Prelude : Brief Guidance for CBs
RSPO Physical Rule for Oleochemicals/HPC

RSPO
Roundtable on Sustainable Palm Oil

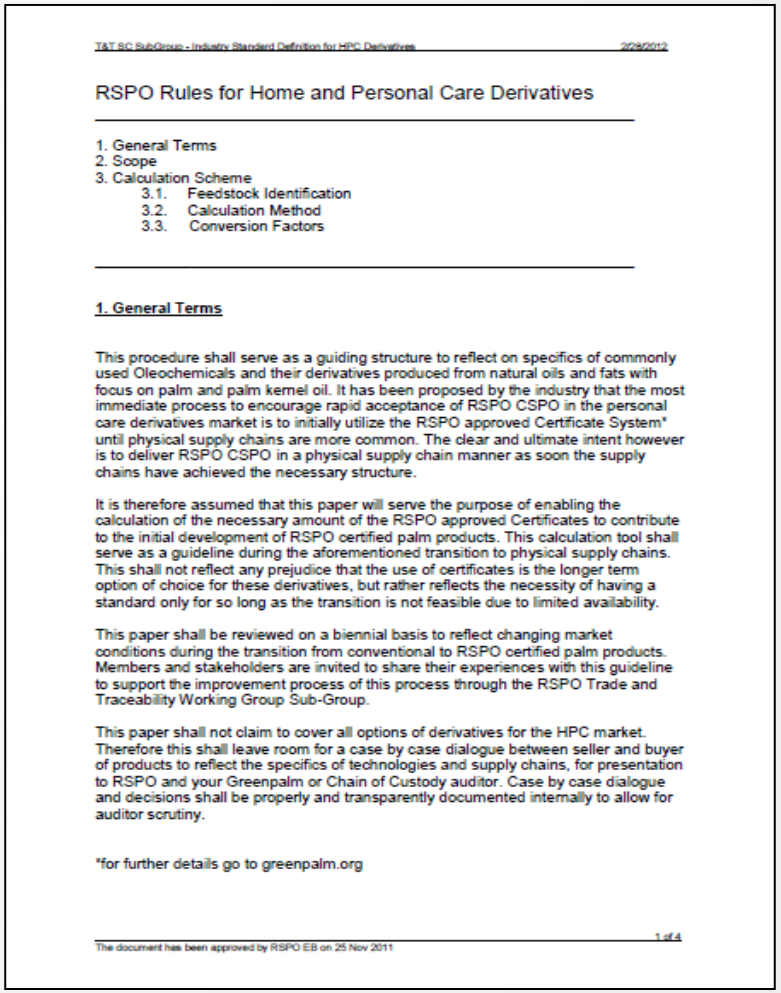
- RSPO Rules for HPC Derivatives
  - Scope and Purpose Slide No: 2-5
- RSPO Rules for Physical Transition for Oleochemicals and Derivatives
  - Scope and Purpose Slide No: 6-8

RSPO Rules for Home and Personal Care Derivatives, Calculation Tool Box for GreenPalm Certificates

RSPO
Roundtable on Sustainable Palm Oil

Background

- Limited material for Oleochemical derivatives, mainly for Home and Personal Care derivatives production
- Document targeted to serve as a guiding paper for Book&Claim coverage



T&T SC SubGroup - Industry Standard Definition for HPC Derivatives 2/28/2012

RSPO Rules for Home and Personal Care Derivatives

1. General Terms

This procedure shall serve as a guiding structure to reflect on specifics of commonly used Oleochemicals and their derivatives produced from natural oils and fats with focus on palm and palm kernel oil. It has been proposed by the industry that the most immediate process to encourage rapid acceptance of RSPO CSPO in the personal care derivatives market is to initially utilize the RSPO approved Certificate System* until physical supply chains are more common. The clear and ultimate intent however is to deliver RSPO CSPO in a physical supply chain manner as soon the supply chains have achieved the necessary structure.

It is therefore assumed that this paper will serve the purpose of enabling the calculation of the necessary amount of the RSPO approved Certificates to contribute to the initial development of RSPO certified palm products. This calculation tool shall serve as a guideline during the aforementioned transition to physical supply chains. This shall not reflect any prejudice that the use of certificates is the longer term option of choice for these derivatives, but rather reflects the necessity of having a standard only for so long as the transition is not feasible due to limited availability.

