))
G	Certificate for manufacture of special mixtures (Ref. Cl.15(2))
H	Application for disposal of non standard fertilizers (Ref. Cl.23(1) (b))
I	Certificate of authorization for sale and disposal of non standard fertilizer (Ref. Cl.23(1)(b))
J	Form for Sampling of Fertilizers (Ref. Cl.28(1)(b))
K	Form for dispatch of fertilizer sample to the laboratory for analysis (Ref. Cl.30(1))
L	Laboratory analysis report (Ref. Cl.30(1))
M	Cash or credit memorandum issued by the dealer for purchase of fertilizer (Ref. Cl.5)
N	Maintenance of Stock Register (Ref. Cl.35(1)(a))
O	Certificate of source (Ref. Cl.8 & 11)
P	Particulars of samples drawn (Ref. Cl. 28(1)(b))

LIST OF FERTILIZERS NOTIFIED UNDER FCO SCHEDULE - I A

1. (a) **STRAIGHT NITROGENOUS FERTILIZERS**
 - i. Ammonium Sulphate
 - ii. Urea (46% N) (While free flowing)
 - iii. Urea (coated) (45% N) (While free flowing)
 - iv. Ammonium Chloride
 - v. Calcium Ammonium Nitrate (25% N)
 - vi. Calcium Ammonium Nitrate (26% N)
 - vii. Anhydrous Ammonia
 - viii. Urea Super Granulated

- ix. Urea (Granular)
- x. Urea Ammonium Nitrate (32%) (Liquid)

1. (b) STRAIGHT PHOSPHATIC FERTILIZERS

- i. Single Superphosphate (16% P₂O₅ Powdered)
- ii. Single Superphosphate (14% P₂O₅ Powdered)
- iii. Triple Superphosphate
- iv. Bone meal, Raw
- v. Bone meal, Steamed
- vi. Rockphosphate
- vii. Single Superphosphate (16% P₂O₅ Granulated)
- viii. Superphosphoric Acid (70% P₂O₅) (Liquid)

1. (c) STRIGHT POTASSIC FERTILIZERS

- i. Potassium Chloride (Muriate of Potash)
- ii. Potassium Sulphate
- iii. Potassium Schoenite
- iv. Potassium Chloride (Muriate of Potash) (Granular)

1. (d) N. P. COMPLEX FERTILIZERS

- i. Diammonium Phosphate (18-46-0)
- ii. Ammonium Phosphate Sulphate (16-20-0)
- iii. Ammonium Phosphate Sulphate (20-20-0)
- iv. Ammonium Phosphate Sulphate Nitrate (20-20-0)
- v. Ammonium Phosphate Sulphate (18-9-0)
- vi. Nitro Phosphate (20-20-0)
- vii. Urea Ammonium phosphate (28-28-0)
- viii. Urea Ammonium Phosphate (24-24-0)
- ix. Urea Ammonium Phosphates (20-20-0)
- x. Mono Ammonium Phosphate (11-52-0)
- xi. Nitrophosphate (23-23-0)
- xii. Ammonium Nitrate phosphate (23-23-0)
- xiii. Ammonium Poly Phosphate (10-34-0)
- xiv. Ammonium Phosphate (14-28-0)

1. (e) N.P.K. COMPLEX FERTILIZERS

- i. Nitrophosphate with Potash (15-15-15)
- ii. N.P.K (10-26-26)
- iii. N.P.K.(12-32-16)
- iv. N.P.K. (22-22-11)
- v. N.P.K. (14-35-14)
- vi. N.P.K. (17-17-17)
- vii. N.P.K. (14-28-14)
- viii. N.P.K. (19-19-19)

- ix. N.P.K. (17-17-17)
- x. N.P.K. (20-10-10)
- xi. N.P.K. (15-15-15)

1 (f) MICRONUTRIENTS

- i. Zinc Sulphate Heptahydrate ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$)
- ii. Manganese Sulphate
- iii. Borax (Sodium Tetraborate) for soil application
- iv. Copper Sulphate
- v. Ferrous Sulphate
- vi. Ammonium Molybdate
- vii. Chelated Zinc as Zn-EDTA
- viii. Chelated Iron as Fe-EDTA
- ix. Zinc Sulphate Mono-hydrate ($\text{ZnSO}_4 \cdot \text{H}_2\text{O}$)
- x. Magnesium Sulphate
- xi. Boric Acid
- xii. Di-sodium Octaborate Tetrahydrate

1. (g) FORTIFIED FERTILIZERS

- i. Boronated Single Superphosphate (16% P_2O_5 Powdered)
- ii. Zincated Urea
- iii. Zincated Phosphate (Suspension)

1. (h) 100% WATER SOLUBLE COMPLEX FERTILIZERS

- i. Potassium Nitrate (13-0-45)
- ii. Mono Potassium Phosphate (0-52-34)
- iii. Calcium Nitrate
- iv. NPK (13-40-13)
- v. NPK (18-18-18)
- vi. NPK (13-5-26)
- vii. NPK (6-12-36)
- viii. NPK (20-20-20)
- ix. NPK (19-19-19)
- x. Potassium Magnesium Sulphate

Mono Ammonium Phosphate (12-61-0)

SPECIFICATIONS OF FERTILIZERS.

<p>1(a). STRAIGHT NITROGENOUS FERTILIZERS.</p> <p>1. Ammonium Sulphate:</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Ammoniacal nitrogen per cent by weight, minimum iii. Free acidity (as H₂SO₄) per cent by weight, maximum (0.04 for material obtained from by-product ammonia and by-product gypsum) iv. Arsenic as (As₂O₃) per cent by weight, maximum v. Sulphur (as S), percent by weight, minimum 	<p>1.0 20.6 0.025 0.01 23.0</p>
<p>2. Urea (46% N) (While free flowing)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Total nitrogen, per cent by weight, (on dry basis) minimum iii. Biuret, per cent by weight, maximum iv. Particle size – Not less than 90 per cent of the material shall pass through 2.8 mm IS sieve and not less than 80 per cent by weight shall be retained on 1mm IS sieve 	<p>1.0 46.00 1.5</p>
<p>3. Urea (coated) (45% N) (While free flowing)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, content with coating, minimum iii. Biuret, per cent by weight, maximum iv. Particle size -90 per cent of the material shall passthrough 2.8 mm IS sieve and not less than 80 per cent by weight shall be retained on 1 mm IS sieve. 	<p>0.5 45.0 1.5</p>
<p>4. Ammonium Chloride</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Ammoniacal nitrogen, per cent by weight, minimum iii. Chloride other than ammonium chloride (as NaCl) per cent by weight, (on dry basis), maximum iv. 	<p>2.0 25.0 2.0</p>

