

**ADDITIONAL TERMS AND CONDITIONS (ATC's) FOR SUPPLY OF VEG FRESH
& BREAD (W&WW) AT SUPPLY DEPOT ASC, GWALIOR THE CONSUMPTION
PD FROM 16 MAY 2025 TO 31 MAY 2025 ON GeM PORTAL**

1. **The Demand of VEG FRESH & BREAD (W&WW) mentioned in BOQ and ATC is only tentative and the final demand for total quantity will be as per the discretion of the Supply Depot, Gwalior and shall be stated in the offline Supply Order to be given through official e-mail ID, given 24-48 hours in advance as per the requirement.**

2. **Effective Date of the Local Purchase.** The local purchase shall come into effect the day local purchase order is placed on GeM and shall remain valid until the completion of the obligations of the parties under the local purchase. The deliveries and supplies and performance of the services shall commence from the effective date of the local purchase.

3. **Schedule of Requirements:-**

(a) **Veg Fresh.**

<u>S/No</u>	<u>Item</u>	<u>Total (In kgs)</u>	<u>Remarks</u>
(i)	Lady Finger	680.000	Qty will be delivered at Supply Depot ASC, Gwalior duly sorted as per Defence Food Specification.
(ii)	Pumpkin	680.000	
(iii)	Cucumber	2040.000	
(iv)	Tinda	680.000	
(v)	Brinjal	680.000	
(vi)	Beans all type	680.000	
(vii)	Cabbage	2040.000	
(viii)	Spinach C	1360.000	
(ix)	Tomato Ripe	1360.000	
(x)	Bitter Gourd	680.000	
(xi)	Ginger Green	136.000	
(xii)	Chillies Green	136.000	
(xiii)	Mint Green	136.000	
(xiv)	Coconut Whole	136.000	
(xv)	Lime Fresh	136.000	
(xvi)	Bottle Gourd	1360.000	
(xvii)	Long Melon	680.000	
Total		13600.000	

(b) **Bread (W) & (WW).**

<u>S/No</u>	<u>Item</u>	<u>Qty (In kgs)</u>	<u>Remarks</u>
(i)	Bread (W)	300.000	Qty will be delivered at Supply Depot ASC, Gwalior duly sorted as per Defence Food Specification.
(ii)	Bread (WW)	300.000	
Total		600.000	

**** In case the items are rejected / not found as per laid down specification, the same will be replaced within 3 hour by the vendor.**

4. The qty given in above sch may varied & the final demand of items will be intimated to your firms before 24 hrs of delivery.

5. **Delivery.** Veg Fresh & Bread (W&WW) will be delivered at Supply Depot ASC, Gwalior is as under:-

S/ No	Items	Approx Qty Demanded (In Kgs)	Date of Delivery#	Delivery at
(a)	Veg Fresh	13600.000	As per the tentative delivery schedule of items will be intimated as 48 hours earlier of reqmt	Supply Depot ASC, Gwalior
(b)	Bread (W&WW)	600.000		
	Total	14200.000		

Note. # Above mentioned item will be supplied in full quantity without fail as per supply order/ demand placed during the pd of contract. Items will be considered accepted only if they pertain to the quality as per Food Specification as attached at Annexure I & II and quantity as per the delivery schedule.

6. **Specification.** Veg Fresh & Bread (W&WW) to be delivered under self-certification by seller at station of delivery / consignee Supply Depot ASC, Gwalior according to the present Contract shall correspond to the Defence Food Specification DFS No 360 (Veg Fresh) & DFS No 497 Bread (W&WW) copy att as **Appendix A & B** and will be tendered against self-certification by the seller (format enclosed as **Appendix**). The certificate will be uploaded in the upload option while participating in the bid.

7. **Additional Conditions Specific to Supply Depot, Gwalior.**

- The bid will be opened by the Purchase Committee/Station Board of Officers.
- Rates quoted will be inclusive of all local taxes, delivery charge and other incidental charges for delivery of articles at location mentioned in the schedule.
- Rates mentioned in commercial bid will be in form of figures as well as in words. Incomplete forms, not authenticated by supplier shall render the bid invalid. The items will be provided by the supplier in sound and standardized packing material.
- The seller will provide the required number of laborers for unloading the items from the delivery vehicle and stacking them in the storage shed at Supply Depot, Gwalior. The price quoted by the seller should include all these services. No laborers will be provided by the Supply Depot, Gwalior for unloading of the items.
- Certificate regarding non disclosure of local purchase documents Annexure I.
- Certificate regarding acceptance of Additional Terms & Conditions need to be uploaded by the seller as per format attached as Annexure II.
- Delivery certificate attached as per Annexure III.
- Veg Fresh & Bread (W&WW) provided by the contractor is to be delivered at the time and place mentioned in demand.

8. For any clarification the bidders can contact as per following details:-

Email - supplydepot.gwalior@gmail.com

Phone No - 7807083010/ 8239058636

ADDITIONAL TERMS

General

Online Submission The Online Bids will be submitted along with following scanned documents:

(a) Scanned copy of certificate of "Acceptance of Terms & Conditions of Tender Documents" enclosed as **Annexure II**.

(b) Scanned copy of self attested copy of PAN card, GST registration, FSSAI Certificate, Bank details /NEFT/Cancelled Cheque.

(c) In the case of partnership firm, scanned copy of partnership deed duly registered with Registrar of firm.

(e) Scanned copy of affidavit stating no Criminal/ Black listing/court case related to Service concerned is pending against the firm.

(f) Scanned copy of certificate of "Non Disclosure of Local Purchase Documents" enclosed as per **Annexure-I**.

(g) Scanned copy of Delivery certificate attached as per **Annexure III**.

Contract Operating Officer(s)

2. The Buyer may authorize one or more officers as Consignees or Local Purchase Operating Officers (COOs) to operate the local purchase on his / her behalf. The Seller will accept and carry out all instructions given by such COOs or their representatives in connection with this local purchase.

3. COOs may change during the currency of the local purchase due to functional reasons for which the Seller shall have no objection.

4. Distribution

(a) **Paying Authority (OC Supply Depot ASC Gwalior)** - Following details are given to enable internal audit to admit payments in connection with this Supply Order:-

(i) Head of Account for this local purchase :-

(aa) **Officer Commanding, Supply Depot ASC, Gwalior.**

(ii) Schedule of Powers applicable for this local purchase Sch 2.4 of ASP of DFPDS-2021.

(b) Period of local purchase :- **16-31 May 2025** (Both days inclusive).

