

## **DESICCATED COCONUT**

Desiccated Coconut Powder is obtained by drying ground or shredded coconut kernel after the removal of brown testa. It finds extensive use in confectioneries, puddings and many other food preparations as a substitute to raw grated coconut. In India the product is manufactured by units mainly scattered in Karnataka, Tamil Nadu, Kerala and Andhra Pradesh

A study conducted by the Coconut Development Board has revealed that a growing consumer demand for desiccated coconut powder could be developed in the country by resorting to organized market promotion activities for the popularization of the product in consumer packs for household uses. The survey has also shown that desiccated coconut powder in consumer packs is acceptable not only in non-coconut producing states but also in traditional coconut growing states such as Kerala. From the survey it was revealed that a sizeable section of the middle class and upper class families residing in cities and towns in Kerala would prefer desiccated coconut powder, if readily available, to raw nuts.

### **Health Benefits of Desiccated Coconut**

Desiccated coconut is rich in healthy saturated fats with no cholesterol and is also a good source of dietary fiber. Lauric acid, the medium chain fatty acid from the fat of the coconut, is having antiviral, antibacterial, and antiprotozoal properties. Capric acid, another of coconut's fatty acid is also found to have antimicrobial properties. These fatty acids are found in the largest amounts only in traditional lauric fats, especially from coconut. Also, recently published research has shown that natural coconut fat in the diet leads to a normalization of body lipids, protects against alcohol damage to the liver, and improves the immune system of body.

Coconut contains dietary fiber which passes through the digestive tract without being broken down or absorbed and is passed out of the body. Instead of contributing to health problems like starch and sugar, fiber promotes good health. Coconut is a natural low - carb, high - fiber food ideally suited for low carbohydrate diets. Coconut flour has been found in several studies to have a glycemic lowering effect, because coconut meat

has simple carbohydrate content coupled with a high fiber, it yields a flour that is less disruptive to blood sugar levels. It is vegan and gluten free.

### Food Safety Standards for Desiccated Coconut

As per FSSAI standards, Grated Desiccated Coconut means the product obtained by peeling, milling and drying the kernel of coconut (*Cocos nucifera*). The product may be in the form of thin flakes, chips or shreds. The product shall be white in colour, free from foreign matter, insects, mould and rodent contamination. The product shall have pleasant taste and flavour, free from rancidity and any evidence of fermentation.

The product shall conform to the following requirements as per the food safety and standards regulations, 2011:

- |  |                               |
|--|-------------------------------|
| (i) Extraneous Vegetable matter                              | Not more than 15 units/100 gm |
| (ii) Moisture (m/m)  | Not more than 3.0 percent     |
| (iii) Total Ash (m/m)  | Not more than 2.5 percent     |
| (iv) Oil Content (m/m)                                       | Not less than 55.0 percent    |
| (v) Acidity of extracted fat pressed<br>as Lauric Acid (m/m) | Not more than 0.3 percent     |
| (vi) Sulphur Dioxide   | Not more than 50.0 mg/kg      |

### List of Food Additives

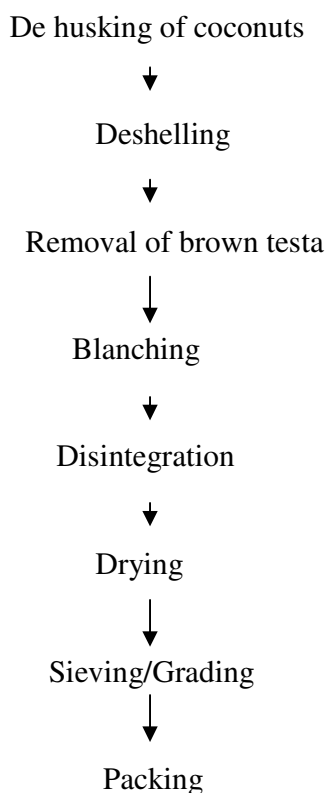
Sl.No	Permissible Food Additive	Limit
1	Sulphur dioxide, Sodium/ Potassium/ Calcium Sulphite/ Bisulphate/ Metasulphite expressed as SO <sub>2</sub>	50mg/kg maximum

