THE ESSENTIAL OILS GRADING AND MARKING RULES

1. Short title and application.- (1) These rules may be called the Essential Oils Grading and Marking Rules, 1993.

(2)They shall apply to essential oils produced in India. (3)They shall come into force from the date of their

(3) Suitable number of consumer packs, bottles may be packed in master container such as corrugated card board cartons or

(4)Each container shall contain the essential oil of one grade designation only.

2. Definitions:-In these rules-

(1) "**Agricultural Marketing Adviser**" means the Agricultural Marketing Adviser to the Government of India.

(2) "**Authorised packer"** means a person or a body of persons who has been granted a Certificate of Authorisation to grade and mark essential oils in accordance with the manner approved by the Agricultural Marketing Adviser; (2) In addition to the grade designation mark following particulars shall be clearly and indelibly marked on each grade standards and procedure prescribed under these rules;

the packer, (3) "**Certificate of Authorisation**" means a certificate issued under the provisions of the General Grading and Marking Rules, 1988 authorising a person or a body or persons to grade and marks essential oils with the grade designation marks;

(4) "**Schedule"** means schedule appended to these rules.

(7) Method of Marking.- (1) The grade designation mark shall be securely applied or affixed to each container in the container -

(a)Name and address of

(b)Lot number,

(c)Place of packing,

(d)Date of packing in month and Year,

(e)Net weight.

3. Grade designations.-The grade designation to indicate the quality of essential oils shall be as set out in column I of Schedules I to VIII

4. Definition of quality. – The quality of essential oils indicated by the grade designations in Schedule I to VIII.

5. Grade designation marks.- The grade designations mark shall consist of :-

(i)A label specifying name of the commodity, grade designation and bearing a design consisting of an outline map of India with the word "AGMARK" and the figure of rising sun with the words "Produce of India" and "Hkkjrh; mRikn" resembling the one as set out in Schedule IX or (ii) Agmark replica consisting of a design incorporating the number of Certificate of Authorisation, the word "AGMARK", name of the commodity, grade designation and resembling the one as set out in Schedule X;

Provided that use of Agmark replica in lieu of Agmark labels will be allowed only to such authorised packers who have been granted necessary permission, by the Agricultural Marketing Adviser of an officer authorised in this regard.

6. Method of packing :-

(1) Essential Oils shall be packed in new, sound and clean tins, mild steel drums, glass bottles, spun aluminum bottles, wooden vats or in other suitable containers as may be approved by the Agricultural Marketing Adviser or an officer authorised by him in this regard;

SCHEDULE – I

(See Rule 3 and 4)

Grade designations and definition of quality of oil of East Indian Lemongrass (Cymbopogan flexuosus)

Physico-chemical requirements

Grade designation	Specific gravity At 27^0/27^{0}C*	Optical rotation	Refractive index at 27^{0}C**	Total aldehyde as Citral content per cent by volume** * (by Bisulphite method)
1	2	3	4	5
Grade-I	0.890 to 0.900	-3^0 to+1^0	1.4799 to 1.4859	Not less than 90%
Grade-II	0.890 to 0.900	-3^{0}to+1^0	1.4799to 1.4859 Non-Specified $	Not less than 76%

Solubility in 70% (by volume) Ethyl alcohol	Description and appearance
6	7
Soluble in 2 to 3 volumes.	(1) The east Indian lemongrass oil shall be the dark yellow to light brown red mobile essential oil obtained by a process of steam or water distillation of freshly cut and sufficiently dried clean grass of Cymbopogan flexuous (D.C.) Stapf plants. The oil shall be free from admixture with any other oil or substance.
-do-	(2) It shall have lemon* like odour and shall be clear, free from any sediment, suspended matter and separated water.

*The correction factor for specific gravity for each degree Celsius rise in temperature shall be (-) 0.00079.