(c) Inspection Authority – Local Purchase Operating Officer or his auth representative.

(d) Consignee/ buyer - Supply Depot ASC, Gwalior.

(e) Indenter- Supply Depot ASC, Gwalior.

ADDITIONAL TERMS

5. **Payment Terms.** Payment will be undertaken in offline mode upto 100% of value of qty delivered as per contractor's bill which will be submitted by the seller to the buyer after completion of the complete duration of local purchase. It will be mandatory for the bidders to indicate their bank account numbers and other relevant e-payment details so that payments could be made through ECS/EFT mechanism instead of payment through cheques, wherever feasible. A copy of the model mandate form prescribed by RBI to be submitted by bidders for receiving payments through ECS. The payment will be made as per the following terms, on production of the requisite documents.

6. Any delay in payment of seller bills by the paying authority/PCDA/CDA concerned with holding by them of payment or any money to seller on any account will not absolve seller from the responsibility or carrying out their contractual obligations under terms of the local purchase.

7. **Advance Payment.** No payment will be made in advance for any supplies under this local purchase.

Contract Operating Officers

2. The Buyer may authorize one or more officers as Contracting or Local Purchase Operating Officers (COOs) to operate the local purchase on his/her behalf. The Seller will accept and carry out all instructions given by such COOs or their representatives in connection with this local purchase.
3. COOs may change during the currency of the local purchase due to functional reasons for which the Seller shall have no objection.

Distribution

- (a) Payable Authority (QC Supply Depot ASC Gwalior) - Following details are given to enable internal audit to admit payments in connection with this Supply Order:-
 - (i) Head of Account for this local purchase :-
 - (ii) Officer Commanding, Supply Depot ASC, Gwalior.
 - (iii) Schedule of Rates applicable for this local purchase Sch 2 & 4 of ASP of ORPD-2021.
 - (b) Period of local purchase :- 01-12 May 2022 (Both days inclusive)
 - (c) Inspection Authority - Local Purchase Operating Officer or his authorized representative.
 - (d) Consignee/buyer - Supply Depot ASC, Gwalior.
 - (e) Tenderer - Supply Depot ASC, Gwalior.

Annexure-I

(Refer to Para 8(e) of of ATC)

CERTIFICATE : NON DISCLOSURE OF LOCAL PURCHASE DOCUMENTS

(To be given on Company Letter Head)

1. I M/s _____ hereby declare that I shall not disclose the local purchase or any provision, specification, plan, pattern, sample or information thereof to any third party during and after expiry of this Local Purchase.

2. I am / We are fully aware that my / our firm is liable for action as per rules in case the above declaration is found violated.

3. **Schedule of Requirements.**(a) **Veg Fresh.**

<u>S/ No</u>	<u>Item</u>	<u>Total (In kgs)</u>	<u>Remarks</u>
(i)	Lady Finger	680.000	Qty will be delivered at Supply Depot ASC, Gwalior duly sorted as per Defence Food Specification.
(ii)	Pumpkin	680.000	
(iii)	Cucumber	2040.000	
(iv)	Tinda	680.000	
(v)	Brinjal	680.000	
(vi)	Beans all type	680.000	
(vii)	Cabbage	2040.000	
(viii)	Spinach C	1360.000	
(ix)	Tomato Ripe	1360.000	
(x)	Bitter Gourd	680.000	
(xi)	Ginger Green	136.000	
(xii)	Chillies Green	136.000	
(xiii)	Mint Green	136.000	
(xiv)	Coconut Whole	136.000	
(xv)	Lime Fresh	136.000	
(xvi)	Bottle Gourd	1360.000	
(xvii)	Long Melon	680.000	
Total		13600.00	

(b) **Bread (W) & (WW).**

<u>S/No</u>	<u>Item</u>	<u>Qty (In kgs)</u>	<u>Remarks</u>
(i)	Bread (W)	300.000	Qty will be delivered at Supply Depot ASC, Gwalior duly sorted as per Defence Food Specification.
(ii)	Bread (WW)	300.000	
Total		600.000	

**** In case the items are rejected / not found as per laid down specification, the same will be replaced within 3 hour by the vendor.**

4. **Delivery.** Veg Fresh & Bread (W&WW) will be delivered at Supply Depot ASC, Gwalior as is under:-

<u>S/ No</u>	<u>Items</u>	<u>Total Qty Demanded (In Kgs) (Approx)</u>	<u>Date of Delivery#</u>	<u>Delivery at</u>
(a)	Veg Fresh	13600.000	As per the tentative delivery schedule of items will be intimated as 48 hours earlier of reqmt	Supply Depot ASC, Gwalior
(b)	Bread (W&WW)	600.000		
Total		14200.000		

Annexure-I
(Refer to Para 8(e) of ATO)

Note. # Above mentioned item will be supplied in full quantity without fail as per supply order/demand placed during the pd of contract. Items will be considered accepted only if they pertain to the quality as per Food Specification as attached at Annexure I & II and quantity as per the delivery schedule.

I, M/s _____ hereby declare that I shall not disclose the local purchase price, provision, specification, plan, pattern, sample or information thereof to any third party during and after expiry of this Local Purchase.

I am / We are fully aware that my / our firm is liable for action as per _____

Station : Gwalior

(Signature of tenderer (s))

Dated : 2025

Schedule of Requirements

(Name in Block letters) Veg Fresh (a)

Sl No	Item	Address	Total Qty (in Kgs)	Remarks
(i)	Lady Finger		1280.000	Qty will be delivered at Supply
(ii)	Pumpkin		640.000	Depot ASC, Gwalior duly sorted as
(iii)	Cucumber		640.000	per Defence Food Specification.
(iv)	Tomato		640.000	
(v)	Brinjal		1280.000	
(vi)	Beans all type		640.000	
(vii)	Cabbage		640.000	
(viii)	Spinach C		640.000	
(ix)	Tomato Ripe		640.000	
(x)	Bitter Gourd		1280.000	
(xi)	Ginger Green		128.000	
(xii)	Chillies Green		128.000	
(xiii)	Mint Green		128.000	
(xiv)	Coconut Whole		128.000	
(xv)	Lime Fresh		128.000	
(xvi)	Bottle Gourd		1820.000	
(xvii)	Long Melon		1820.000	
	Total		12800.000	

Bread (W) & (WW) (b)

Sl No	Item	Qty (in Kgs)	Remarks
(i)	Bread (W)	300.000	Qty will be delivered at Supply Depot ASC,
(ii)	Bread (WW)	300.000	Gwalior duly sorted as per Defence Food Specification.
	Total	600.000	

"In case the items are rejected / not found as per laid down specification, the same will be replaced within 3 hour by the vendor.