### Microbiological Requirements

Sl.No	Parameter	Limit
1	Total Plate Count	Not more than 40,000 per gm

### Manufacturing Process

It is simple and well-established. Fully grown and matured coconuts of around 1 year are stored with husk for about a month to facilitate absorption of water and separation of coconut kernels from shell walls. After de-husking, shells are removed and brown portion (also known as Testa) is removed by scrapping it off and in this process around 12-15% of the kernel goes as paring which is further processed to obtain oil, and thus there is a ready market for this by-product. Subsequently, de-shelled coconuts are broken into pieces, washed and disintegrated in powder form. This powder is then dried in tray drier at about 80 -90°C and powder is stirred occasionally to ensure uniform drying. On cooling, it is passed through vibratory screen with different mesh sizes to segregate the powder according to mesh size. Finally, it is packed in moisture and oil-proof polythene-lined plywood boxes of 10, 25 or 50 kgs and even in retail packets of 200 / 400g. Recovery of desiccated coconut largely depends upon quality of coconuts. But on an average processing of 100 coconuts gives around 10 kg of coconut powder. By-products like parings and shell can be sold in the market. The process flow chart is as under:



According to IS 966:1999, DC is produced by a mechanical process of disintegrating, cleaned and dried pieces of pared kernel of fully matured and fresh coconut. The product should be natural white in color. It shall have characteristic taste, odor and flavor. It shall be free from cheesy, smoky, musty or any other objectionable odors, fungus and insect infestation. It shall be crisp, free from rancidity and not show fat sweating. DC is categorized into three types based on the particle size and are as follows:

- Fine – if size of particle is between 1.40mm and 1.00 mm or if it is retained on 1.00mm IS test sieve.
- Medium- If size of particle is between 1.70 mm and 1.40 mm or if it is retained on 1.40 mm iS sieve.
- Coarse – If size of particle is more than 1.70 mm or if it passes through 1.70 mm IS test sieve.

Yield of the product is 1 tone from 10,000 coconuts.

### Composition of the Product

Sl. No	Item	Quantity
1	Moisture	1.3-2.5%
2	Protein	6.0-6.6%
3	Oil	68-72%
4	Carbohydrate	18-20%
5	Crude fibre	4-6%
Source* - Tropical Foods, Chemistry and Nutrition, Volume 2, George E Inglett		

### Low fat Desiccated Coconut

Desiccated coconut is of two types: High fat and low fat. High fat means the desiccated coconut powder produced without removal of coconut milk. Low fat desiccated coconut powder is produced as the byproduct of coconut milk/VCO/ DC units and is having a fat percentage upto 38-40%. It is a good source of dietary fiber. Low fat DC is used for the manufacturing of coconut flour (Annexure A) and dietary fiber.

### **Export Potential of Desiccated Coconut**

Desiccated coconut is gaining more export value nowadays. During the year 2014-15 and 2015-16, the quantity of DC exported from India was 2606.34 MT and 4260.97 MT amounting to Rs.42.42 crores and Rs.52.60 crores respectively. The export during the month of April 2016 was 1208.35 MT which is 279.67% more than the export of desiccated coconut in April 2015. This steep increase in the export shows the immense export potential of this sector. The major export destinations of desiccated coconut are Iran, UAE, Saudi Arabia, Qatar, Oman, Kuwait, Spain and US.

### **Export Promotion Activities**

Government of India has provided promotional measures to boost India's exports under Foreign Trade Policy 2015-20. Entrepreneurs are entitled to receive the following incentives for exporting of coconut products:

#### **(1) Merchandise Exports from India Scheme (MEIS)**

Under the MEIS scheme, the Government of India provides incentive for exporting notified goods/products to notified markets (Annexure B). The rate of benefit ranges from 2-5% of the realized FOB value of exports.

#### **(2) Duty Drawback Scheme**

Duty Drawback has been one of the popular and principal methods of encouraging export. It is a method of refund of custom duties paid on the inputs or raw materials and service tax paid on the input services used in the manufacture of export goods. The duty drawback benefit are as stated in the table below.

**Benefits secured under MEIS (Merchandise Exports From India Scheme)  
and Duty Drawback Scheme**

ITC HS Code	Products	MEIS benefits in percentage of FOB Value	Duty Drawback Scheme benefit in percentage of FOB Value	
			Drawback rate when cenvat facility has not been availed	Drawback rate when cenvat facility has been availed
8011100	Desiccated coconut	5	1	0.15

**List of Plant and Machinery**

Sl.No	Item
1	Coconut de shelling machine
2	Brown skin removing machine
3	Washing Unit
4	Whole nut inspection conveyor
5	Disintegration Unit
6	Blanching Unit
7	Dryer with pre drying circuit and dust collection system
8	DC powder cooler
9	Lump breaker
10	Vibro sieve
11	Intermediate Conveyors