<p>5. Calcium Ammonium Nitrate (25% N)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total ammoniacal and nitrate nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Calcium nitrate per cent by weight, maximum v. Particle size-80 per cent of the material shall passthrough 4mm IS sieve and be retained on 1mm IS sieve. Not more than 10 per cent shall be below 1mm IS sieve. 	<p>1.00 25.0 12.5 0.5</p>
<p>6. Calcium Ammonium Nitrate (26% N)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total Ammoniacal and nitrate nitrogen per cent by weight minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Calcium nitrate per cent by weight, maximum v. Particle size-90 per cent of the material shall pass through 4mm IS sieve and be retained on 1mm IS sieve. Not more than 5 per cent shall be below 1 mm IS sieve. 	<p>1.0 26.0 13.0 0.5</p>
<p>7. Anhydrous Ammonia</p> <ul style="list-style-type: none"> i. Ammonia per cent by weight, minimum ii. Water per cent by weight, maximum iii. Oil content by weight, maximum 	<p>99.0 1.0 20 ppm</p>
<p>8. Urea Super Granulated</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Total nitrogen. per cent by weight (on dry basis), minimum iii. Biuret per cent by weight, maximum iv. Particle size – not less than 90 per cent of the material shall pass through 13.2 mm IS sieve and not less than 80 per cent by weight shall be retained on 9.5 mm IS sieve. 	<p>1.00 46.00 1.5</p>

<p>9. Urea (Granular)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Total nitrogen, per cent by weight, minimum 4 iii. Biuret, per cent by weight, maximum iv. Particle size – not less than 90 per cent of the material shall pass through 4mm IS sieve and be retained on 2mm IS sieve. Not more than 5 per cent shall below 2mm IS sieve. 	<p>1.00 46.00 1.5</p>
<p>1(b) STRAIGHT PHOSPHATIC FERTILIZERS</p> <p>1. Single Superphosphate (16% P₂O₅ Powdered)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Free phosphoric acid (as P₂O₅) per cent by weight maximum iii. Water soluble phosphates (as P₂O₅) per cent by weight, minimum iv. Sulphur (as S), per cent by weight, minimum 	<p>12.0 4.0 16.0 11.0</p>
<p>2. Single Superphosphate (14% P₂O₅ Powdered)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Free phosphoric acid (as P₂ O₅) per cent by weight, maximum iii. Water soluble phosphates (as P₂O₅), per sent by weight iv. Sulphur (as S), per cent by weight, minimum 	<p>12.0 4.0 14.0 11.0</p>
<p>3. Triple Superphosphate</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Free phosphoric acid (as P₂O₅) per cent by weight, maximum iii. Total phosphates (as P₂O₅) per cent by weight, minimum iv. Water soluble phosphates (as P₂O₅)per cent by weight, minimum 	<p>12.0 3.0 46.0 42.25</p>

<p>4. Bone meal, Raw</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Acid insoluble matter per cent by weight, maximum iii. Total phosphates (as P_2O_5) per cent by weight, minimum iv. 2 per cent citric acid soluble phosphates (as P_2O_5) per cent by weight, minimum v. Nitrogen content of water insoluble portion per cent by weight, minimum vi. Particle size-The material shall pass wholly thorough 2.36 mm IS sieve of which not more than 30 per cent shall be retained on 0.85 mm IS sieve. 	<p>8.0 12.0 20.0 8.0 3.0</p>
<p>5. Bone meal, Steamed</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total phosphates (as P_2O_5) per cent by weight (on dry basis) minimum iii. 2 per cent citric acid soluble phosphates (as $P_2OPv5Pv$) per cent by weight , (on dry basis) minimum iv. Particle size-Not less than 90 per cent of the material shall pass through 1.18 mm IS sieve. 	<p>7.0 22.0 16.0</p>
<p>6. Rockphosphate</p> <ul style="list-style-type: none"> i. Particle size - Minimum 90 per cent of the material shall pass through 0.15 mm IS sieve and the balance 10 per cent of material shall pass through 0.25 mm IS sieve. ii. Total phosphate (as P_2O_5) per cent by weight, minimum 	<p>18.0</p>
<p>7. Single Superphosphate (16% P_2O_5 Granulated)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Free shosphoric acid (as P_2O_5) per cent by weight, maximum iii. Water soluble phosphates (as P_2O_5) per cent by weight, minimum iv. Particle size-Not less than 90 per cent of the material shall pass through 4mm IS sieve and shall be retained on 1 mm IS sieve. Not more than 5 per cent shall pass through 1mm IS sieve. v. Sulphur (as S) percent by weight, minimum 	<p>5.0 4.0 16.0 11.0</p>

<p>8. Superphosphoric Acid (70% P₂O₅) (Liquid)</p> <ul style="list-style-type: none"> i. Total phosphate (as P₂O₅), per cent by weight, minimum ii. Polyphosphate (as P₂O₅), per cent by weight, minimum iii. Methanol insoluble matter, per cent by weight, maximum iv. Magnesium (as MgO), per cent by weight, maximum v. Specific gravity (at 24^oC) 	<p>70.0 18.9 1.0 0.5 1.96</p>
<p>1(c) STRIGHT POTASSIC FERTILIZERS</p> <p>1. Potassium Chloride (Muriate of Potash)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Water Soluble potash content (as K₂O) per cent by weight minimum iii. Sodium as NaCl per cent by weight (on dry basis)maximum iv. Particle size-95 per cent of the material shall pass through 1.7 mm IS sieve and be retained on 0.25 mm IS sieve. 	<p>0.5 60.00 3.5</p>
<p>2. Potassium Sulphate</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Potash content (as K₂O) per cent by weight, minimum iii. Total chlorides (as Cl) per cent by weight, (on dry basis) maximum iv. Sodium as NaCl per cent by weight (on dry basis)maximum v. Sulphur (as S), per cent by weight, minimum 	<p>1.5 50.00 2.5 2.0 17.5</p>
<p>3. Potassium Schoenite</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Potash content (as K₂O) per cent by weight (on dry basis) minimum iii. Magnesium oxide (as MgO) per cent by weight maximum iv. Sodium (as NaCl) (on dry basis) per cent by weight, maximum 	<p>1.5 23.0 10.0 1.5</p>

<p>4. Potassium Chloride (Muriate of Potash) (Granular)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Water soluble potash (as K_2O) per cent by weight, minimum iii. Sodium (as NaCl) per cent by weight, maximum iv. Magnesium (as $MgCl_2$) per cent by weight, maximum v. Particle size – not less than 90 per cent of the material shall pass through 3.35 mm IS sieve and be retained on 1 mm IS sieve. Not more than 5 per cent shall be below 1 mm IS sieve. 	<p>0.5 60.0 3.5 1.0</p>
<p>1.(d) N. P. COMPLEX FERTILIZERS</p>	
<p>1. Diammonium Phosphate (18-46-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen form per cent by weight, minimum iv. Total nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates (as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5) per cent by weight minimum vii. Particle size- not less than 90 per cent of the material shall pass through 4mm IS sieve and be retained on 1mm IS sieve. Not more than 5 per cent shall be below than 1mm size. 	<p>1.5 18.0 15.5 2.5 46.0 41.0</p>
<p>2. Ammonium Phosphate Sulphate (16-20-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total ammoniacal nitrogen per cent by weight, minimum iii. Neutral ammonium citrate soluble phosphates (as P_2O_5) per cent by weight, minimum iv. Water soluble phosphates (as P_2O_5) per cent by weight minimum v. Particle size- not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. vi. Sulphur (as S) per cent by weight, minimum 	<p>1.0 16.0 20.0 19.5 13.0</p>