Delivery Veg Fresh & Bread (W&WW) will be delivered at Supply Depot ASC, Gwalior as under:-

Sl No	Items	Total Qty Demanded (in Kgs) (Approx)	Date of Delivery	Delivery at
(a)	Veg Fresh	12800.000	As per the tentative delivery schedule of	Supply Depot
(b)	Bread (W&WW)	600.000	Items will be intimated as	ASC, Gwalior
	Total	13400.000	48 hours earlier of receipt	

Annexure III
(Refer to Para 8 (g) of ATC)

Annexure II
(Refer to Para 8(f) of of ATC)

(To be given on Company Letter Head)

To,

I, hereby certify that I completely understand the terms and conditions of the Bid (W&WW) and I will deliver the items as per the supply order placed to me and the details given below:-

SUB: ACCEPTANCE OF TERMS & CONDITIONS OF BID

Reference Bid No : _____ dated _____

Name of Bid / Work: **Supply of Veg Fresh & Bread (W&WW) at Supply Depot, Gwalior.**

Dear Sir,

1. I / We have downloaded the Bid document(s) for the above mentioned 'Bid /Work' from the GeM portal as per your Bid referred above published on GeM Portal.
2. I / We hereby certify that I / we have read entire terms and conditions which include the Service Level Agreement (SLA), General Terms and Conditions (GTCs) and the Additional Terms and Conditions (ATCs) of this bid document (including all Appendices), which will form part of the local purchase agreement and I / we shall abide hereby the terms / conditions / clauses contained therein.
3. The Addendum(s) / Corrigendum(s) issued from time to time by your department/ organizations too have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the conditions of above mentioned Bid document(s) Addendum(s) / Corrigendum(s) in its totality / entirety.
5. The documents uploaded on the GeM Portal are true copies of the original documents.
6. In case any provisions of this Bid are found violated, your department/ organization shall be at liberty to reject this Bid and invoke provisions of the Bid Security Declaration / forfeit our EMD and we shall not have any claim/ right against your department/ organization in satisfaction of this condition.

Yours Faithfully,
(Signature of the Seller, with Official Seal)

Annexure-III
(Refer to Para 8 (g) of ATC)

CERTIFICATE OF DELIVERY

I, hereby certify that I completely understand the timelines & place for delivery of **Veg Fresh & Bread (W&WW)**. I/ we will deliver the items as per the supply order placed to me and the details given below:-

SUB: ACCEPTANCE OF TERMS & CONDITIONS OF BID

- Reference Bid No. _____ dated _____
- Name of Bid / Work: Supply of Veg Fresh & Bread (W&WW) at Supply Depot, Gwalior
- (Signature with affixed firm seal)
- Dear Sir,
1. We have downloaded the Bid document(s) for the above mentioned Bid / Work from the Gem Portal as per your Bid referred above published on Gem Portal.
 2. I / We hereby certify that I / we have read entire terms and conditions which include the Service Level Agreement (SLA), General Terms and Conditions (GTCs) and the Additional Terms and Conditions (ATCs) of this bid document (including all Appendices) which will form part of the local purchase agreement and I / we shall abide thereby the terms / conditions / clauses contained therein.
 3. The Addendum(s) / Amendment(s) issued from time to time by your department / organization has been taken into consideration while submitting this acceptance letter.
 4. I / We hereby unconditionally accept the conditions of above mentioned Bid document(s) / Addendum(s) / Amendment(s) in its totality / entirely.
 5. The documents uploaded on the Gem Portal are true copies of the original documents.
 6. In case any provision of this Bid is found violated, your department / organization shall be at liberty to reject the Bid and invoke provisions of the Bid Security Declaration / forfeit our EMD and we shall not have any claim right against your department / organization in satisfaction of this condition.

Yours Faithfully,
(Signature of the Seller, with Official Seal)

Appendix B

SECRETARIAT

OF

THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)
(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)

DEFENCE FOOD SPECIFICATIONS-2021

SPECIFICATION NO 360 : VEGETABLE FRESH

General

1. The fresh vegetables will be crisp, well formed, of proper tender maturity and shall not be with coarse fibres, stringy, old or hard due to over age and over growth, spongy or fluffy due to age. The vegetables shall be those in season commencing from early season arrivals and also late season receipts. These will be freshly gathered, cleaned, graded for soundness and wholesomeness. Botanically fruits of plants, roots, leaves, stems, flowers and modified forms of stems, roots and leaves constitute vegetable fresh for human consumptions.
2. The vegetable fresh shall be free from insect infestation, physiological disorders, blemishes of damage and disease. They shall also be free from discolouration, injury, damage or signs of improper storage, handling and transportation, which renders them a poor look as to the freshness.
3. The vegetable fresh shall be free from rotting, coating of waxes, mineral oil and colours.
4. All mandatory requirements of FSSAI Rules, as amended from time to time, pertaining to this specification shall be complied with.
5. The vegetable can broadly be classified into :-
 - (a) Root varieties.
 - (b) Creeper varieties.
 - (c) Leafy varieties.
 - (d) Fruits/surface/overground varieties.

Root Varieties

6. This category includes the modified roots and stems used as food like Arvi, Carrots, Radish, Turnips, Ginger and the like. The important features of these varieties are discussed in succeeding paras.



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IHQ of MoD (Army)
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7. These vegetables shall be well formed and not forked or misshapen, over or under-grown. The surface shall be characteristic of type but free from growth cracks/hardened body and fibrous cores. The leaves of root vegetables shall be removed 5 cms from the crown and trimmed to remove tail and root portion.

8. **Arvi.** It has a wide range of physical classification, starting from small sized bulbs to large sized bulbs from round shaped to faizabadi elongated long sized Arvi. Arvi shall be soft in texture, free from field fungal diseases and hardening of bulbs which is evident with partial decay of degeneration of portion of bulb.

9. **Carrots.** The varieties of carrots range from golden yellow, light red, bright orange-red to deep orange-red colour. The greenish white or country carrot and also yellowish white are hard, coarse and insipid. Carrots should be smooth and regular, of good size, should break crisp, having a fine skin and sweet tender flesh. It should not be tough, stringy with leathery skin, fibrous flesh or with excessive heart. The varieties of carrots are namely Pusa Kesar, Pusa Meghali and Half-long-Nantes, Pusa Yamdagni & coreless. The size of carrots shall be not less than 12 cm and not more than 30 cm. Top should be denuded of foliage.