**Capital Investment**

Components	Capacity	
	15,000 coconuts per day	25,000 coconuts per day
	(Rs. in lakhs)	
Land (min 50 cent)	Own/Leased	Own/leased
Building & Civil	35.00	45.00

Coconut Development Board, Kochi

Works		
Plant & machinery	67.00	87.00
ETP	5.00	5.00
Electrification	4.00	5.00
Generator	10.00	10.00
Pre-operative expenses	0.67	0.87
Working capital margin	8.00	13.00
<b>Total</b>	<b>129.00</b>	<b>165.87</b>

**DC Machinery Manufacturers List**

Sl. No.	Name of the Unit	Address of the Registered Office	Website
1.	Marshall-Flower Engineers India (P) Ltd	Marshall Sons & Co. Tea Pvt Ltd, Harrington Court, Flat No 16, Kolkatta 700071	2282-9363,9367 <a href="mailto:mail@cal3.vsnl.net.in">mail@cal3.vsnl.net.in</a> <a href="http://www.marshallflower.com">www.marshallflower.com</a>
2	L&F Machineries,	Chemmanda, Near Inrinjakkuda, Karalam-PO, Thrissur – 680711	<a href="http://www.lfmachineries.com">www.lfmachineries.com</a> Ph: 0484- 2889549/ 9847293050 / 9495917378
3	GEM Allied Industries Pvt Ltd	GEM Group of Companies, 10/C Middleton Row, 3 <sup>rd</sup> Floor, Kolkata - 700 071 India	<a href="http://www.gemforgings.com/">http://www.gemforgings.com/</a> <a href="mailto:gem.forgings@vsnl.com">gem.forgings@vsnl.com</a>
4	T & I Global Ltd, 11, Jassal House, 4-A Auckland Square, Kolkata- 700 017	<a href="mailto:sales@tiglobal.com">sales@tiglobal.com</a> 9443708418 (Mr Kumar Suresh) Coimbatore – 0422-2674814/15 Kolkata 03322833613/ 30283626	<a href="http://www.tiglobal.com">www.tiglobal.com</a> 18, SIDCO Industrial Estate, Kurichi, Coimbatore 641 021, India, Phones:- 0422-2674814/2674815 Mr Sangeet Bagaria 9443318408 at Coimbatore <a href="mailto:tk@tiglobal.com">tk@tiglobal.com</a>
5	Vikram India Limited	Head Office Tobacco House, 1, Old Court House Corner, Kolkata – 700 001	Ph: 033 22307299 09674344443
6	Tea Mech (India)	Registered Office:- 96D, Karaya Road, 4 <sup>th</sup> Floor, Kolkata – 700 019 033- 22812912 / 033-22812913	Email- <a href="mailto:teamechindia10@gmail.com">teamechindia10@gmail.com</a>
7	Anpharma Equipments	Anpharma Equipment IX/417-B, Near Apollo Tyres,	0480 2723887 / 480 3291249 / 04803261249

Coconut Development Board, Kochi

		Perambra P.o., Thrissur (Dt). Kerala. Pin - 680 689	anpharma equipments@yahoo.com
8	Lakshmi Industrial Equipments	No. 22/10, Kollan Thottam, Nallampalayam, Ganapthy, Coimbatore – 641 006	Ph: 04222929445, 9786020888 Email: <a href="mailto:lakshmiequip14@gmail.com">lakshmiequip14@gmail.com</a> , <a href="mailto:info@lakshmiequip.com">info@lakshmiequip.com</a>
9	Vista Equipments and Machines P ltd	21 A,Chetipalayam Main Road, Eachanari Post, Coimbatore – 641021. Tamilnadu, INDIA.	Mobile: +91 98431 77300 / +254 737 066 145., Email: <a href="mailto:info@vistaequipments.com">info@vistaequipments.com</a> / <a href="mailto:sales@vistaequipments.com">sales@vistaequipments.com</a>
10	Essar Technics	Essar Technics, Royal Plaza, Aluva	0484 4033166, 9746475576
11	Essar Engineers, Coimbatore	519/1 <sup>a</sup> -Athipalayam Road, Chinnavedamappi, Coimbatore- 641006 Ph: 04222012617 Mail: <a href="mailto:essareng@yahoo.com">essareng@yahoo.com</a>	Ph: 04222012617 Mob: 9843099054 Mail: <a href="mailto:essareng@yahoo.com">essareng@yahoo.com</a> Web:www.essarengineer.com
12	Kaps Engineers Crushing & Pulverisng equipments	Makarpura, Vadodara, Gujarat	91-265-2632692, 2648082 9377065713 <a href="mailto:sales@kapsengineers.com">sales@kapsengineers.com</a>
13	Nirmal prem creations Crushing & Pulverisng equipments	Coimbatore	0422-2543736 9443342236 <a href="mailto:npskumar@yahoo.com">npskumar@yahoo.com</a>
14	Kilburn Engineers Dryer for DC & VCO	Kilburn Engineering Ltd. 3 <sup>rd</sup> Floor, Four Mangoe Lane Surendra Mohan Ghosh Sarani Kolkata - 700 001, India. Tel: (+91-33) 2231 3337 / 3450 (+91-33) 4003 5154 E-mail : <a href="mailto:kelero@kilburnengg.com">kelero@kilburnengg.com</a>	<a href="http://www.kilburnengg.com">www.kilburnengg.com</a> Kilburn Engineering Ltd. 6, MIDC Saravali, Kalyan Bhiwandi Road, Bhiwandi Dist. Thane - 421 311, Maharashtra India. Tel: (+91-2522) 283000 E-mail: <a href="mailto:marketing@kilburnengg.com">marketing@kilburnengg.com</a>