<p>3. Ammonium Phosphate Sulphate (20-20-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammonical nitrogen per cent by weight, minimum iv. Nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum vi. Water soluble phosphates (as P₂O₅)per cent by weight minimum vii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. viii. Sulphur (as S), per cent by weight, minimum 	<p>1.0 20.0 18.0 2.0 20.0 17.0 13.0</p>
<p>4. Ammonium Phosphate Sulphate Nitrate (20-20-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrate nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates (as P₂O₅) per cent by weight,minimum vi. Water soluble phosphates (as P₂O₅)per cent by weight minimum vii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 20.0 17.0 3.0 20.0 17.0</p>
<p>5. Ammonium Phosphate Sulphate (18-9-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Ammoniacal nitrogen per cent by weight, minimum iii. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum iv. Water soluble phosphates (as P₂O₅)per cent by weight minimum v. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.0 18.0 9.0 8.5</p>

<p>6. Nitro Phosphate (20-20-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Nitrogen in Ammoniacal form per cent by weight, minimum iv. Nitrogen in nitrate form per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Calcium nitrate, per cent by weight, maximum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 20.0 10.0 10.0 20.0 12.0 1.0</p>
<p>7. Urea Ammonium phosphate (28-28-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammonical nitrogen per cent by weight, minimum iv. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum v. Water soluble phosphates (as P_2O_5)percent by weight minimum vi. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 28.0 9.0 28.0 25.2</p>
<p>8. Urea Ammonium Phosphate (24-24-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. <p>(Notes: This product contains inert filler material such as sand or dolomite to the extent of 20% by weight, maximum)</p>	<p>1.5 24.0 7.5 16.5 24.0 20.4</p>

<p>9. Urea Ammonium Phosphates (20-20-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum v. Water soluble phosphates (as P₂O₅)per cent by weight minimum vi. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. <p>(Notes: This product contains filler material (inert soil) to the extent of 30% by weight)</p>	<p>1.5</p> <p>20.0</p> <p>6.4</p> <p>20.0</p> <p>17.0</p>
<p>10. Mono Ammonium Phosphate (11-52-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Neutral ammonium citrate soluble phosphates(P₂O₅) per cent by weight, minimum v. Water soluble phosphates (as P₂O₅)per cent by weight minimum vi. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.0</p> <p>11.0</p> <p>6.4</p> <p>52.0</p> <p>44.2</p>
<p>11. Nitrophosphate (23-23-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrogen in nitrate form, per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum vi. Water soluble phosphates (as P₂O₅)per cent by weight minimum vii. Calcium nitrate per cent by weight, maximum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5</p> <p>23.0</p> <p>11.5</p> <p>11.5</p> <p>23.0</p> <p>18.5</p> <p>1.0</p>

<p>12. Ammonium Nitrate phosphate (23-23-0)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates (as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5) per cent by weight minimum vii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 23.0 13.0 10.0 23.0 20.5</p>
<p>13. Ammonium Poly-phosphate (10-34-0)(Liquid)</p> <ul style="list-style-type: none"> i. Total nitrogen (all as ammoniacal nitrogen), per cent by weight , minimum ii. Total phosphate (as P_2O_5), per cent by weight, minimum iii. Poly-phosphate (as P_2O_5) percent by weight, minimum iv. Magnesium (as MgO), per cent by weight, maximum v. Specific gravity (at $27^{\circ}C$) vi. pH 	<p>10.0 34.0 22.1 0.5 1.4 5.8 - 6.2</p>
<p>14. Ammonium Phosphate (14-28-0)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Total nitrogen , per cent by weight, minimum iii. Urea nitrogen, , per cent by weight, maximum iv. Ammoniacal nitrogen, per cent by weight, minimum v. Neutral ammonium citrate soluble phosphates (as P_2O_5), per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5), per cent by weight, minimum vii. Particle size – Not less than 90 per cent of the material shall pass through 4 mm IS sieve and be retained on 1 mm IS sieve. Not more than 5 per cent shall be below 1 mm IS sieve. 	<p>1.5 14.0 6.0 8.0 28.0 23.0</p>
<p>15 Diammonium Phosphate (16-44-0)</p> <ul style="list-style-type: none"> viii. Moisture per cent by weight, maximum ix. Total nitrogen per cent by weight, minimum x. Ammoniacal nitrogen form per cent by weigh, minimum xi. Total nitrogen in the form of urea per cent by weight, maximum xii. Neutral ammonium citrate soluble phosphates (as P_2O_5) per cent by weight, minimum xiii. Water soluble phosphates (as P_2O_5) per cent by weight minimum xiv. Particle size- not less than 90 per cent of the material shall pass through 4mm IS sieve and be retained on 1mm IS sieve. Not more 	<p>3.0 16.0 14.0 2.0 44.0 37.0</p>

<p>than 5 per cent shall be below 1mm IS sieve.</p>	
<p>1(e) N.P.K. COMPLEX FERTILIZER</p> <p>1. Nitrophosphate with Potash (15-15-15)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrate nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum vi. Water soluble phosphates (as P₂O₅)per cent by weight minimum vii. Water soluble potash (as K₂O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. ix. Calcium nitrate, per cent by weight, maximum 	<p>1.5</p> <p>15.0</p> <p>7.5</p> <p>7.5</p> <p>15.0</p> <p>4.0</p> <p>15.0</p> <p>1.0</p>
<p>2. N.P.K (10-26-26)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P₂O₅) per cent by weight, minimum vi. Water soluble potash (as K₂O)per cent by weight minimum vii. Water soluble phosphates (as P₂O₅)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.0</p> <p>10.0</p> <p>7.5</p> <p>3.0</p> <p>26.0</p> <p>26.0</p> <p>22.1</p>

<p>3. N.P.K.(12-32-16)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrogen in the form of urea per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Particle size-90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.0 12.0 9.0 3.0 32.0 27.2</p>
<p>4. N.P.K. (22-22-11)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Urea nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 22.0 7.0 15.0 22.0 18.7 11.0</p>
<p>5. N.P.K. (14-35-14)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Nitrogen in ammoniacal per cent by weight, minimum iii. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight,minimum iv. Water soluble phosphates (as P_2O_5)per cent by weight minimum v. Water soluble potash (as K_2O)per cent by weight minimum vi. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve 	<p>1.0 14.0 35.0 29.0 14.0</p>

<p>6. N.P.K. (17-17-17)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Urea nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 17.0 5.0 12.0 17.0 14.5 17.0</p>
<p>7. N.P.K. (14-28-14)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum 1 iii. Ammoniacal nitrogen per cent by weight, minimum iv. Urea nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 14.0 8.0 6.0 28.0 23.8 14.0</p>
<p>8. N.P.K. (19-19-19)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Urea nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 5 per cent shall be below 1mm IS sieve. 	<p>1.5 19.0 5.6 13.4 19.0 16.2 19.0</p>