10. **Radish.** The radish varies in size according to the area in which it is grown. They should be smooth and regular, of good size, should break crisp, having a fine skin, juicy and of good flavour. It should not be tough with fibrous flesh and wanting in flavour which indicates inferior quality and overgrown roots.

11. **Turnips.** The turnip belongs to the family cruciferae, genus Brassica and species rapa. They should be clean and fresh in appearance, of good size and regular shape, free from all cracks. The flesh should be crisp, tender, fine grained, solid, sweet, juicy and of good flavour. Loose wrinkled skin, softness, discoloured appearance due to staleness, and bad storage are chief defects. Toughness, cracked skin, hard and fibrous flesh and wanting in flavour denote inferior quality and overgrown roots. The top shall not be more than 1.0 cm.

12. **Ginger.** It is the bulbous root of ginger plant. It should be fresh, should break crisp, having a fine stain, tender and juicy flesh. It should give a slightly bitter taste. Bruised and discoloured skin are caused due to bad packing and rough handling. Toughness, hardness and excessive fibrous flesh wanting in juice and flavour indicate inferior quality and overgrown roots.

13. **Beet Root (Chukandar).** Well formed bulbs, proper stage of maturity with soft secondary roots of bright reddish purple colour. These bulbs will be free from sogginess and attacks of field fungi or disease. Max numbers of Beetroot in a kg can be 10 with each single piece not less than 100 gms.



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Creeper Varieties

14. The vegetable like, beans, cucumber, pumpkin, snake gourd, tinda, bitter gourd, chappan kaddu, marrow, ridge gourd, ribbon gourd, tori ghia, tori jhinga and long melon etc. form part of this category of vegetables. These vegetables are susceptible to damage by field fungi and various other insects, thus, making them unsuitable for human consumption.

15. These vegetables shall be well formed, tender of proper stage of maturity. Surfaces not facing sun may have little under distribution of chlorophyll thus slight light yellow in colour, this should not be taken as a major defect. Skin shall be moist, smooth and with velvety feeling. Presence of hard seeds, hard skin, bitterness, shrinkage and physiological disorders are defects and vegetable with these defects shall be rejected. The details of vegetables are discussed in succeeding paras.

16. **Beans.** This category includes cluster beans, broad beans, french beans, soya beans, moong beans, bengal beans etc. They should be young, tender and fleshy, not hard, wrinkled, stringy or discoloured.

17. **Cucumber.** It should be smooth and regular, of good size and shape, should be filled with tender flesh and seeds. It should not be over ripe, loose or with wrinkled skin which denote staleness. The cucumber shall be of varieties namely Field Grown slicing or Table -sorts, Packing varieties and Forging or Green house varieties of size between 8 cm and 50 cm.

18. Snake gourd, Ridge gourd, Ribbon gourd, Sponge gourd, Tori ghia, Tori Jhinga and Squash. These should be smooth, tender and of good size. The colour is normally fresh light green and not yellowish or rusty brown which denotes staleness. The interior should be fleshy, soft and tender, not hard and stringy which denotes over ripeness or inferior quality.

19. **Pumpkin.** It should be of good size with tender skin. It may be of fresh green colour to rusty brown. Once it is fully matured and turns into rusty brown colour, it can be stored for long period. The skin should be free from any damage and field fungi or disease. The damage on outer skin is the sign of bad handling and storage.

20. **Tinda.** It should be round shape with smooth skin of fresh light green colour or they may have fresh off white velvety appearance. The interior should be fleshy with small and soft seeds. The skin should be soft and tender and not hard which denotes over ripeness or inferior quality. The hard seed also conform over ripeness of tinda.

21. **Bitter Gourd.** It should be of good size and shape with bright green colour knotted skin. It should break crisp and have tender flesh. The yellowish or rusty brown colour indicates over ripeness or inferior quality.


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29. **Knol-Khol.** They should be clean and fresh in appearance of good size and regular shape. It should have well formed body and soft flesh. The discoloured appearance due to staleness and bad storage are chief defects. Toughness, hard and fibrous flesh denote inferior quality.

30. **Chow-chow and Brinjal.** The colour of brinjal varies, they may be white to yellow or dark purple. They should have fresh looking shiny skin. The thinner skin, the better the brinjal. It should be well filled with soft greenish pulp and tender seeds which should not be in excess. It should not be over-ripe, loose or with wrinkled skin which denotes staleness.

31. **Cauliflower.** This should have large, firm snowy-white compact head of uniform closeness. Any tinge of green or yellow indicates inferior quality. Some varieties of good quality when fully matured, become suffused with violet. The less foliage the better, small dark spots or soft spots denote decomposition. They should normally be delivered with two layers of leaves of sufficient length to protect the flower and stalk removed. The varieties of Cauliflower are classified as Early (Kunwari or Kauri and Early Patna available from mid-September to mid-October), Pusa Ketki and Pusa Deepali available in October - November Mid-Season (Aghani, Poosi, Patna Main Crop, plant Shubhra -available from mid-November to mid-December. Early snowball, Giant Snowball, D-96, Japanese Improved, Pusa Shubhra - available from mid-December to mid-January) and Late (Dania-available in January -February, snowball -16 Pusa snowball 1-2 and Pusa Himjyoti-available from mid-January to April)

32. **Cowpeas (lobia green).** They should be young, tender, fleshy and filled with soft and tender seeds. These should not be hard, fibrous, wrinkled, stringy or discoloured.

33. **Ladies Finger or Bhindi.** The pods of these vary, some are ridged, others are not. The colour is either fresh, light green or they have fresh white velvety appearance, not yellowish or rusty brown denoting staleness. The interior should be fleshy and seeds small and soft. A dry and stringy interior, with hard seeds is due to over ripeness. The skin should be soft and tender not hard and stringy which denotes over ripeness or inferior quality. The ladies finger are of varieties namely Makhmali, Pusa Sqwani, Perkin's Long Green, Vaishali Badhu, Punjab Padmini and Parbani Kranti. The tail end of ladies finger shall break crisp without any signs of fibrous formation.

34. **Plaintain Green.** These should be smooth and regular with fresh appearance. It should break crisp and interior should have good creamy white pulp. Toughness, cracked skin and wanting in flavour denote inferior quality. These are available in different sizes according to the area where these are grown.

35. **Cabbage.** These will be green in colour, should be fresh, crisp and firm with a large compact heart and as few loose outer leaves and as little stalk as possible. The different varieties of cabbage are Round head or Bell head type, Flat head or Drum head type (Pusa Drumhead), Conical head type (Jersey wake field) and Savoy type (Chieftain).



