



PM/ IS 5470 / 1/June 2019

**PRODUCT MANUAL  
FOR DICALCIUM PHOSPHATE, ANIMAL FEED GRADE  
ACCORDING TO IS 5470:2002**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	<b>Product</b>	:	IS 5470:2002
	Title	:	DICALCIUM PHOSPHATE, ANIMAL FEED GRADE.
	No. of Amendments	:	3
2.	<b>Sampling Guidelines:</b>		
a)	Raw material	:	No specific requirement
b)	Grouping guidelines	:	NA
c)	Sample Size	:	250 gram (Approx)
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – A
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – B
5.	<b>Possible tests in a day :</b>		
	a)Moisture test b)Total Ash test c)Fineness d)Presence of portentous /organic impurities e)Acid Insoluble ash test		
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 5470:2002 with the following scope:-		
	Name of the product	:	Dicalcium Phosphate, Animal Feed Grade.

BUREAU OF INDIAN STANDARDS  
Manak Bhawan, 9, Bahadur Shah Zafar Marg,  
New Delhi – 110002

**ANNEX A**  
**TO PRODUCT MANUAL**  
**FOR DICALCIUM PHOSPHATE, ANIMAL FEED GRADE**  
**ACCORDING TO IS 5470:2002**  
**List of Test Equipments**

S.No	Name of equipments, chemicals and glasswares	Tests used in with Clause Reference
1	Silica crucible	MOISTURE, Cl.4.4, Table 1,(i)
	Weighing machine	
	Vacuum oven	
2	Weighing balance	TOTAL ASH, Cl.4.4, Table 1, (viii)
	Silica crucible	
	Muffle furnace	
	Desiccator	
3	Weighing balance	ACID INSOLUBLE ASH, Cl.4.4, Table 1,(v)
	Silica crucible	
	Muffle furnace	
	Hot air oven	
	Watch glass	
	Whatman filter paper -42	
	Meker burner	
	Desiccators	
4	Silica crucible	Presence of Portentous /Organic Impurities, Cl.4.4, Table 1,(ix)
	Hot plate	
	Thermometer	
5	Weighing balance	CALCIUM, Cl.4.4, Table 1,(ii)
	Silica crucible	
	Muffle furnace	
	Sintered glass filter crucible(P-16)	
	Boiling water bath	
	Beaker	
	Volumetric flask	
	Hot plate	
	Pipette	
	Burette	
	Glassrod	
	Conical flask	
	Stand	
	pHmeter	
	Hydrochloric acid	
	Nitric acid	
	Sulphuric acid	
Ammonia solution		
Ammonium oxalate		

	Citric acid monohydrate	
	Potassium permanganate	
	Distilled water	
	Ammonium chloride	
	Bromocresol green	
	IS test sieve	
6	UV Spectrophotometer	PHOSPHOROUS, Cl.4.4, Table 1,(iii)
	Ashing crucibles of silica	
	Volumetric flask	
	One mark volumetric flask of capacities	
	Spectrophotometer, fitted with 10mm cells,suitable for measurements at a wavelength 430nm	
	Electronic muffle furnace	
	Glass test tubes of capacity 25ml to 30ml fitted with ground glass stoppers	
	Sand bath	
	beaker	
	Graduated pipettes(10ml)	
	DM Water complying to atleast grade 3 in accordance with ISO 3696	
	Calcium carbonate	
	Hydrochloric acid	
	Nitric acid	
	Nitric acid	
	Sulphuric acid	
	Ammonium heamolybdate	
	Ammonium monovendate	
	Molybdovanadate reagent	
	Potassium dihydrogen phosphate	
	Volumetric flask	
	Filter paper	
	funnel	
	Weighing balance	
	Measuring jar	
	Hot air oven	
7	Nessler cylinders	LEAD, Cl.4.4, Table 1,(vi)
	Distilled water	
	Pipette	
	Weighing balance	
	Measuring jar	
	Suitable glass wares	
	Hydrochloric acid	
	Acetic acid	
	Ammonium hydroxide	

	Hydrogen sulphide solution	
	Standard lead solution	
	Lead nitrate	
	Volumetric flask	
8	Ion selective electrode meter(HI5222-02)	FLUORINE, Cl.4.4, Table 1,(iv)
	Solid state fluoride electrode(HI4110-51)	
	Magnetic stirrer and stir bars(MS-500)	
	Plastic lab ware	
	Deionized water	
	100ppm/100mg/kg Fluoride standard sol.HI4010-02	
	Reference electrode filling sol.HI 7075	
	Total ionic strength adjustment buffer(TISAB-III)HI 7075	
	Single junction reference electrode	
	Plastic beakers(100/250 ml)	
	TISAB-III	
	Sodium fluoride	
	Hot air oven	
	Plastic bottles	
	Hydrochloric acid	
	Weighing balance	
	Measuring jar	
	Volumetric flask	
	Standard fluoride solution	
9	a.Modified Gutzeit method	ARSENIC, Cl.4.4, Table 1,(vii)
	Distilled water	
	Acetic acid (IS 695)	
	Lead acetate solution	
	Cotton wool	
	Absorbent cotton wool impregnated with lead acetate	
	Mercuric bromide solution	
	Mercuric bromide	
	Rectified spirit(IS 323)	
	Sensitized Mercuric bromide paper strips	
	Filter paper 70×50mm	
	Mercuric bromide solution	
	Gutzeit bottle	
	Dil.Sulphuric acid	
	Conc.Hydrochloric acid(IS 265)	
	Potassium iodide solution	
	Stannous chloride solution	
	Stannous chloride	