<p>9. N.P.K. (17-17-17)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Ammoniacal nitrogen per cent by weight, minimum iv. Nitrate nitrogen per cent by weight, maximum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 80 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm sieve. Not more than 20 per cent shall be above 4 mm IS sieve. 	<p>1.5 17.0 8.5 8.5 17.0 13.6 17.0</p>
<p>10. N.P.K. (20-10-10)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Urea nitrogen per cent by weight, maximum iv. Ammoniacal nitrogen per cent by weight, minimum v. Neutral ammonium citrate soluble phosphates(as P_2O_5) per cent by weight, minimum vi. Water soluble phosphates (as P_2O_5)per cent by weight minimum vii. Water soluble potash (as K_2O)per cent by weight minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm IS sieve. Not more than 5 per cent shall be below 1 mm IS sieve. 	<p>1.5 20.0 17.1 3.9 10.0 8.5 10.0</p>
<p>11. N.P.K. (15-15-15)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight, minimum iii. Amoniacal nitrogen, per cent by weight, minimum iv. Nitrogen in the form of urea, per cent by weight, maximum v. Water soluble phosphate (as P_2O_5) per cent by weight, minimum vi. Neutral ammonium citrate soluble phosphate (as P_2O_5), per cent by weight, minimum vii. Water soluble potash as K_2O per cent by weight, minimum viii. Particle size- Not less than 90 per cent of the material shall pass through 4 mm IS sieve and shall be retained on 1mm IS sieve. 	<p>1.5 15.0 12.0 3.0 12.0 15.0 15.0</p>

<p>1(f) MICRONUTRIENTS</p> <p>1. Zinc Sulphate Heptahydrate (ZnSO₄·7H₂O)</p> <ul style="list-style-type: none"> i. Matter insoluble in water per cent by weight, maximum ii. Zinc (as Zn) per cent by weight, minimum iii. Lead (as Pb) per cent by weight, maximum iv. Copper (as Cu) per cent by weight, maximum v. Magnesium (as Mg) per cent by weight, maximum vi. pH not less than vii. Sulphur (as S) per cent by weight, minimum viii. Cadmium (as Cd), per cent by weight, maximum ix. Arsenic (as As), per cent by weight, maximum 	<p>1.0</p> <p>21.0</p> <p>0.003</p> <p>0.1</p> <p>0.5</p> <p>4.0</p> <p>10.0</p> <p>0.0025</p> <p>0.01</p>
<p>2. Manganese Sulphate</p> <ul style="list-style-type: none"> i. Free flowing crystalline form ii. Matter insoluble in water per cent by weight, maximum iii. Manganese (as Mn) content per cent by weight, minimum iv. Lead (as Pb) per cent by weight, maximum v. Copper (as Cu) per cent by weight, maximum vi. Magnesium (as Mg) per cent by weight, maximum vii. pH viii. Sulphur (as S), per cent by weight, minimum 	<p>1.2</p> <p>30.5</p> <p>0.003</p> <p>0.1</p> <p>2.0</p> <p>3.75 ± 0.25</p> <p>17.0</p>
<p>3. Borax (Sodium Tetraborate) (Na₂B₄O₇·10H₂O) for soil application.</p> <ul style="list-style-type: none"> i. Content of Boron as (B) per cent by weight, minimum ii. Matter soluble in water per cent by weight, maximum iii. pH iv. Lead (as Pb) per cent by weight, maximum 	<p>10.5</p> <p>1.0</p> <p>9.0 - 9.5</p> <p>0.003</p>
<p>4. Copper Sulphate (CuSO₄·5H₂O)</p> <ul style="list-style-type: none"> i. Copper (as Cu) percent by weight, minimum ii. Matter insoluble in water per cent by weight, maximum iii. Soluble iron and aluminum compounds (expressed as Fe) percent by weight, maximum iv. Lead (as Pb) per cent by weight, maximum v. pH not less than vi. Sulphur (as S), per cent by weight, minimum 	<p>24.0</p> <p>1.0</p> <p>0.5</p> <p>0.003</p> <p>3.0</p> <p>12.0</p>

<p>5. Ferrous Sulphate (Fe SO₄7H₂O)</p> <ul style="list-style-type: none"> i. Ferrous iron (as Fe), percent by weight, minimum ii. Free Acid (as H₂SO₄) per cent by weight, maximum iii. Ferric iron (as Fe) percent by weight, maximum iv. Matter insoluble in water, percent by weight, maximum v. pH not less than vi. Lead (as Pb) per cent by weight, maximum vii. Sulphur (as S), per cent by weight, minimum 	<p>19.0 1.0 0.5 1.0 3.5 0.003 10.5</p>
<p>6. Ammonium Molybdate (NH₄)₆MO₇O₂₄4H₂O)</p> <ul style="list-style-type: none"> i. Molybdenum (as Mo)per cent by weight, minimum ii. Matter insoluble in water, percent by weight, maximum iii. Lead (as Pb) per cent by weight maximum 	<p>52.0 1.0 0.003</p>
<p>7. Chelated Zinc as Zn-EDTA</p> <ul style="list-style-type: none"> i. Appearance- Free flowing crystalline/powder ii. Zinc content (Expressed as Zn) per cent by weight, minimum in the form of Zn -EDTA iii. (iii)Lead (as Pb) per cent by weight maximum 0 iv. (iv) pH 	<p>12.0 0.003 5.5 - 6.5</p>
<p>8. Chelated Iron as Fe-EDTA</p> <ul style="list-style-type: none"> i. Appearance- Free flowing crystalline/powder ii. Iron content (Expressed as Zn) per cent by weight, minimum in the form of Fe -EDTA iii. Lead (as Pb) per cent by weight maximum iv. pH 	<p>12.0 0.003 5.5-6.5</p>
<p>9. Zinc Sulphate Mono-hydrate (ZnSO₄H₂O)</p> <ul style="list-style-type: none"> i. Free flowing powder form ii. Matter-insoluble in water, per cent by weight, maximum iii. Zinc (as Zn) per cent by weight, minimum iv. Lead (as Pb) per cent by weight maximum v. Copper (as Cu) per cent by weight, maximum vi. Magnesium (as Mg.)per cent by weight, maximum vii. Iron (as Fe) per cent by weight, maximum viii. pH not less than ix. Sulphur (as S), per cent by weight, minimum 	<p>1.0 33.0 0.003 0.1 0.5 0.5 4.0 15.0</p>

<ul style="list-style-type: none"> x. Cadmium (as Cd), percent by weight, maximum xi. Arsenic (as As), per cent by weight, maximum 	<p>0.0025 0.01</p>
<p>10. Magnesium Sulphate</p> <ul style="list-style-type: none"> i. Free flowing-Crystalline form ii. Matter-insoluble in water, per cent by weight, maximum iii. Magnesium (as Mg.)per cent by weight, minimum iv. Lead (as Pb) per cent by weight maximum v. pH (5% solution) vi. Sulphur (as S), per cent by weight, minimum 	<p>1.0 9.6 0.003 5.0-8.0 12.0</p>
<p>11. Boric Acid (H₃BO₃)</p> <ul style="list-style-type: none"> i. Boron (as B), per cent by weight, minimum ii. Matter insoluble in water, per cent by weight, maximum iii. Lead (as Pb), per cent by weight, maximum 	<p>17.0 1.0 0.003</p>
<p>12 Di-Sodium Octa Borate Tetra Hydrate (Na₂B₈O₁₃4H₂O)</p> <ul style="list-style-type: none"> i. Boron (as B), per cent by weight, minimum ii. Matter insoluble in water, per cent by weight, maximum iii. Lead (as Pb), per cent by weight, maximum 	<p>20.00 1.0 0.003</p>
<p>1(g) FORTIFIED FERTILIZERS</p> <p>1. Boronated Single Superphosphate (16% P₂O₅ Powdered)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Free phosphoric acid (as P₂O₅)per cent by weight, maximum iii. Water soluble phosphate (as P₂O₅)per cent by weight, minimum iv. Boron (as B) per cent by weight maximum 0.18 	<p>12.0 4.0 16.0 0.18</p>