This paper shall be reviewed on a biennial basis to reflect changing market conditions during the transition from conventional to RSPO certified palm products. Members and stakeholders are invited to share their experiences with this guideline to support the improvement process of this process through the RSPO Trade and Traceability Working Group Sub-Group.

This paper shall not claim to cover all options of derivatives for the HPC market. Therefore this shall leave room for a case by case dialogue between seller and buyer of products to reflect the specifics of technologies and supply chains, for presentation to RSPO and your Greenpalm or Chain of Custody auditor. Case by case dialogue and decisions shall be properly and transparently documented internally to allow for auditor scrutiny.

*for further details go to greenpalm.org

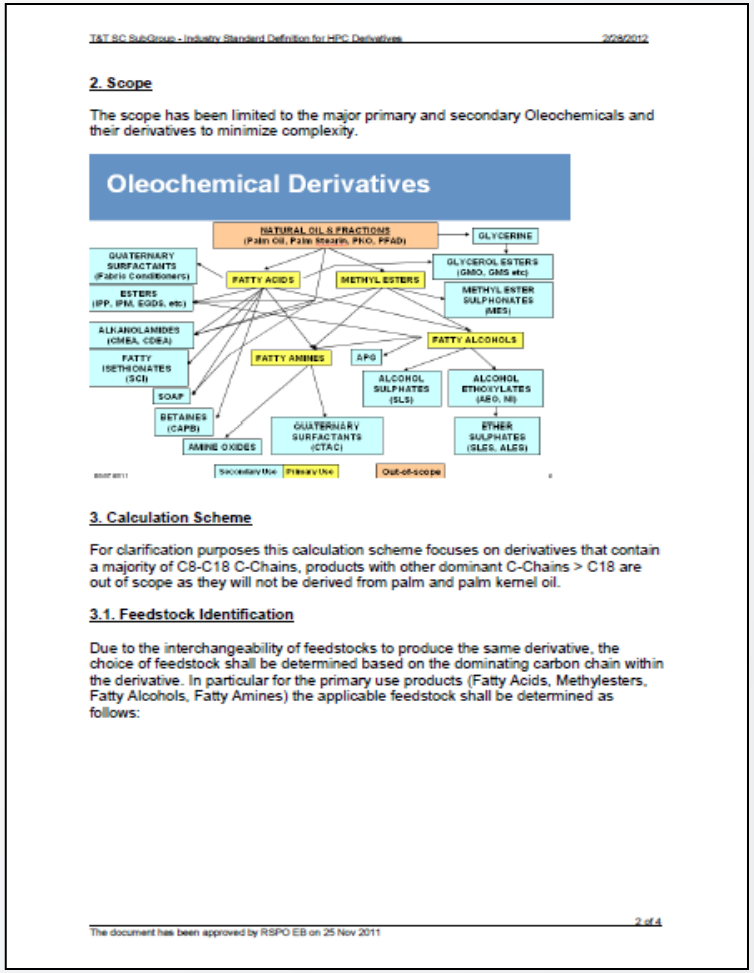
1 of 4
The document has been approved by RSPO EB on 25 Nov 2011

RSPO Rules for Home and Personal Care Derivatives, Calculation Tool Box for GreenPalm Certificates

RSPO
Roundtable on Sustainable Palm Oil

Key Issues

- Visual impression of major routes and flows for key derivatives based on P(K)O
- Key major first steps from P(K)O are Fatty Acids, Methylesters, Fatty Alcohols, Fatty Amines
- From these key first **steps diverging production** starts, oleochemicals will be cut into fractions according to their C Chain length
- Optional raw material use (other vegetable oils – i.e. interchangeability CNO vs. PKO adds to complexity)



T&T SC SubGroup - Industry Standard Definition for HPC Derivatives 2/28/2012

2. Scope

The scope has been limited to the major primary and secondary Oleochemicals and their derivatives to minimize complexity.

Oleochemical Derivatives

3. Calculation Scheme

For clarification purposes this calculation scheme focuses on derivatives that contain a majority of C8-C18 C-Chains, products with other dominant C-Chains > C18 are out of scope as they will not be derived from palm and palm kernel oil.