**The correction factor for refractive index for reach degree Celsius rise in temperature shall be (-) 0.00044.

$Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

***For the purpose of guidance chromatogram given in IS 327 : 1991 may be referred.

SCHEDULE II

(See Rule 3 and 4)

Grade designations and definition of quality of Oil of East Indian Sandalwood (Santalum album) Physico-chemical requirements

Grade designation	specific gravity at 27^0/27^{0}C*	Optical rotation	Refractive index at 27^{0}C**	Free alcohols expressed or calculated as

1	2	3	4	Sanatol $C_{15}H_{24}0$ per cent by weight*** 5
Grade-I	0.964 to 0.978	-15_0 to -20_0	1.5002 to 1.5072	$Non-Specified
	Not less than 90%			

Solubility in 70% (by volume) ethyl alcohol	Esters calculated as santalol acetate $C_{17}H_{26}O_2$ percent by weight	Description and appearance
6	7	8
Soluble in 5 volumes	Not more than 7 per cent	The East Indian Sandalwood oil shall be the pale yellow or nearly colourless essential oil obtained by steam distillation and/or water distillation of Santalum album Linn. Only shall be free from admixture with any other oil or substance. It shall be clear, free from sediment, suspended matter and separated water. It shall have the characteristic pleasant, sweet, woody and persistent odour.

*The correction factor for specific gravity for each degree Celsius rise in temperature shall be (-) 0.00070

**The correction factor for refractive index for each degree Celsius rise in temperature shall be (-) 0.00039.

$Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

*** For the purpose of guidance chromatogram given in IS 329 : 1993 may be referred.

SCHEDULE –III

(See Rule 3 and 4)

Grade designations and definition of quality of Oil of Indian Palmarosa (Cymbopogan) (martini Var. Motia)

Physico-chemical requirements

Grade						
Designation	Specific Gravity at $27^0/27^0$ C*	Optical rotation	Refractive index at 27^0 C**	Acid value maximum	The percentage of Esters by weight *** (as Geranyl acetate)	Ester value after acetylation (using about I gm of the material)
1	2	3	4	5	6	7
Grade-I	0.876to 0.888	-2^0 to $+2^0$	1.4702 to 1.4747	3	5 to 15	266 to 280
Grade-II	0.876 to 0.888	-2^0 to $+2^0$	1.4702 to 1.4747	3	5 to 15	266 to 280
Grade – III	0.876 to 0.888	-2^0 to $+2^0$	1.4702 to 1.4747	3	5 to 15	255 to 270
$ Non-Specified						

Total Alcohol (Geraniol) Content percent by mass (minimum)	Solubility in 70% (by volume) Ethyl alcohol	Description and appearance
8	9	10
92	Soluble in 2 volumes	Indian Oil of pelmarosa is the yellowish essential oil obtained by steam or water distillation of partially dried leave, flowers and upper third of the stems cut after flowering of Cymbopogan martini stapf. Var Motia.
90	Soluble in 2 volumes	
85 rose like bynotes free from admixture with detection of shall be	Soluble in 2 volumes	The oil shall have natural characteristic, sweet odour and shall be clear. It shall be free from sediments and suspended matter. Oil shall be separated water. It shall also be free from any other oil, adulterants and substances. For adulteration of Ginger grass oil colour test performed.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00073

**The correction factor for refractive index for each degree Celsius rise in temperature is (-) 0.00040

$ Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

***For the purpose of guidance chromatogram given in IS 526 : 1988 may be referred.

SCHEDULE –IV

(See Rules 3 and 4)

Grade designations and definition of quality of oil of Indian Ginger-grass (Cymbopogan martini Var. Sofia)

Physico-chemical requirements

Grade designation		Specific gravity at 27° C/27°C*	Optical rotation	Refractive index at at 27°C**	Acid value maximum	Ester value
1		2	3	4	5	6
Grade-I	0.898 to 0.927	(-) 14_0 to (+)54_0	1.4752 to 1.4902	1.4752 to 1.4902	6	13.5 to 34 (5 to12 percent of esters as geranyl acetate)

Ester (Saponification) Value after acetylation) $Non-Specified	Total Alcohol percentage (Gera-neol) content by mass	Solubility @ in70% (by volume) ethyl alcohol	Description and appearance
7	8	9	10
140 to 180	36 to 60	Soluble in 2 to 3 volumes	Indian gingergrass oil is the brownish yellow to brownish red essential oil obtained by steam or water distillation of partially dried leaves, flowers and upper third of stems, after flowering of Cymbopogan martini stapf.Var Sofia. The oil shall be clear and free from separated water. It shall also be free from sediments, suspended matter and shall posses the characteristic sharp but pleasant odour.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00073.