<p>2. Zincated Urea</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen per cent by weight,(on dry basis)minimum iii. Zinc (as Zn) per cent by weight, minimum iv. Biuret per cent by weight, maximum v. Particle size – Not less than 90 per cent of the material shall pass through 2.8 mm IS sieve and not less than 80 per cent by weight shall be retained on 1mm IS sieve. 	<p>1.0 43.0 2.0 1.5</p>
<p>3. Zincated Phosphate (Suspension)</p> <ul style="list-style-type: none"> i. Total phosphate (as P₂O₅) per cent by weight, minimum ii. Total Zinc (as Zn) per cent by weight, minimum iii. Neutral ammonium citrate soluble (as P₂O₅) per cent by weight, minimum iv. Lead (as Pb), per cent by weight, maximum v. pH 	<p>12.9 19.4 3.9 0.003 8±1</p>
<p>1(h) 100% WATER SOLUBLE COMPLEX FERTILISERS</p> <p>1. Potassium Nitrate (13-0-45)</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum ii. Total nitrogen (all in nitrate form), per cent by weight, minimum iii. Water soluble potash (as K₂O), per cent by weight, minimum iv. Sodium (as Na) (on dry basis), per cent by weight, maximum v. Total chloride (as Cl) (on dry basis) per cent by weight, maximum vi. Matter insoluble in water, per cent by weight, maximum 	<p>0.5 13.0 45.0 1.0 1.5 0.05</p>
<p>2. Mono-Potassium Phosphate (0-52-34) (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum ii. Water soluble phosphate (as P₂O₅), per cent by weight, minimum iii. Water soluble potash (as K₂O), per cent by weight, minimum iv. Sodium (as NaCl), per cent by weight (on dry basis), Maximum 	<p>0.5 52.0 34.0 0.025</p>

<p>3. Calcium Nitrate</p> <ul style="list-style-type: none"> i. Total Nitrogen, per cent by weight, minimum ii. Ammonical nitrogen, per cent by weight, maximum iii. Nitrate nitrogen, as N per cent by weight, minimum iv. Water soluble calcium as per cent by weight, minimum v. Water insolubles, per cent by weight, maximum 	<p>15.5 1.1 14.4 18.8 1.5</p>
<p>4. N.P.K. 13:40:13 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum ii. Nitrate nitrogen, per cent by weight, maximum iii. Ammoniacal nitrogen, per cent by weight, minimum iv. Water soluble phosphate, (as P₂O₅) per cent by weight, minimum v. Water soluble potash as K₂O, per cent by weight, minimum vi. Sodium (as NaCl), per cent by weight, on dry basis, maximum vii. Matter insoluble in water, per cent by weight, maximum 	<p>13.0 4.4 8.6 40.0 13.0 0.15 0.5</p>
<p>5. N.P.K. 18:18:18 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum ii. Nitrate nitrogen, per cent by weight, maximum iii. Ammoniacal nitrogen, per cent by weight, minimum iv. Water soluble phosphate, (as P₂O₅) per cent by weight, minimum v. Water soluble potash as K₂O, per cent by weight, minimum vi. Sodium (as NaCl), per cent by weight, on dry basis, maximum vii. Matter insoluble in water, per cent by weight, maximum 	<p>18.0 9.8 8.2 18.0 18.0 0.25 0.5</p>
<p>6. N.P.K. 13:5:26 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum ii. Nitrate nitrogen, per cent by weight, maximum iii. Ammoniacal nitrogen, per cent by weight, maximum iv. Water soluble phosphate, (as P₂O₅) per cent by weight, minimum v. Water soluble potash as K₂O, per cent by weight, minimum vi. Sodium (as NaCl), per cent by weight, on dry basis, maximum vii. Matter insoluble in water, per cent by weight, maximum 	<p>13.0 7.0 6.0 5.0 26.0 0.3 0.5</p>
<p>7. N.P.K. 6:12:36 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum ii. Nitrate nitrogen, per cent by weight, maximum iii. Ammoniacal nitrogen, per cent by weight, minimum iv. Water soluble phosphate, (as P₂O₅) per cent by weight, minimum v. Water soluble potash as K₂O, per cent by weight, minimum vi. Sodium (as NaCl), per cent by weight, on dry basis, maximum vii. Matter insoluble in water, per cent by weight, maximum 	<p>6.0 4.5 1.5 12.0 36.0 0.5 0.5</p>

<p>8. N.P.K. 20:20:20 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum 20.0 ii. Nitrate nitrogen, per cent by weight, maximum 4.9 iii. Ammoniacal nitrogen, per cent by weight, minimum 3.0 iv. Urea Nitrogen, per cent by weight, maximum 12.1 v. Water soluble phosphate, (as P₂O₅) per cent by weight, minimum 20.0 vi. Water soluble potash as K₂O, per cent by weight, minimum 20.0 vii. Sodium (as NaCl), per cent by weight, on dry basis, maximum 0.06 viii. Matter insoluble in water, per cent by weight, maximum 0.5 	
<p>9. Potassium Magnesium Sulphate</p> <ul style="list-style-type: none"> i. Moisture per cent by weight, maximum 0.5 ii. Potash content (as K₂O), per cent by weight, maximum 22.0 iii. Magnesium as MgO, per cent by weight, minimum 18.0 iv. Total Chloride (as Cl), per cent by weight (on try basis), maximum 2.5 v. Sodium (as NaCl), per cent by weight (on dry basis), maximum 2.0 vi. Sulphur (as S), per cent by weight, minimum 20.0 	
<p>10. N.P.K. 20:20:20 (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Total nitrogen, per cent by weight, minimum 19.0 ii. Nitrate nitrogen, per cent by weight, maximum 4.0 iii. Ammoniacal nitrogen, per cent by weight, minimum 4.5 iv. Urea Nitrogen in nitrogen, per cent by weight, minimum 10.5 v. Water soluble phosphate (as P₂O₅) per cent by weight, minimum 19.0 vi. Water soluble potash as K₂O, per cent by weight, minimum 19.0 vii. Sodium (as NaCl), per cent by weight, on dry basis, maximum 0.5 viii. Matter insoluble in water, per cent by weight, maximum 0.5 ix. Moisture, per cent by weight, maximum 0.5 	
<p>11. Mono Ammonium Phosphate (12:61:0) (100% Water Soluble)</p> <ul style="list-style-type: none"> i. Moisture, per cent by weight, maximum 0.5 ii. Ammoniacal Nitrogen, per cent by weight, minimum 12.0 iii. Water soluble phosphate (as P₂O₅), per cent by weight, minimum 61.0 iv. Matter insoluble in water, per cent by weight, maximum 0.5 v. Sodium as NaCl, per cent by weight, on dry basis, maximum 0.5 	