3.1. Feedstock Identification

Due to the interchangeability of feedstocks to produce the same derivative, the choice of feedstock shall be determined based on the dominating carbon chain within the derivative. In particular for the primary use products (Fatty Acids, Methylesters, Fatty Alcohols, Fatty Amines) the applicable feedstock shall be determined as follows:

2 of 4

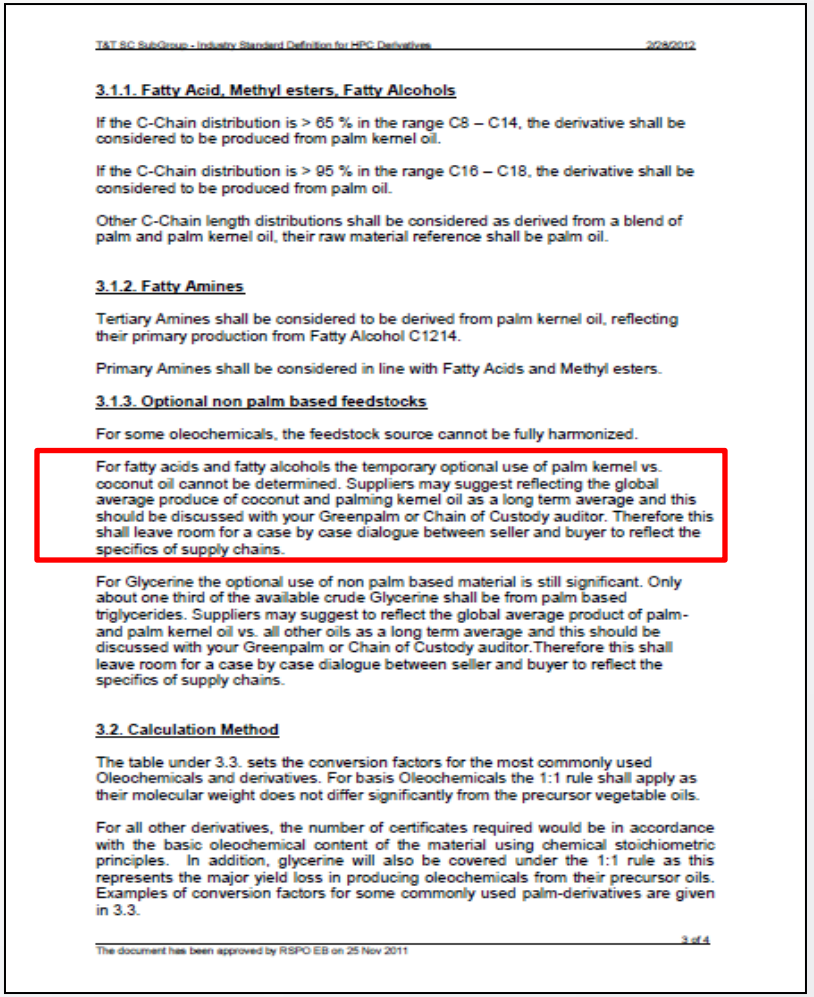
The document has been approved by RSPO EB on 25 Nov 2011

RSPO Rules for Home and Personal Care Derivatives, Calculation Tool Box for GreenPalm Certificates

RSPO
Roundtable on Sustainable Palm Oil

Key Issues

- For simplicity reasons determination and default definition and factors of palm and palmkernel based according to chain length
- Example: Optional raw material use (other vegetable oils – i.e. interchangeability CNO vs. PKO adds to complexity)
- Suggesting long term average produce as a basis for certificate coverage



T&T SC SubGroup - Industry Standard Definition for HPC Derivatives 2/24/2012

3.1.1. Fatty Acid, Methyl esters, Fatty Alcohols

If the C-Chain distribution is > 65 % in the range C8 – C14, the derivative shall be considered to be produced from palm kernel oil.

If the C-Chain distribution is > 95 % in the range C16 – C18, the derivative shall be considered to be produced from palm oil.

Other C-Chain length distributions shall be considered as derived from a blend of palm and palm kernel oil, their raw material reference shall be palm oil.

3.1.2. Fatty Amines

Tertiary Amines shall be considered to be derived from palm kernel oil, reflecting their primary production from Fatty Alcohol C1214.

Primary Amines shall be considered in line with Fatty Acids and Methyl esters.

3.1.3. Optional non palm based feedstocks

For some oleochemicals, the feedstock source cannot be fully harmonized.

For fatty acids and fatty alcohols the temporary optional use of palm kernel vs. coconut oil cannot be determined. Suppliers may suggest reflecting the global average produce of coconut and palming kernel oil as a long term average and this should be discussed with your Greenpalm or Chain of Custody auditor. Therefore this shall leave room for a case by case dialogue between seller and buyer to reflect the specifics of supply chains.