**The correction factor for refractive index for each degree Celsius rise in temperature is (-) 0.00040.

@ The solution of ginger grass oil in ethyl alcohol, 70% by volume occasionally turns opalescent to turbid with further addition of alcohol

$ Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grade. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHEDULE –VA

(See Rules 3 and 4)

Grade designations and definitions of quality of Oil of Indian Eucalyptus (Eucalyptus globulus)

Physico-chemicals requirements

Grade designation	Specific gravity at 27^{0}C/27^{0}C*	Optical rotation	Refractive index at 27^{0}C**	Solubility in 80% (by volume)ethyl alcohol	Cineole content not less than per cent by weight ***	Freezing point ^{0}C	Description and appearance
1	2	3	4	5	6	7	8
Grade-I	0.8995 to 0.9065	(-)5^0 to (+) 10^0	1.4561 to 1.4669	Soluble in equal volume	70	35 and above	Indian Eucalyptus oil is the colourless pale yellow essential oil obtained by water or steam distillation of fresh leaves of Eucalyptus Globulus labill or from other cineole containing species of Eucalyptus (family: Myrtacea) and rectified. It shall be clear, free from sediment, suspended matter, separated water and possess the characteristics aromatic camphoraceous taste, followed by sensation of cold. The eucalyptus oil shall satisfy the test requirements for the limits of aldehyde (1) and phellandrene (2). It shall be free from admixture of any other oil or substance.
Grade-II	0.8995 to 0.9065	(-) 5^{0}to(+)10^0	1.4561 to 1.4669	Soluble in equal volume	60	35 and above	
$ Non-specified							

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00084.

**The correction factor for refractive index for each degree celsius rise in temperature is (-) 0.00044.

1. The volume of 0.5 N potassium hydroxide required to neutralize acids liberated from 10 ml. of the eucalyptus oil is treated with 4 ml. of a 3.5 percent alcoholic hydroxylamine hydrochloride and 5 ml of benzene, shall not exceed 2 ml.

2. Phellandrene shall be taken to be absent when no crystalline precipitate is formed in the petroleum layer, within 10 minutes, on mixing one ml. of eucalyptus oil with 5 ml. of light petroleum, 2 ml. of saturated sodium nitrate solution and 2 ml of glacial acetic acid.

$ Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHEDULE V-B

(See Rules 3 and 4)

Grade designations and definition of quality of Oil of Indian Eucalyptus (Eucalyptus citriodora)

Physico-chemical requirements

Grade designation	Specific gravity at 27^{0}C/27^0 C*	Optical rotation	Refractive index at 27^{0}C**	Solubility in 80% (by volume) ethyl alcohol
1	2	3	4	5
Grade I	0.8521 to 0.8711	(-)2^{0}to (+)4^0	1.4469 to 1.4589	Soluble in two volumes
Grade II	0.8521 to 0.8711	(-)2^0 to(+)4^0	1.4469 to 1.4589	Soluble in two volumes $ Non-specified

Physico-chemical Requirements

Aldehyde content calculated as Citronellal not less than per cent by weight	Description and appearance
6	7
75 70	Indian Eucalyptus oil is the colour less pale yellow or greenish yellow essential oil obtained by water or steam distillation of fresh leaves and terminal branches of Eucalyptus citriodora and rectified. It shall be clear free from sediment ,suspended matter ,separated water and possess the characteristics aromatic camphoraceous taste followed by sensation of cold. The Eucalyptus oil shall satisfy The test requirment s for phellandrene***It shall be free from admixture of any other oil or substance.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00084.

**The correction factor for refractive index for each degree Celsius rise in temperature is (-) 0.00044.

***Phellandrene shall be taken to be absent when no crystalline precipitate is formed in the petroleum layer, within 10 minutes, on mixing one ml. of eucalyptus oil with 5 ml. of light petroleum, 2 ml. of saturated sodium nitrate solution and 2 ml. Of glacial acetic acid.

$ Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHED ULE VI

(See Rules 3 and 4)

Grade designations and definition of quality of Oil of Wild (Khus) North Indian Vetiver (Vetiveria zizanioides)

Grade designation	Physico-chemical requirements					
	Specific Gravity at $27^0C/27^0C$*	Optical rotation	Refractive index at 27^0C**	Acid Value maximum (using 2 to 2.5 grams of the sample)	Saponification value (using 4 to 5 grams of the sample)	Saponification value after acetylation
1	2	3	4	5	6	7
Grade I	0.992 to 1.034	-50^0 to -130^0	1.5132 to 1.5242	40	25 to 80	145 to 200
$ Non-Specified						

Physico-chemical requirements			
Total alcohol as Vetiverol C_{15} H_{24} O), percent by weight Minimum	Carbonyl Value (C_{15} $H_{22}O$), per cent by weight minimum	Solubility in 80% (by volume) ethyl alcohol	Description and appearance
8	9	10	11
70	24	One to two volumes	Oil of Vetiver (khus) shall be obtained by steam hydro-distillation of clean and fresh or air dry roots of Vetiveria zizaniodes (Linn) Nash, family Gramineae growing wild. The oil shall be clear and free from sediment, suspended matter, separated water and adulterants. It shall have characteristic aroma and persistent odour of Khus roots and shall be light brown to deep brown, sometimes greenish in colour.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00071

**The correction factor for refractive index for each degree Celsius rise in temperature is (-) 0.00039.

$ Non-specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHEDULE VII

(See Rules 3 and 4)

Grade designations and definition of quality of Oil of Cultivated Vetiver-roots (Vetiveria zizanioides)

Physico-chemical requirements

Grade designation	Specific Gravity at 27$_0$C/27$_0$C*	Optical rotation	Refractive index at 27$_0$C**	Acid value maximum (using 2 to 2.5 grams of sample)	Saponification value	Saponification value after acetylation
1	2	3	4	5	6	7
Grade I	0.994 to 1.017	+10$_0$ to +25$_0$	1.5172 to 1.5312	35	25 to 50	125 to 155

$ Non-specified

Physico-chemical requirements

Carbonyl value (using 1 to 1.5 grams of the sample) 220 percent by (minimum)	Total alcohol (calculated on molecular weight we ight (minimum)	Solubility in 80% (by volume) Ethyl alcohol	Description and appearance
8	9	10	11
55	55	One to two volumes	Oil of vetiver roots (cultivated) shall be obtained by steam or hydro-distillation of clean, fresh or air dry roots of the cultivated plant called Vetiveria zizanioides (Linn) Nash

	family : Gramineae. The oil shall be clear, free from sediment, suspended matter, separated water and adulterants. It shall have characteristic and persistent aroma with pleasant woody character and shall be light brown to reddish brown, sometimes greenish in colour.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00071

**The correction factor for refractive index for each degree Celsius rise in temperature is (-) 0.00039.

Non –specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHEDULE-VIII

(See Rules 3 and 4)

Grade designations and definition of quality of Oil of Himalayan Cedarwood (Cedras deodara)

Grade designation	Physico-chemical requirements					
	Specific Gravity at 27₀C/27₀C*	Optical rotation	Refractive index at 27₀C/27₀C**	Acid value (maximum)	Saponification value	Saponification value after acetylation
1	2	3	4	5	6	7
Grade-I	0.934 to 0.959	+42 to +65	1.5050 to 1.5132	1	10 to 20	25 to 40

$ Non-Specified

Physico-chemical requirements		
Carbonyl content (using (1 to 2 grams of the sampl	Solubility in 90% (by volume) ethyl alcohol	Description and appearance

e) as atlantone, ($C_{15}H_{22}O$) percent by weight (minimum)

8	9	10
13	10 to 15	Oil of Himalayan Cedar-wood shall be obtained primarily by the distillation of the waste sawdust, chips and wood shavings of the heartwood of the deodar tree Cedras deodara. Loud: Family: Pinaceae. The oil shall be clear

	free from sediment, suspended matter, separated water and adulterants. It shall have heavy balsamic odour and shall be of light yellow to reddish brown in colour.

*The correction factor for specific gravity for each degree Celsius rise in temperature is (-) 0.00071

**The corrective factor for refractive index for each degree Celsius rise in temperature is (-) 0.00040.

$ Non-Specified grade is provided to meet such specific quality requirements of the buyer which are not covered under the regular grades. It is allowed for export grading only against specific order from the buyer indicating the quantity and quality required.

SCHEDUEL –IX

[See rule 5(i)]

Grade designation mark

(Design on Agmark Label)

SCHEDULE -X

[See rule 5(ii)]

Grade designation mark

(Design of AGMARK

Replica)

Name of Commodity …….....

Grade …….……

NOTE: The principal rules were published vide G.S.R. 259 dt. 17.4.95.