**(The above list of machinery manufacturers is indicative and for reference. Entrepreneur has to ensure the quality and price of the machineries independently and Coconut Development Board is not responsible in this regard)**



## **CDB Scheme for Promotion of Coconut Industries**

Coconut Development Board under Technology Mission on Coconut extends financial assistance to the limit of 25% of the eligible project cost limited to Rs. 50 lakhs per project. For technical enquiries and for availing subsidy, please send email to [cdbtech@gmail.com](mailto:cdbtech@gmail.com). For export related enquiries, please send email to [epccdb@gmail.com](mailto:epccdb@gmail.com)

## **Annexure A**

### **Food Safety Standards for Solvent Extracted Coconut Flour**

**SOLVENT EXTRACTED COCONUT FLOUR** means the product obtained from fresh coconut kernels or dried coconut copra of good quality and free from mould. Food grade hexane shall be used for extraction of the oil. It shall be of white or pale brownish yellow colour of uniform composition and free from rancid and objectionable odour, extraneous matter, insects, fungus, rodent hair and excreta. It shall be free from added colour and flavour. It shall conform to the following standards, namely :—

(a) Moisture	Not more than 9.0 per cent by weight
(b) Total ash	Not more than 6.0 per cent by weight on dry basis
(c) Ash insoluble in — dilute HCl	Not more than 0.35 per cent by weight on dry basis.
(d) Protein (Nx6.25)	Not less than 22.0 per cent by weight on dry basis.
(e) Crude fibre	Not more than 9.0 per cent by weight on dry basis.
(f) Fat	Not more than 1.5 per cent by weight on dry basis
(g) Total bacterial	Not more than 50,000 per gm.count
(h) Coliform bacteria	Not more than 10 per gm.
(i) Salmonella bacteria	Nil in 25 gm.
(j) Hexane (Food grade)	Not more than 10.00 ppm

### **Reference**

Food Safety and Standards (Food Product Standard and Food Additives) Regulation, 2011 (Part 1)

**Annexure B**

**Notified Markets under MEIS Scheme**

**Table 1-List of Countries under Country Group A, Country Group B and Country Group C**

**I-Country Group A**

(1) Austria, (2) Belgium, (3) Bulgaria, (4) Canada, (5) Croatia, (6) Cyprus, (7) Czech Republic, (8) Denmark, (9) Estonia, (10) Finland, (11) France, (12) Germany, (13)Greece, (14) Hungary, (15) Ireland, (16) Italy, (17) Latvia, (18) Lithuania, (19)Luxembourg, (20) Malta, (21) Netherlands, (22) Poland, (23) Portugal, (24)Romania, (25) Slovak Republic, (26) Slovenia, (27) Spain, (28) Sweden, (29)United Kingdom, (30) United States of America