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31. **Cauliflower**. This should have large, firm snowy-white compact head of uniform closeness. Any tinge of green or yellow indicates inferior quality. Some varieties of good quality when fully matured, become suffused with violet. The less foliage the better, small dark spots or soft spots denote decomposition. They should normally be delivered with two layers of leaves of sufficient length to protect the flower and stalk removed. The varieties of Cauliflower are classified as Early (Kunwari or Kauri and Early Patna available from mid-September to mid-October), Pusa Ketki and Pusa Deepali available in October - November Mid-Season (Aghani, Poosi, Patna Main Crop, plant Shubhra -available from mid-November to mid-December. Early snowball, Giant Snowball, D-96, Japanese Improved, Pusa Shubhra - available from mid-December to mid-January) and Late (Dania-available in January -February, snowball -16 Pusa snowball 1-2 and Pusa Himjyoti-available from mid-January to April)

32. **Cowpeas (lobia green)**. They should be young, tender, fleshy and filled with soft and tender seeds. These should not be hard, fibrous, wrinkled, stringy or discoloured.

33. **Ladies Finger or Bhindi**. The pods of these vary, some are ridged, others are not. The colour is either fresh, light green or they have fresh white velvety appearance, not yellowish or rusty brown denoting staleness. The interior should be fleshy and seeds small and soft. A dry and stringy interior, with hard seeds is due to over ripeness. The skin should be soft and tender not hard and stringy which denotes over ripeness or inferior quality. The ladies finger are of varieties namely Makhmali, Pusa Sqwani, Perkin's Long Green, Vaishali Badhu, Punjab Padmini and Parbani Kranti. The tail end of ladies finger shall break crisp without any signs of fibrous formation.

34. **Plaintain Green**. These should be smooth and regular with fresh appearance. It should break crisp and interior should have good creamy white pulp. Toughness, cracked skin and wanting in flavour denote inferior quality. These are available in different sizes according to the area where these are grown.

35. **Cabbage**. These will be green in colour, should be fresh, crisp and firm with a large compact heart and as few loose outer leaves and as little stalk as possible. The different varieties of cabbage are Round head or Bell head type, Flat head or Drum head type (Pusa Drumhead), Conical head type (Jersey wake field) and Savoy type (Chieftain).


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36. **Tomatoes.** These should be of good fresh appearance and ripe colour, good size, firm, solid, plump, well filled and heavy. The flesh should be plentiful, rich, solid, tender of good colour. It should have a pleasant, not too bitter flavour. Smaller the core and less seeds the better the tomatoes. Greenish, tough skinned, lumpy and sour flesh (due to unripeness) dry wrinkled, discolour skin and a watery pulpy interior shows staleness and poor quality. Bruised and discoloured tomatoes are caused due to bad packing and rough handling and loose their taste and flavour. The different varieties of tomatoes are Pusa Early Dwarf, Pusa Fuby, Sioux Marglobe, Best of all, La Bonita, Pusa 120, Pusa Sheetal, Pusa Gaurav, Italian Red Pear and Rema.

37. **Chillies.** These will be of good size as per variety with fresh and bright in appearance. Should break crisp, well filled with soft seeds and free from field fungi or any other disease. Loose or damaged skin denote bad handling/storage and inferior quality. The size of individual chillies shall not be less than 2.0 cm.

38. **Capsicum.** These will be of bright green colour, fresh and break crisp. The skin will be light, solid and free from any damage due to handling, storage or disease. The interior will partially contain tender seeds. Discoloured capsicum with hard seeds are over-ripe and loose their taste and flavour.

39. **Green Papaya.** It should be smooth and regular of good size, well shaped of green colour. The skin should be thin with creamy white pulp, minimum of seeds and pleasant flavour. The discolouration and damage to skin are the sign of long storage and bad handling.

40. **Parwal.** These should be smooth and regular, of good size and shape with fine skin and tender flesh. The interior will be filled with creamy white pulp and soft seeds. The hard seeds and discolouration of skin are the signs of over ripeness and staleness.

41. **Jack fruit.** This should be of green colour, solid, young and good size. The interior should be filled with whitish pulp and tender seeds. When cut the milky substance, should come out. If it is over mature, it can not be used as vegetable, should be free from any disease and softness of skin shows the sign of staleness and long storage.

42. **Fresh Lime (Kaagzi Nimbu).** Fresh lime shall be of two types namely round and oval. The lime fresh shall show a green rind colour just beginning to turn yellow or uniform golden yellow, rind not soft or flabby, shall be free from bruises, injury, damage, canker and discolouration. The minimum weight of single fresh lime shall not be less than 30 gm and maximum number to a kg shall be 33.

43. **Radish Fruit (Singri).** On maturity the radish top bear fruit which are used as vegetable. They are bitter in taste and when cooked produces excellent vegetable. The fruit pod is a cilicle which is about 2.5 to 7.5 cm in length and does not become open to discharge the seeds at maturity. Best used when the seed is very tender inside the pod.



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44. **Leek.** The leek resembles the onion in its adaptability and cultural requirements. Instead of forming a bulb the leek produces a thick, fleshy cylinder that has the characteristics of large green onion. The main varieties of leek are London flag and American flag. Under favourable conditions they grow to 4 cm in diameter or more and from 15 to 20 cm in length. The plant is larger than onion.

Inspection

45. The fresh vegetables will be subjected to the approval of local supply officer after his careful inspection and having found them conforming to this specification. The decision of this officer shall be final.

46. All vegetables shall be supplied in suitable clean containers designed to protect them from damage, deterioration and contamination of any kind.

47. An excess of earth on root vegetables amount to adulteration, they should be tendered clean. The contractors must not give bright appearance to the vegetables especially of green leaf by washing them. This is important as water used for the purpose is often filthy and germ laden. Some suppliers soak the vegetables to increase weight, which can be detected easily by their damp and sodden feel, and their over bright and pulpy state.

Note:- A regular and proper schedule of supplies shall be drawn by the contract concluding authority from the various genus of vegetables as reflected at Appendix 'A'. The instructions at Appendix 'A' shall act as guide to officers concluding and operating the contract and will not form part of the tenders.