**Tolerance Limits For Various Fertilizers- Schedule I
(Part B), FCO**

1. For Fertilizers with definite compounds like ammonium sulphate, Urea, Ammonium chloride, Muriate of Potash, Sulphate of Potash Superphosphate, Dicalcium Phosphate, containing more than 20 per cent nutrients		0.2
containing less than 20 per cent nutrients		0.1
2. Calcium ammonium nitrate		0.3
3. DAP		** 0.5 units each for N & P contents
4. Nitrophosphates, ammonium sulphate Nitrate Urea ammonium phosphate, ammonium phosphate, ammonium phosphate, sulphate, bonemeal, granulated mixture, compound/complex fertilizer/ physical mixtures of fertilizers (NPK Mixtures), Mixtures of NPK with Micronutrients	tolerance varies with nutrient level in fertilizer subject to maximum of 2% for all combine nutrients.	
	Nutrient level(%)	Tolerance level (unit)
	15 or less	0.5
	16 to 20	0.6
	21 or more	0.7
5. Borax, Chelated Zinc EDTA and chelated iron-EDTA		0.1
6. Copper sulphate, Zinc Sulphate manganese sulphate and ferrous sulphate		0.2
7. Ammonium molybdate		0.5
8. Magnesium Sulphate		0.1
9. Mixture of micronutrient Fertilizer	Tolerance varies with combined nutrient level in Fertilizer	

	Nutrient level (%)	Tolerance level (unit)
	10 or less	0.1
	11 to 20	0.2
	21 or more	0.5
10. Particle size		± 3 units
11. Moisture		0.3 units

Addresses of State Fertilizer Quality Control Laboratories & Referee Laboratories:

*** Notified for analysis/Referee Analysis of Micronutrients

ANDHRA PRADESH (5)		GUJARAT	
1.	Asstt. Director of Agriculture (QC), Fertiliser Control Order Laboratory, Near D.R.D.A. Anantapur-515001 (A.P.) ***	11.	The Agricultural Chemist, Fertiliser Testing Laboratory, Bardoli (Gujarat)
		HIMACHAL PRADESH (2)	
2.	Asstt. Director of Agriculture (QC) Fertiliser Control Order Laboratory, Agril. College Compus, Bapatla – 522101 Distt. Guntur (A.P.) ***	12	The Agricultural Chemist, Fertiliser Testing Laboratory, Hamirpur (H.P.) ***
3	Asstt. Director of Agriculture (QC) Fertiliser Control Order Laboratory, Rajindranagar, Hyderabad- 500030 ***	13	The Analytical Chemist, Fertiliser Quality Control Laboratory, Sunder Nagar, Distt. Mandi(H.P.) ***
4	Asstt. Director of Agriculture (QC) Fertiliser Control Order Laboratory, 2-5-55, Nakkalagutta, Mannama Konda, Warrangal-506001 (A.P.) ***	HARYANA (2)	
5	Asstt. Director of Agriculture (QC) Fertiliser Control Order Laboratory, Tadepalligudem-534101 Distt. West Godawari (A.P.) ***	14	The Analytical Chemist, Fertiliser Quality Control Laboratory, Karnal (Haryana)
ASSAM (1)			

6	Soil Survey Officer-Cum-Incharge, Fertiliser Testing Laboratory, Ulubari, Guwahati (Assam)	15	The Analytical Chemist, Fertiliser Quality Control Lab., 1512 Urban Estate II, Hissar (Haryana)
JHARKHAND (1)		JAMMU & KASHMIR (2)	
7	The Analytical Chemist, Fertiliser Control Laboratory, Department of Agriculture, Inderpuri, Ranchi-834005 (Jharkhand)	16	Agriculture Chemist, Fertiliser Quality Control Lab., Agril. Research Complex, Jammu Div., Talab Tillo, Jammu
BIHAR (1)			
8	Asstt. Director of Agriculture (QC) Fertiliser Control Order Laboratory, Meethapur Farm, Patna	17.	Agril. Chemist, Fertiliser Quality Control Laboratory, Kashmir Division, Lal Mandi, Srinagar
GUJARAT (3)		KARNATAKA (4)	
9	Chemist (QC), Fertiliser Testing Laboratory, Sector 15, Gandhi Nagar (Gujarat) ***	18	Dy. Director of Agriculture (QC), Fertiliser Quality Control Laboratory, Seshadari Road, Bangalore-560001 ***
10	Chemist (QC), Fertiliser Testing Laboratory, Gujarat Agricultural Uni. Campus, Motibagh, Junagarh- 362001 ***	19	Agril. Officer (QC), Fertiliser Control Laboratory, Rural Development Trg Centre, Dharwad-580008 (Kar.) ***
KARNATAKA			
20	Dy. Director of Agriculture, Fertiliser Quality Control Laboratory, Distt. Gangavathi. (Karnataka)	31	The Analytical Chemist, Fertiliser Control Laboratory, Osmanpura, Aurangabad – 431005 (M.S.) ***
21	Dy. Director of Agriculture, Fertiliser Quality Control Lab., Belthanagody (Karnataka) ***	32	The Analytical Chemist, Fertiliser Control Laboratory, Agril. Engg. Workshop Premises, Untwadi Road, Nasik – 422002 (M.S.) ***

KERALA (2)		ORISSA (2)	
22	Dy. Director of Agriculture (QC), Fertiliser Quality Control Laboratory, Pattambi-679306(Kerala)	33	Analytical Chemist, State Fertiliser Quality Control Lab.,Plot No. 646, Sahid Nagar, Bhubaneshwar- 751007 (Orissa)
23	Dy. Director of Agriculture (QC), Fertiliser Quality Control Laboratory, Porttukonam, Nalandhra, P.O. Thiruvananthapuram- 695015(Kerala) ***	34	Analytical Chemist, Fertiliser Control Lab.,P.O. Mudipara, Sambalpur – 768002 (Orissa)
MADHYA PRADESH (4)		PUNJAB (2)	
24	Jt. Director of Agriculture, Fertiliser Quality Control Laboratory, Bhopal. (M.P.)	35	Analytical Chemist, Fertiliser Quality Control Laboratory, PAU Campus, Ludhiana (Punjab) ***
25.	Asstt. Chemist Specialist, Fertiliser Quality Control Laboratory, Adhartal, Jabalpur (M.P.)	36	Analytical Chemist, Fertiliser Quality Control Laboratory, Faridkot (Punjab) ***
		RAJASTHAN (3)	
26	Asstt. Analytical Chemist, Fertiliser Quality Control Laboratory, Gwalior (M.P.)	37	Dy. Director of Agriculture (Q.C.), Fertiliser Testing Laboratory, Durgapur – Jaipur (Rajasthan) ***
27	Asstt. Analytical Chemist, Fertiliser Quality Control Laboratory, Indore (M.P.)	38	Dy. Director of Agriculture (Q.C.), Fertiliser Testing Lab., 24, Paota, Jodhpur (Rajasthan) ***
CHATTISGARH (1)			
28	Asstt. Director of Agriculture, Fertiliser Quality Control Laboratory, Labhandi Farm, Raipur, (Chhatisgarh)	39	Dy. Director of Agriculture (Q.C.), Fertiliser Testing Laboratory, Sikh Colony (Opposite-M.B. College), Udaipur. ***