For Glycerine the optional use of non palm based material is still significant. Only about one third of the available crude Glycerine shall be from palm based triglycerides. Suppliers may suggest to reflect the global average product of palm- and palm kernel oil vs. all other oils as a long term average and this should be discussed with your Greenpalm or Chain of Custody auditor.Therefore this shall leave room for a case by case dialogue between seller and buyer to reflect the specifics of supply chains.

3.2. Calculation Method

The table under 3.3. sets the conversion factors for the most commonly used Oleochemicals and derivatives. For basis Oleochemicals the 1:1 rule shall apply as their molecular weight does not differ significantly from the precursor vegetable oils.

For all other derivatives, the number of certificates required would be in accordance with the basic oleochemical content of the material using chemical stoichiometric principles. In addition, glycerine will also be covered under the 1:1 rule as this represents the major yield loss in producing oleochemicals from their precursor oils. Examples of conversion factors for some commonly used palm-derivatives are given in 3.3.

3 of 4

The document has been approved by RSPO EB on 25 Nov 2011

Prelude :RSPO Physical Rule for Oleochemicals & Derivatives v 1.0 /10 July 2013

RSPO Rules for Home and Personal Care Derivatives, Calculation Tool Box for GreenPalm Certificates

RSPO
Roundtable on Sustainable Palm Oil

Key Issues

- Easy guide to calculate approximate content of P(K)O for certificate coverage under Greenpalm
- Only for a list of 24 key basic oleochemicals
- Calculation based on stochiometric principles

3.3. Conversion Factors

This table shall serve as a guiding structure for the commonly used Oleochemicals and derivatives.

#	Material	feedstock	agreed * number
1	Fatty acids (all fractions / blends)	See details under 3.1	1,0
2	Fatty alcohols (all fractions / blends)	See details under 3.1	1,0
3	Methyl esters (all fractions / blends)	See details under 3.1	1,0
4	Fatty amines (all fractions / blends)	See details under 3.1	1,0
5	Glycerine	See details under 3.1	1,0
6	Cocoamidopropyl betaine (fatty acid derivative)	PKO	0,6
7	Sodium lauryl sulfate	PKO	0,7
8	Sodium laureth-1 sulfate	PKO	0,6
9	Sodium laureth-2 sulfate	PKO	0,5
10	Sodium laureth-3 sulfate	PKO	0,5
11	Sodium stearate	Palm oil	0,9
12	Sodium palm kernelate	PKO	0,9
13	Laureth-7	PKO	0,4
14	Steareth-2	PKO	0,8
15	Cocamide MEA (fatty acid-derived)	PKO	0,8
16	Cocamide DEA (fatty acid-derived)	PKO	0,6
17	Stearamidopropyldimethylamine	Palm oil	0,7
18	Cetyltrimethylammonium chloride	PKO	0,8
19	Isopropylpalmitate	Palm oil	0,8
20	Isopropylmyristate	PKO	0,8
21	Caprylic/capric Triglyceride	PKO	1,0
22	Fatty isethionate (SCI)	PKO	0,6
23	Alkylpolyglucoside (APG)	PKO	0,4
24	Laurylamine oxide	PKO	0,9

Based on material at 100% active (excluding water/solvent)
"to be determined"