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APPENDIX 'A'
TO SPECIFICATION NO : 360

THESE INSTRUCTIONS ARE ISSUED FOR THE GUIDANCE OF OFFICERS
CONCLUDING AND OPERATING CONTRACTS AND
WILL NOT FORM PART OF THE TENDER

The vegetables shall be selected from the following kinds only :-

GENUS 'A'

1. Beans cluster (Gowar)
2. Beans broad (Bakla Sem)
3. Beans French (Vilayti Sem)
4. Soya beans
5. Moong beans
6. Bengal Beans
7. Brinjals (Baigon)
8. Cauliflower (Phool Ghobi)
9. Lady Finger (Bhindi)
10. Peas green (Hari Mutter)
11. Pumpkin (Petha Kaddu)
12. Cowpeas
13. Cucumber (Khira)
14. Snake Gourd
15. Tinda
16. Arvi
17. Plantain green

GENUS 'B'

1. Fenugreek (Methi)
2. Carrots Country (Desi gajar)
3. Cabbage (Band Ghobi)
4. Spinach country (Deshi palak)
5. Rape Sag (Sarson) stem
6. Rape Sag (Sarson) leaves
7. Tomatoes ripe
8. Amaranth (Chulai Sag)
9. Carrots English (Vilayati Gajar)
10. Lai Sag
11. Karam Sag
12. Knol Khol (Ganth Ghobi)
13. Bitter Gourd
14. Leek
15. Bathua

GENUS 'C'

1. Corriander green (Dhania Sabz)
2. Ginger green (Adrak)
3. Chillies green
4. Mint green (Podina)
5. Coconut whole
6. Fresh Lime (Kagzi Nimbu)

GENUS UNCLASSIFIED

1. Jack fruit green (Kathal)
2. Parwal (Oarwar)
3. Raddish country (Desi Muli)
4. Turnips (Saljam)
5. Bottle gourd (Ghia)
6. Marrow (Kaddu)
7. Long Melon (Kakri)
8. Chow chow (a type of Baigon)
9. Tomatoes green
10. Spong gourd (a type of Tori)
11. Ridge gourd (a type of Tori)
12. Tori Jhinga
13. Green papaya
14. Capsicum
15. Nadroo
16. Ribbon gourd
17. Radish Fruit
18. Squash
19. Beet Root (Chaukinder).

The varieties of vegetables to be supplied will be fixed by the local authority making the contract in consultation with the local agricultural and medical authorities concerned. A list of these vegetables, based on the kind, either locally grown or imported, shall be prepared and included in the contract.

Local varieties if approved by Army Medical authorities may be included in the list.

Note :-

(a) Genus 'A' Vegetables of this genus, taken altogether should not be less than 35% and not more than 40% of a day's vegetable ration.

(b) Genus 'B' Vegetables of this genus should be taken for a day's vegetables ration as under :-

<u>During Season</u>	<u>During off Season</u>
(Nov to Mar)	(Apr to Oct)
Not less than 35%	Not less than 25%

Every effort will be made to supply Genus 'B' items as specified. But the shortfall may be made up by items other than from Genus 'C'.

(c) Genus 'C' Vegetables of this genus, taken altogether should not exceed 5% of a day's vegetable ration.

(d) Genus Unclassified. Balance of a day's vegetable ration should be taken from this genus.

(e) Genii percentages will be completed on fortnightly basis except in ASSAM, MEGHALAYA, NAGALAND, ARUNACHAL, MIZORAM, TRIPURA, MANIPUR and NORTH BENGAL including SIKKIM in Eastern Command where it will be completed on a monthly basis. The genii percentages of items under Genus 'C' which are for garnishing purposes will, however, be completed on daily basis. It will be ensured that :-

- (i) Variety is provided and no monotony is allowed to occur in the diet.
- (ii) Green leafy vegetables are issued within short periodicity.

SECRETARIAT

OF

THE TECHNICAL STANDARDISATION COMMITTEE (FOOD STUFFS)
(DIRECTORATE GENERAL OF SUPPLIES AND TRANSPORT)

DEFENCE FOOD SPECIFICATIONS - 2022

SPECIFICATION NO 498 : WHOLE WHEAT BREAD

Quality

1. The Whole Wheat Bread shall be baked in conventional form in manufacturing plant which is preferably HACCP/ISO 22000 certified. The crust shall be uniform free from blisters and brown to dark brown in colour. The crust shall not be scorched and shall be free from soot and any foreign matter.

2. The following materials shall be used in the preparation of dough for whole wheat bread:-

(a) **Whole Wheat Flour (Atta).** It should conform to the latest BIS Spn as available in market. Whole Wheat Bread will be made of atleast 75% of Whole Wheat Flour.

(b) **Refined Wheat Flour Maida.** Maida used shall be conforming to latest BIS Spn.

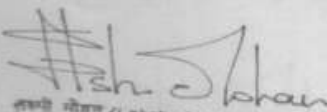
3. The loaf shall have a good volume/mass ratio of not less than 2.5. The crumb shall have small pores uniformly distributed, throughout and with thin cell walls. It shall be free from non-porous mass, splits and large holes, lumps of flour or salt or any other evidence of incomplete mixing or baking.

4. There shall be no hollow between the crust and the crumb.

5. The flavour shall be characteristic of fresh, well baked bread, free from staleness, bitterness or any other objectionable flavour or taste. The bread shall also be free from indications of rope or mould. Baking products received back from market shall not be recycled.

Packing

6. The bread shall be wrapped or packed in sliced form either in clean waxed paper or any other suitable food grade wrapper to preserve freshness. Packing may also be done in printed food grade poly bags which can be tightened with rubber band. The mass of each bread loaf shall be either 400 gm or 800 gm as per the provisions of the Legal Metrology (Packaged Commodities) Acts, 2009 and Rules, 2011.


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अधीक्षक, डी.डी. को.
संयोजक (डी.डी. को.) / ADMD (DT-78)
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Marking

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7. The following particulars shall be clearly and indelibly marked on each pack of bread on the outer side of the wrapper. Printing shall be done by using non toxic and non penetrating/non transferable ink:-

- (a) Description of contents.
- (b) Name and address of manufacturer.
- (c) Trade name, if any.
- (d) Mass of the loaf when packed.
- (e) Any added ingredients such as preservatives, emulsifiers, dough conditioners nutrients etc.
- (f) Date of manufacture.
- (g) Best before.
- (h) Symbol for veg food.

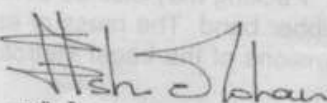
8. **Essential Ingredients.** The following material shall be used in the preparation of dough for whole wheat bread :-

(a) **Whole Wheat Flour.** The material shall be obtained by milling sound and clean wheat. It shall be in the form of powder having characteristic taste and flavour. It shall be free from rancidity, insect, rodent or fungus infestation. It shall also be free from fermented, musty or other objectionable odour. It shall not have adulterants and other extraneous matter. The appearance, taste and odour shall be determined by organoleptic tests.