**II-Country Group B**

(1) Algeria, (2) Angola, (3) Antigua, (4) Argentina, (5) Armenia, (6) Azerbaijan, (7)Bahamas, (8) Bahrain , (9) Barbados, (10) Belarus, (11) Belize, (12) Benin, (13)Bermuda, (14) Bolivia, (15) Botswana, (16) British Virgin Islands, (17) Brazil,(18) Brunei, (19) Burkina Faso, (20) Burundi, (21) Central African Republic, (22)Cambodia, (23) Cameroon, (24) Canary Island, (25) Cape Verde Island, (26)Cayman Island, (27) Chad, (28) Chile, (29) China PRP, (30) Colombia, (31)Comoros, (32) Congo Democratic Republic, (33) Congo Republic, (34) Costa Rica,(35) Cote D' Ivoire, (36) Cuba, (37) Djibouti, (38) Dominic Rep, (39) Dominica,(40) Ecuador, (41) Egypt , (42) El Salvador, (43) Equatorial Guinea, (44) Ethiopia,(45) Falkland Island, (46) French Guiana, (47) Gabon, (48) Gambia, (49) Georgia,(50) Ghana, (51) Grenada, (52) Guadeloupe, (53) Guatemala, (54) Guinea, (55)Guinea Bissau, (56) Guyana, (57) Haiti, (58) Honduras, (59) Indonesia, (60) Iran,(61) Iraq, (62) Israel, (63) Jamaica, (64) Japan, (65) Jordan, (66) Kazakhstan, (67)Kenya, (68) Korea Republic (South Korea), (69) Kuwait, (70) Kyrgyzstan, (71)Lao PDR, (72) Lebanon, (73) Lesotho, (74) Liberia, (75) Libya, (76) Madagascar,(77) Malawi, (78) Malaysia, (79) Mali, (80) Martinique, (81) Mauritania, (82)Mauritius, (83) Mexico, (84) Moldova, (85) Montserrat, (86) Morocco, (87)Mozambique, (88) Myanmar, (89) Namibia, (90) Netherland Antilles, (91)Nicaragua, (92) Niger, (93) Nigeria, (94) Oman, (95) Panama Republic, (96)Paraguay, (97) Peru, (98) Philippines, (99) Qatar, (100) Reunion, (101) Russia,(102) Rwanda, (103) Sao Tome, (104) Saudi Arab, (105) Senegal, (106)Seychelles, (107) Sierra Leone, (108) Singapore, (109) Somalia, (110) SouthAfrica, (111) St Helena, (112) St Kitt N A, (113) St Lucia, (114) St Vincent, (115)Sudan, (116) Suriname, (117) Swaziland, (118) Syria, (119) Taiwan, (120)Tajikistan, (121) Tanzania Republic, (122) Thailand, (123) Togo, (124) Trinidad,(125) Tunisia, (126) Turkey, (127) Turkmenistan, (128) Turks and Caicos Islands,(129) United Arab Emirates, (130) Uganda, (131) Ukraine, (132) Uruguay, (133) Uzbekistan, (134) Venezuela, (135) Vietnam Socialist Republic, (136) Virgin IslandUS, (137) Yemen Republic, (138) Zambia, (139) Zimbabwe.

**III-Country Group C**

(1) Afghanistan, (2) Albania, (3) American Samoa, (4) Andorra, (5) Anguilla, (6)Antarctica, (7) Aruba, (8) Australia, (9) Bangladesh, (10) Bhutan, (11) Bosnia

andHerzegovina, (12) Channel Islands, (13) Christmas Islands, (14) Cocos Islands,(15) Cook Islands, (16) Eritrea, (17) Faroe Islands, (18) Fiji Island, (19) FrenchPolynesia, (20) French Southern and Antarctic Lands (Fr S Ant Tr), (21) Gibraltar,(22) Greenland, (23)Guam, (24) Heard Macdonald, (25) Hong Kong, (26) Iceland,(27) Kiribati Rep, (28) Korea DPR (North Korea), (29) Liechtenstein, (30) Macao,(31) Macedonia, (32) Maldives, (33) Marshall Islands, (34) Micronesia, (35)Monaco, (36) Mongolia, (37) Montenegro, (38) N. Mariana Islands, (39) NauruRepublic, (40) Nepal, (41) Neutral Zone, (42) New Caledonia, (43) New Zealand,(44) Niue Islands, (45) Norfolk Islands, (46) Norway, (47) Pacific Islands, (48)Pakistan, (49) Palau, (50) Panama, (51) Papua New Guyana, (52) Pitcairn Islands,(53) Puerto Rico, (54) SaharwiA.Dm Republic, (55) Samoa, (56) San Marino, (57)Serbia, (58) Solomon Island, (59) Sri Lanka DSR, (60) St Pierre, (61) Switzerland,(62) Timor Leste, (63) Tokelau Islands, (64) Tonga, (65) Tuvalu, (66) Serbia (67)Montenegro, (68)Vanuatu Republic, (69) Territory of the Wallis and Futuna Islands(70) Any other country not listed in the Country Groups A or B will be treated as part of Country Group C