The document has been approved by RSPO EB on 25 Nov 2011

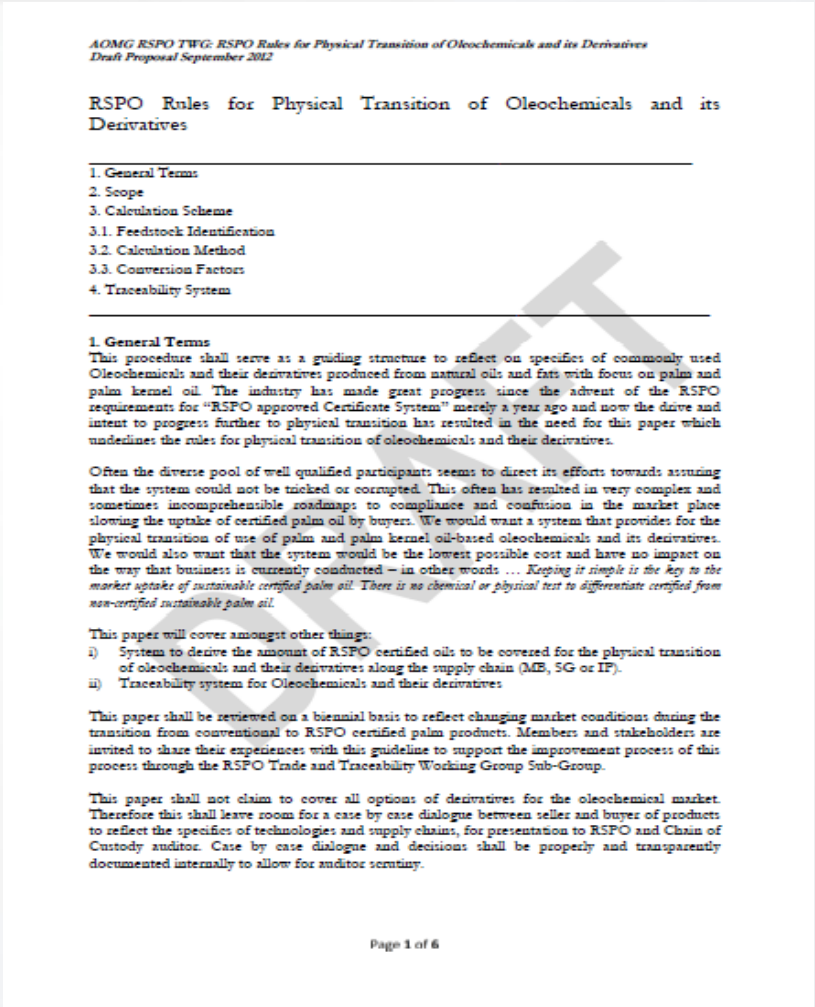
Prelude :RSPO Physical Rule for Oleochemicals & Derivatives v 1.0 /10 July 2013

RSPO Rules for Physical Transition of Oleochemicals and Derivates

RSPO
Roundtable on Sustainable Palm Oil

Background

- Complementary document that shall serve as a guiding paper for Oleochemical sites and CBs to handle the key issues of a diverging production for MB and SG schemes
- Interim use until both papers shall be integrated into the new SCCS



AOMG RSPO TWG: RSPO Rules for Physical Transition of Oleochemicals and its Derivatives
Draft Proposal September 2012

RSPO Rules for Physical Transition of Oleochemicals and its Derivatives

1. General Terms
2. Scope
3. Calculation Scheme
3.1. Feedstock Identification
3.2. Calculation Method
3.3. Conversion Factors
4. Traceability System

1. General Terms

This procedure shall serve as a guiding structure to reflect on specifics of commonly used Oleochemicals and their derivatives produced from natural oils and fats with focus on palm and palm kernel oil. The industry has made great progress since the advent of the RSPO requirements for "RSPO approved Certificate System" merely a year ago and now the drive and intent to progress further to physical transition has resulted in the need for this paper which underlines the rules for physical transition of oleochemicals and their derivatives.

Often the diverse pool of well qualified participants seems to direct its efforts towards assuring that the system could not be tricked or corrupted. This often has resulted in very complex and sometimes incomprehensible roadmaps to compliance and confusion in the market place slowing the uptake of certified palm oil by buyers. We would want a system that provides for the physical transition of use of palm and palm kernel oil-based oleochemicals and its derivatives. We would also want that the system would be the lowest possible cost and have no impact on the way that business is currently conducted – in other words … *Keeping it simple is the key to the market uptake of sustainable certified palm oil. There is no chemical or physical test to differentiate certified from non-certified sustainable palm oil.*

This paper will cover amongst other things:

i) System to derive the amount of RSPO certified oils to be covered for the physical transition of oleochemicals and their derivatives along the supply chain (MB, SG or IP).
ii) Traceability system for Oleochemicals and their derivatives

This paper shall be reviewed on a biennial basis to reflect changing market conditions during the transition from conventional to RSPO certified palm products. Members and stakeholders are invited to share their experiences with this guideline to support the improvement process of this process through the RSPO Trade and Traceability Working Group Sub-Group.

This paper shall not claim to cover all options of derivatives for the oleochemical market. Therefore this shall leave room for a case by case dialogue between seller and buyer of products to reflect the specifics of technologies and supply chains, for presentation to RSPO and Chain of Custody auditor. Case by case dialogue and decisions shall be properly and transparently documented internally to allow for auditor scrutiny.