(b) The material shall also comply with the requirements of latest BIS Spn.

(c) **Maida (Refined Wheat Flour).** Maida (Refined Wheat Flour) shall be the product obtained by milling cleaned, hard or soft wheat or blends thereof in a roller flour mill and bolting. The flour shall be free flowing, dry to touch, should not pack when squeezed, should be creamy in colour and free from any visible bran particles. The flour shall have a characteristic taste and smell, and shall be free from insect and fungus infestation, rodent contamination, dirt and other extraneous matter. It should not have any musty flavour or rancid taste.

(d) The material shall also comply with the requirements given in latest BIS Spn.


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(e) **Leavening Agents.** Any of the following agents singly or in combination may be used:-

- (i) Baker's yeast (As per IS: 1320-1988 third revision).
- (ii) Barm and hops.
- (iii) Fermented juice obtained from palms, and
- (iv) Lactic acid ferment.

(f) **Edible common salt.** Edible common salt or iodized salt conforming to BIS specification No IS: 253-1985 or IS: 7224-1985 shall be used.

(g) **Water.** Water used in the manufacture of bread shall conform to the quality tolerance limits laid down in BIS specification No 4251-1967.

9. **Optional Ingredients.** In addition to the essential ingredients prescribed above any of the following ingredients may be added in the dough :-

- (a) Milk and Milk products - (As per IS : 1166-1986 specification for condensed milk (second revision), BIS Specification No IS : 1165-1992 for milk powder (Whole and skim) (fourth revision).
- (b) Vital gluten.
- (c) Sugar and Sugar products.
- (d) Honey.
- (e) Liquid glucose (As per BIS Specification No IS: 873-1974 specification for liquid glucose (first revision).
- (f) Dextrose monohydrate (As per BIS Specification No IS: 874-1992 for dextrose monohydrate (third revision).
- (g) Malt products.
- (h) Other edible flours and starches.
- (j) Edible oil seed flour.
- (k) Fat - Hydrogenated edible vegetable oil or refined edible vegetable oil of suitable type, butter, ghee, margarine or their mixture.
- (l) Vitamins and/or minerals.
- (m) Lecithin.
- (n) Albumin.
- (o) Lysine.
- (p) Fungal alpha amylase - not exceeding 100 mg/kg of the mass of the flour.



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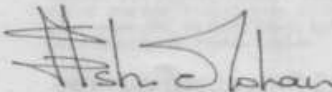
- (q) Sorbitol.
- (r) Glycerine.
- (s) Emulsifying agents - As per FSSAI rules.
- (t) Stabilizing agents - As per FSSAI rules.
- (u) Ammonium chloride - Not exceeding 500 mg/kg of the mass of the flour.
- (v) Ascorbic acid and
- (w) Lime water.

10. **Improvers.** Following improvers may be used:-

- (a) Ammonium persulphate. - Not exceeding 2.5 gm/kg of mass of the flour.
- (b) Calcium carbonate - Not exceeding 5 gm/kg of the mass of the flour.
- (c) Acid calcium phosphate. - Not exceeding 10.0 gm/kg of the mass of the flour.
- (d) Calcium phosphate - Not exceeding 2.5 gm/kg of the mass of the flour.
- (e) L-cysteine hydrochloride. - Not exceeding 90 mg/kg of the mass of the flour.
- (f) Guar gum - Not exceeding 5.0 gm/kg of the mass of the flour.

11. **Rope and Mould Inhibitors.** The following rope and mould inhibitors in the quantities given against each may be used :-

- (a) Calcium or Sodium propionate. - Not exceeding 5.0 gm/kg of the flour.
- (b) Glacial acetic acid lactic acid - Not exceeding 2.5 gm/kg of the mass of the or flour.
- (c) Vinegar - Equivalent to the concentration of acetic acid permitted.
- (d) Sodium diacetate - Not exceeding 4.0 gm/kg of the mass of the flour.
- (e) Acid sodium pyrophosphate - Not exceeding 5.0 gm/kg of the mass of the flour.
- (f) Sorbic acid or its sodium, potassium or calcium salts. - Not exceeding 1.0 gm/kg of the mass of the flour.



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12. Dough Conditioners

- (a) Calcium or sodium salt of stearoyl-2 lactylate not exceeding 5.0 gm/kg of the mass of the flour.
- (b) Polysorbates.

Hygiene Requirements

13. The whole wheat bread shall be prepared in premises maintained in a hygienic condition, which shall be open to inspection at any time by a competent authority approved by the Quartermaster General and the Director General of Medical Services (Army).
14. The hygiene requirements in a factory producing whole wheat bread shall be in accordance with Appendix 'A' attached.

Inspection

15. An inspection shall be carried out by the Director General of Supplies and Transport or an officer acting on his behalf on all supplies tendered for acceptance. The decision of this officer shall be final.

16. The whole wheat bread shall conform to the following analysis:-

- | | |
|--|--------------|
| (a) Total solid content, percent by mass, Min | - 60 |
| (b) pH of the whole wheat bread | - 5.5 to 6.0 |
| (c) Acid insoluble ash (on dry basis), percent by mass, Max. | - 0.1 |
| (d) Crude fibre (on dry basis), percent by mass, Max. | - 1.8 |

Methods of analysis

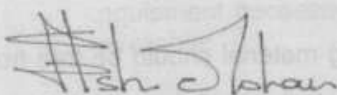
17. The methods of analysis shall be those as laid down in Bureau of Indian Standards Specification No IS: 1483-1988 for white bread.

Machinery

18. A bread manufacturing unit shall preferably have the machinery in accordance with Appendix 'B' attached.

Mandatory requirements of FSSAI/BIS

19. All mandatory requirements of FSSAI/BIS, as amended from time to time, pertaining to the above product shall be complied with.