Hydrochloric acid	
Zinc granules	
Standard Arsenic stock solution Arsenic trioxide Beaker 100ml Sodium hydroxide Volumetric flask—1000ml Dil.standard Arsenic Solution Standard arsenic solution Volumetric flask-1000ml	
Hydrogen peroxide	
Hydrogen fluoride	
Sulphuric acid	
Sodium peroxide & Sodium carbonate	
Borax	
b.Silver diethyldithiocarbamate method	
Evolution and absorption apparatus (Conical flasks, connecting tube, Hydrogen sulphide, absorption tube, spherical/conical ground glass joint, spring clip)	
Spectrophotometer / photometric absorptometer	
Distilled water	
Silver diethyldithiocarbamate solution Silver diethyldithiocarbamate 1g Water white pyridine Pyridine-200ml	
Stoppered glass bottles	
Conical flask-1000ml	
Conc. Hydrochloric acid	
Potassium iodide solution	
Stannous chloride solution Stannous chloride Hydrochloric acid	
Connecting tube	
Absorbent cotton wool	
Absorption tube	
Zinc granules	
Conical flask-100ml	
Sodium diethyl dithiocarbamate	
Rectified spirit	
Glass rod	
Ether (IS 336)	
Silver nitrate	

	Distilled water	
10	IS Sieve 200 micron	FINENESS, C1.4.1
	Woven wire cloth	
11	Measuring jar	BACILUS ANTHRACIS, C1.4.2
	Weighing balance	
	Sterile Sodium Chloride Solution (Normal Saline)	
	Sterile defibrinated blood	
	Nutrient agar	
	Beaker	
	Refrigerator	
	Water bath	
	Centrifuger	
	Sterile plates	
12	Measuring jar	CLOSTRIDIUM SEPTICUM, C1.4.2
	Weighing balance	
	Sterile sodium chloride solution	
	Centrifuger	
	Burner	
	Water bath	
	Thermometer	
	Guinea pigs	
Sterile calcium chloride solution		



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**ANNEX-B  
TO PRODUCT MANUAL  
FOR DICALCIUM PHOSPHATE, ANIMAL FEED GRADE  
ACCORDING TO IS 5470:2002  
(SCHEME OF INSPECTION AND TESTING)**

**1. LABORATORY** – A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. PACKING AND MARKING** – The Standard Mark, as given in the Schedule of the licence, shall be marked on each bag/containers of Dicalcium Phosphate Animal Feed Grade or printed on the label applied to it, provided always that the product so marked conform to every requirement of the specification.

3.1 Packing and marking shall be done as per the provision of IS 5470:2002. In addition, the following details shall be mentioned on each container/package:-

- a) BIS Licence No. CM/L-----.
- b) BIS website details i.e. –“For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”.

**4. CONTROL UNIT-** For the purpose of this Scheme, material precipitated at single run and subsequently dried and powdered would constitute a control unit.

**4.1** For a control unit, three samples shall be taken at equal intervals at the time of packing and mixed together in equal proportion to make a composite sample. The composite sample shall be tested for all requirements.

**4.2** The material covered under the control unit shall be considered to have passed the tests if the requirements specified in Table 1 are satisfied.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. HYGIENIC CONDITIONS** – Wherever applicable, hygienic conditions shall be complied in day to day production and quality control activities. Schedule for each activity for this purpose shall be displayed prominently in the factory premises and records of compliance shall be maintained.



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**7. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.





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**Table 1 (Level of Control)  
FOR DICALCIUM PHOSPHATE, ANIMAL FEED GRADE  
ACCORDING TO IS 5470:2002**

(Scheme of Inspection and Testing)

(1)				(2)	(3)		
TEST DETAILS				Test equipment requirement  R: required (or) S: Sub-contracting permitted	LEVELS OF CONTROL		
Clause	Requirements	Test method			No.of samples	Frequency	Remarks
		Clause	Reference				
3.0	Description	3.0	IS 5470	R	Entire material	Entire Material	
4.0	Requirements						
	Fineness	4.1	IS 5470	R	One composite sample	Each control unit	See 4.1 & 4.2
	Freedom from adulterant & spores of Bacillus anthracis, Clostridium sp	4.5&6.0	IS 7874(Pt-3)	S	One composite sample	Once in a Month	
4.4 & Table 1	Moisture, percent by mass	Annex A	IS 5470	R	One composite sample	Each control unit	
	Calcium, percent by mass*	-	IS 15121 or IS 13433 (Pt-1)	R	One composite sample	Each control unit	
	Phosphorus percent by mass**	6	IS 14828 or IS 7874 (Pt-4)	R	One composite Sample	Each control unit	

Fluorine, percent by mass	Annex B	IS 5470	R	One composite sample	Each control unit	
Acid Insoluble ash	10	IS 7874(Pt 1)	R	One composite sample	Each control unit	
Lead	A-7	IS 1767	R	One composite sample	Each control unit	
Arsenic	A-6	-do-	R	One composite sample	Each control unit	
Total Ash	Annex C	IS 5470	R	One composite sample	Each control unit	
Presence of Proteinous/organic impurities	Annex D	-do-	R	One composite sample	Each control unit	

\* In case of dispute the method given in IS 15121 shall be the referee method.

\*\* In case of dispute the method given in IS 14828 shall be the referee method.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

OR

Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.