MAHARASHTRA (4)		TAMIL NADU (14)	
29	The Analytical Chemist, Fertiliser Control Laboratory, Tapovan Road, Amravati-444602 (M.S.) ***	40	Asstt. Agril. Chemist (Q.C.), Fertiliser Control Order Laboratory, Composite Scheme, Coimbatore – 641013 (T.N.)
30	The Analytical Chemist, Fertiliser Control Laboratory, Krishi Bhavan, Shivaji Nagar, Pune –411005 (M.S.) ***	41	Agril. Chemist, Fertiliser Control Lab., Sattur Road, Kovipatti – 628501(T.N.)
TAMIL NADU			
42	Agril. Chemist, Fertiliser Testing Laboratory, 300/1, Kanniyakulam Road, Fijaya Lay Out, Near Mani Nagar, Villupuram –605602 (T.N.)	51	Agril. Chemist, Fertiliser Control Order Lab., No. 74, Srinagar Colony, II Cross Street, Kumbakonam– 612001(T.N.)
43	Agril. Chemist, Fertiliser Testing Laboratory, 18, Thanumadha Iyer Street, Ramavaramapuram, Nagarcoil-629001	52	Agricultural Chemist, Fertiliser Control Lab.,38, N.G.G.O. Colony, Dharamapuri –636705 (T.N.)
44	Agril. Chemist, Fertiliser Control Laboratory, No.10, Ottakoothar Street, Mamallan Nagar, Kancheepuram - 631502 (T.N.)	53	Agricultural Chemist, Fertiliser Control Lab.,D/o Agriculture, 165, Netaji Road, Thiruvavarur,
UTTAR PRADESH (3)			
45	Agril. Chemist, Fertiliser Control Laboratory, 61, Alamelu Mangai Street, Jayanagar, L.I.C. Colony, Trichirapalli	54	Fertiliser Analyst, Fertiliser & Insecticides Quality Control Laboratory, Delhi Road, Meerut (U.P.) ***
46	Asstt. Agril. Chemist, Fertiliser Control Order Scheme	55	Fertiliser Analyst, Fertiliser Quality Control

	Lab., A-27, Gandhiji Road, Thirunagar, Madurai –625006 (T.N)		Laboratory, Industrial Estate, Varansi – 221106 ***
47	Agril. Chemist, Fertiliser Testing Laboratory, 5/249-A, Koliampattarai Street, Paramkudi –623707 (T.N.)	56	Sr. Fertiliser Analyst, Fertiliser Quality Control Lab., Agriculture Complex, Alambagh, Lucknow (U.P.) ***
		UTTARANCHAL (2)	
48	Agril. Chemist, Fertiliser Control Laboratory, Udhagamandalam – 643001 (T.N.)	57	Sr. Fertiliser Analyst, State Level Fertiliser Quality Control Lab., Udham Singh Nagar, (Uttaranchal)
49	Agril. Chemist, Fertiliser Testing Laboratory, 33, Society Street, Dindigul– 624001 (T.N.) (Ooty)	58	Sr. Fertiliser Analyst, Fertiliser Quality Control Lab., Sri Nagar, Pauri (Uttaranchal)
		MIZORAM (1)	
50	Agril. Chemist, Fertiliser Control Laboratory, 77/A, Narayanapillai Street, Peramanur Salem – 636007 (T.N.)	59	Dy. Director of Agriculture, Fertiliser Testing Laboratory, Dte. Of Agriculture, Mizoram , Aizwal

WEST BENGAL ((3))	
60	Agril. Chemist, Fertilisser Quality Control Lab., 330-A, Netaji Subhash Chand Bose Road, Tollyganj, Kolkata-700040
61	Agril. Chemist, Fertilisser Quality Control Lab., Midnapore – (W.B.)
62	Agril. Chemist, Fertilisser Quality Control Lab., Pulses & oil Seeds Research Station, Berhampore, Distt. Murshidabad (W.B.)
PONDICHERY (1)	
63	Dy. Director of Agriculture (Chem.), Fertiliser Quality Control Laboratory, P.K.K.V.K. Campus, Iyyankuttipalayam, Pondicerry-605009
GOVERNMENT OF INDIA (4)	
64	Deputy Director, Regional Fertiliser Control Lab., Govt. of India, P.B. Madhavaram Milk Colony-Chennai 600051 ***
65	Deputy Director, Regional Fertiliser Control Lab., Govt. of India, Plot No. 28-29, Sector 24, Turbhe, Navi Mumbai ***
66	Deputy Director, Regional Fertiliser Control Lab., P.O. Kalyani - 741235 (Distt. Nadia) (W.B.) ***
67	The Director, Central Fertiliser Quality Control & Trg. Institute, Ministry of Agriculture, D/o Agriculture & Coop., N.H. IV, Faridabad-121001 ***

12. Important Guidelines issued by DAC on FCO:

i) Circular No.1-1/2003-Fert. Law dated 28th March,2003 from Additional Commissioner (INM), M/o Agriculture, Govt. of India, Krishi Bhavan, New Delhi addressed to the Director of Agriculture of State Governments.

Sub: Referee Analysis of Fertilizer Samples:

Kind reference is invited to recent FCO amendments 2003 notified vide S.O. 49 (E) dated 16.1.2003, which provides inter alia for Referee analysis of fertilizer samples vide clause 29 B and 32. Now FCO also provides a grievances redressal mechanism to an aggrieved person about the analysis of fertilizer samples carried out by a Government laboratory, which will act as an effective hedge against analytical errors (if any) and instill confidence of dealers/manufacturers in the analytical system.

2. The Clause 32 (2) stipulates that in case samples drawn and analysed by the State Governments and found Non standard, the aggrieved person may appeal to the notified Appellate Authority within 30 days of receipt of Analysis Report and request for Referee analysis. Further, Clause 29 B(2) stipulates that the said Appellate Authority shall decide and send, one of the 2 remaining samples for reference analysis to any notified Fertilizer Quality Control Laboratory of another State or any of Central Government Laboratories namely, CFQC&TI & its 3 RFCLs {Clause 29 B(i) -Proviso (1)}.

3. To ensure that referee analysis of the impugned sample is done in a discreet and transparent manner, the following guidelines be followed and complied with:-

- i) The Appellate Authority on receipt of request from aggrieved dealer about reference analysis within the specified period of 30 days, shall call for both samples lying with dealer and higher authority of Fertilizer Inspector, inspect and satisfy about intactness of seal put on sample, to ensure its genuineness. An undertaking to be taken from the aggrieved dealer as well as the higher authority of Filed Inspector to the effect that the sample

in question is genuine, which was given to him by the Fertilizer Inspector at the time of drawal of sample.