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**APPENDIX 'A' TO SPECIFICATION NO
498 FOR WHOLE WHEAT BREAD**

HYGIENE REQUIREMENTS

1. **Site.** The bakery unit shall preferably be situated in an open, clean and healthy locality. The grounds of the premises surrounding the factory building should be clean and preferably paved or turfed to lay the dust.
2. **Building.**
 - (a) **Structure.** The building shall be of permanent nature and shall be of brick and lime plaster, cement, concrete or any other material which ensures cleanliness. Construction of building shall be such that it shall be rodent proof, fly proof and bird proof. The building and yard, with fittings and equipment should be kept free from breeding places of flies and other insects by eliminating cracks and crevices, as well as by routine and thorough cleaning.
 - (b) **Ventilation and Lighting.** The unit shall be adequately lighted and ventilated, keeping in mind the number of workers, their hours of work and nature of operation.
3. **Floor.** The floor shall be washable with sufficient drainage facility and it shall be impervious to water and not affected by weak acids, alkalies or steam.
4. **Internal wall.** The internal wall shall be smooth, it should be tiled or cement plastered or made of any other impervious material. Where wash basins, sinks are installed, the walls shall be tiled or made impervious to water upto the height of wash basin to safe guard the wall from water seepage.
5. **Ceiling.** The ceiling shall be kept clean.
6. **Maintenance and Repairs.** The building shall be maintained in a proper state of repair and cleanliness. Whenever required it shall be lime washed, painted, disinfected and/or deodorized.
7. There shall be no cobwebs in any part of the unit.
8. Preparation and filling table shall be of wooden tops or covered with Aluminium or stainless sheets or otherwise made impervious to water as far as practicable. All surfaces coming into contact with the food shall be free from pits, crevices and loose scale and shall be non absorbent.
9. All internal joinery work should be of simple design for easy cleaning and for minimizing flour dust deposit. In all rooms' wood work, surrounding door windows and other opening should be fixed tight to the internal wall surface so as to avoid open joints which may harbour pests.
10. **Store Rooms.** The store rooms for raw and packing material should be free from dampness and should be rodent proof.
11. Wherever possible a separate room for storing machinery, equipment, spare parts shall be provided.
12. Proper place shall be provided for storage of brooms, brushes, buckets and other cleaning gear.

Factory and Processing Hygiene.

- (a) Waste and rubbish shall be collected in covered receptacles and shall not be allowed to lie about on the floor.
- (b) Adequate measures shall be taken to prevent growth of mould on equipment and internal structure of processing and storage room.
- (c) Adequate measures shall be taken to prevent infestation of cockroaches and other house hold pests.
- (d) When pesticides and/or other disinfectants are used, care shall be exercised to prevent contamination of equipment, raw material and packing materials.
- (e) Floors and drains shall be kept clean. In the processing areas, the drains shall be provided with detachable covers.
- (f) Sinks and troughs used for washing ingredients and utensils shall not be used for washing of hands.
- (g) No lavatory, sink, cesspool or garbage shall be so situated or maintained that odours or fumes there from pervade any room where product or raw materials are prepared or stored.
- (h) The factory effluents shall be disposed of in a hygienic manner and shall not be let off on road or adjacent fields.
- (j) Window glass and light fitting shall be kept clean.
- (k) Domestic animals shall not be allowed in any part of the unit.

14. **Container cleanliness.** It shall be ensured that containers are clean. The containers shall not be stacked in a manner which allows the contamination of the product.

15. **Installation of Equipment.**

- (a) All equipment shall be installed on a foundation of durable, easily cleanable material.
- (b) Equipment shall be placed away from the walls with a view to providing facilities for inspection and cleaning.
- (c) Installation of pipes shall be such as to facilitate easy cleaning and maintenance.

16. **Equipment and Container Cleanliness.**

- (a) All electrical connections such as switch boxes, control boxes, conduit cables shall be installed in such a way as to facilitate proper cleaning.
- (b) All equipment coming in contact with raw materials or the product shall be kept clean. An ample supply of water, hoses, brushes, detergent and other equipment necessary for the proper cleaning of machinery and equipment shall be available.
- (c) All processing systems shall be cleaned at the close of operation or at the termination of the continuous operation period.

17. Water.

- (a) There shall be adequate supply of potable water.
- (b) The equipment shall be so installed and used that back siphonage of liquid into potable water lines is precluded.
- (c) Hot and cold water in ample supply shall be provided for plant clean up needs where necessary.
- (d) The storage tanks of water should, unless completely sealed, be kept covered, examined regularly and cleaned at least once every six months.

18. Employee Hygiene.

- (a) Every person employed in the factory shall be medically examined before employment. Periodical medical examination of the employee shall be subsequently carried out to ensure that they are free from contagious, communicable diseases.
- (b) It shall be impressed upon all employees that they should notify the medical officer, cases of vomiting, diarrhoea, typhoid, dysentery or any other notifiable disease occurring in their own homes and families.
- (c) Employees shall keep their finger nails short and clean and wash their hands with soap or detergent before commencing work and after each absence, specially after using sanitary conveniences. Towels used for drying hands should be clean.
- (d) All employees should be inoculated against typhoid and paratyphoid once in every five years. In case of an epidemic all workers shall be inoculated and a record shall be kept.
- (e) No worker shall be allowed to work without proper clothing. Employees shall be provided with clean uniform/aprons and clean washable caps. The uniforms shall not be worn outside the plant but just before starting the work and changed when leaving.
- (f) Eating, spitting, nose cleaning, the use of tobacco in any form or chewing betel leaves shall be prohibited within the manufacturing, packing and storage areas of the unit. Notice to this effect shall be prominently displayed.
- (g) Sufficient and suitable sanitary conveniences shall be provided, maintained and kept clean. The conveniences shall be properly lighted. No conveniences shall open directly into any work room in the factory.
- (h) Sufficient wash basins with adequate provision of soap and towels, latrines and urinals in the prescribed manner should be provided.

APPENDIX 'B' TO SPECIFICATION NO 498
FOR WHOLE WHEAT BREAD

MACHINERY

1. Bread manufacturer should preferably have the following special equipments used in preparing bakery products :-

- (a) **Mixer**. To mix various ingredients to ensure uniform distribution throughout the mass and to form minute bubbles of air to serve as foci for the evolution of carbon dioxide and development of gluten which is critical in the preparation of bread doughs.
- (b) **Dough Dividers**. To divide a large mass of dough into pieces corresponding to single unit of the finished product.
- (c) **Rounders**. To close the cut surfaces, from where the gas can readily diffuse. It gives the dough a smooth and dry exterior to reorient the gluten structure.
- (d) **Proofing Chambers**. To hold doughs here in racks under controlled conditions of temperature and humidity before actual baking.
- (e) **Baking Equipment**. For this purpose conventional/electric ovens may be used.
- (f) **Slicing Machine**. To slice the cool bread all loaves must be passed through slicing machine.
- (g) **Packing Machine**. To wrap and pack the bread in clean waxed paper or any other food grade paper to preserve freshness, Packing may also be done in printed food grade polythene bag which can be tightened with rubber band.