- ii) Any one of the 2 samples may be selected for referee analysis and the other sample should be kept intact for production in court, if required.
- iii) The Appellate Authority shall then decide the referee laboratory, where the sample in question is to be sent. The Referee laboratory may be any one of the notified laboratories by Central Government or other State Governments, but will not be from the same State {Proviso (2) of Clause 29 B (1)}. A list of existing 66 notified laboratories is enclosed as Annex.I. **These laboratories shall be treated as Referee Laboratory for analysis of all grades and types of fertilizers except micronutrient fertilizers & mixtures of micronutrient fertilizers.**
- iv) Further, as presently there are only few laboratories who are having AAS, which is indispensable for analysis of micronutrient fertilizers and their mixtures, the list of such laboratories is at Annex.II. Hence, **these laboratories should only be recognized as Referee laboratory for analysis of straight micronutrient fertilizers and their mixtures till further orders.**
- v) The selection of referee laboratory may be made on random basis preferably from a random table to ensure unbiasedness.
- vi) The sample selected as per 3 (ii) above should be defaced with dark ink to avoid any chance of traceability at referee laboratory. Then a "Specific Code No." be given. Also maintain a register to ensure its secrecy.
- vii) Then the reference sample shall be sent promptly to concerned Referee Laboratory by Registered Post or any other means to ensure its safe reaching in the laboratory.
- viii) The Referee Laboratory shall maintain a separate register in their record and on receipt of such sample, shall make entry

therein and will ensure its strict confidentiality with due coding and decoding system and analyse for all parameters prescribed in the FCO and report back to concerned Appellate Authority within specified time frame of 30 days {as provided in sub clause (2) of clause 30}.

4. In case a sample has been drawn by State Inspector but analysed at any of 4 GOI laboratories, the referee laboratory shall be a laboratory located outside the State and also excluding 4 GOI laboratories.

5. **The report received from Referee Laboratory shall supersede the Analysis Report submitted by first laboratory and shall be treated as Final.** The appellate Authority shall then communicate the result of referee laboratory to the aggrieved person as well as concerned Notified Authority and further action shall be taken in consonance of that.

6. In case of the samples drawn and analysed by any of the 4 GOIM laboratories (namely CFQC&TI & 3 RFCLs), the aggrieved person shall appeal to the Controller of Fertilizers {i.e. Joint Secretary (INM), Department of Agriculture & Cooperation, Krishi Bhavan, New Delhi} within specified 30 days period from date of receipt of analysis shall be taken by Controller of Fertilizer by the same principle as indicated in Para 3 above.

7. The receipt of the letter may kindly be acknowledged.

ii) **Circular No.1-1/2003-Fert. Law dated 21st July, 2004 from Deputy Commissioner (INM), M/o Agriculture, Govt. of India, Krishi Bhavan, New Delhi addressed to the Director of Agriculture of State Governments.**

Sub: FCO, 1985-Referee Analysis of fertilizer sample-clarification-regarding.

I am directed to draw your kind attention to this Ministry's letter dated 4.4.2003, sending therewith the detailed guidelines for following the procedure for referee analysis of fertilizer samples. Instances have been brought to this Ministry that a few referee laboratories have returned the sample without analysis with the plea that the duly filled form 'K' signed by Appellate Authority has not been sent alongwith the sample. It has also

come to notice that in many States, the original seal of fertilizer Inspector is being broken and form 'K' removed before sending it to Referee Laboratory.

2. In this regard, it is clarified that in the guidelines issued by this Ministry vide letter of even number dated 4th April, 2003, it is implied that the Appellate Authority while forwarding the sample to Referee Laboratory, will mention the name of fertilizer and grade and new code No. in the forwarding letter alongwith the metallic seal impression so that the Referee Laboratory on receipt of sample, can tally the impression with seal affixed on the new cloth bag, while the original sample seal affixed by the Fertilizer Inspector is to remain intact.

3. Accordingly, in continuation of our above guideline dated 4.4.2003, it is further advised that after defacing the selected sample (but retaining the original unbroken seal of the Fertilizer Inspector), keep in a new cloth bag and write specific code number and seal with a metallic seal. Further, in the forwarding letter to the Referee Laboratory, the name of fertilizer and grade, specific code number and also the metallic seal impression should be sent so that the referee lab may tally the seal on new cloth bag. In case the forwarding letter is being sent by an authorized officer (other than the Appellate Authority), it should be clearly mentioned in the forwarding letter that the sample is being sent with the specific approval of the Appellate Authority.

4. Further, in the para 3 of the above guidelines at serial no.8 of Annexure-I, the Fertilizer Control Laboratory, Muzaffarpur (Bihar) is to be deleted as the laboratory has since been closed by the State Government. In addition, two laboratories, set up by Uttaranchal Government are to be added in the list after Serial No .62.

63. Sr. Fertilizer Analyst
State Level Fertilizer Quality Control Laboratory,
Udham Singh Nagar (Uttaranchal)

64. Sr. Fertilizer Analyst
Fertilizer Quality Control Laboratory,
Sri Nagar, Pauri (Uttaranchal)

Similarly in Annexure II, the entry concerning Amravati Laboratory (at Serial No.6) is to be deleted (being a repetition of Serial No.25). However, in its place, the Nasik Laboratory is to be added with the following address:-

26. The Analytical Chemist,
Fertilizer Quality Control Laboratory,
Agril. Engg. Workshop Premises,
Untawadi Road, Nasik-422022 (M.S.)

5. The State Government is requested to advise all concerned Appellate Authorities and Fertilizer Quality Control Laboratories in this regard.

iii) Notification vide S.O. No. 2073 (E) dated 10th August, 2009

In pursuance of clause 20 A of the Fertilizer (Control) Order, 1985, the Central Government hereby notifies the specifications in respect of the provisional fertilizers Neem Coated Urea to be manufactured by:-

- i) National Fertilizer Ltd. (NFL);
- ii) Sri Ram Fertilizers and Chemicals Ltd.;
- iii) Indo Gulf Fertilizers Ltd.;
- iv) Tata Chemicals Limited;
- v) Chambal Fertilizer and Chemicals Limited;
- vi) Mangalore Chemicals and Fertilizers Limited

for a period of one year unless revoked earlier, namely:-

Neem Coated Urea

Specifications:

- | | | |
|------|---|-------|
| i) | Moisture percent by weight, maximum | 1.0 |
| ii) | Total Nitrogen, per cent by weight, minimum | 46.0 |
| iii) | Biuret, per cent by weight, maximum | 1.5 |
| iv) | Benzene soluble content, per cent by weight, min. | 0.035 |

Particulate size not less than 90 per cent of the material shall pass through 2.8 mm IS sieve and not less than 80 per cent by weight shall be retained on 1 mm IS sieve.

iv) Notification vide G.S.R. No. 226 (E) dated 28th March, 2004

In exercise of the powers conferred by Section 12 A of the Essential Commodities Act, 1955 (10 of 1955), the Central Government, being of the opinion that it is necessary that the contravention of Fertilizer (Control) Order, 1985 made under Section 3 of the said Act, should be tried summarily, hereby specifies the said order to be a special order for the purpose of summary trial under the said Section 12 A.

13. Whom to contact regarding complaint on Fertilizer Quality

At State Level –	Secretary (Agriculture) Director of Agriculture Deputy Director of Agriculture/ District Agriculture Officer
At Central Govt.-	Joint Secretary (INM), Ministry of Agriculture, Krishi Bhavan, NEW DELHI-110001.

14. Related References: Central Fertilizer Quality Control & Training Institute, N.H.IV, FARIDABAD