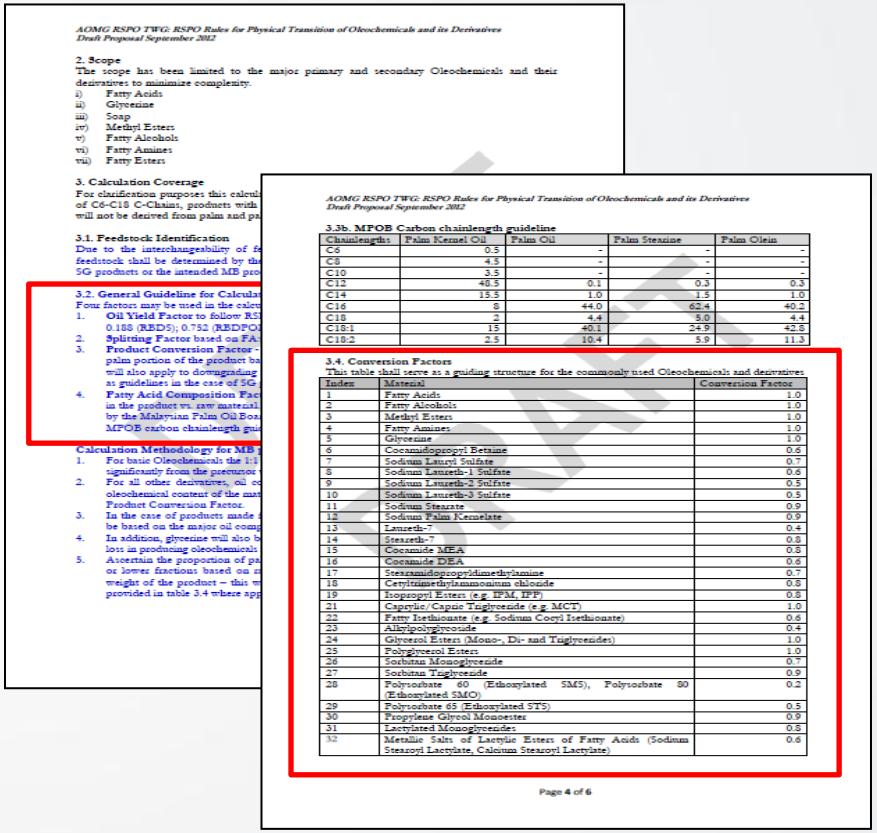
Page 1 of 6

RSPO Rules for Physical Transition of Oleochemicals and Derivates

RSPO
Roundtable on Sustainable Palm Oil

Key Issues

- Page 2 explaining key factors that shall be used – Oil Yield Factor, Splitting Factor, Product Conversion Factor, Fatty Acid Composition Factor
- Product Conversion Factor now extended to 45 key products on page 4 and 5
- Using the same stochiometric principles
- Standard Splitting Factor helping auditing to understand



AOMG RSPO TWG: RSPO Rules for Physical Transition of Oleochemicals and its Derivatives
Draft Proposal September 2012

2. Scope

The scope has been limited to the major primary and secondary Oleochemicals and their derivatives to minimize complexity:

i) Fatty Acids
ii) Glycerine
iii) Soap
iv) Methyl Esters
v) Fatty Alcohols
vi) Fatty Amines
vii) Fatty Esters

3. Calculation Coverage

3.1. Feedstock Identification

3.2. General Guideline for Calcula

1. **Oil Yield Factor** to follow RS
2. **Splitting Factor** based on FA
3. **Product Conversion Factor**
4. **Fatty Acid Composition Fac**

Calculation Methodology for MB

1. For basic Oleochemicals the [illegible]
2. For all other derivatives, oil c
3. In the case of products made
4. In addition, glycerine will also b
5. Ascertain the proportion of pa

AOMG RSPO TWG: RSPO Rules for Physical Transition of Oleochemicals and its Derivatives
Draft Proposal September 2012

3.3b. MPOB Carbon chainlength guideline

Chainlength	Palm Kernel Oil	Palm Oil	Palm Stearine	Palm Olein
C6	0.5	-	-	-
C8	4.5	-	-	-
C10	3.5	-	-	-
C12	48.5	0.1	0.3	0.3
C14	15.5	1.0	1.5	1.0
C16	8	44.0	62.4	40.2
C18	2	4.4	5.0	4.4
C18:1	15	40.1	24.9	42.8
C18:2	2.5	10.4	5.9	11.3

3.4. Conversion Factors

This table shall serve as a guiding structure for the commonly used Oleochemicals and derivatives

Index	Material	Conversion Factor
1	Fatty Acids	1.0
2	Fatty Alcohols	1.0
3	Methyl Esters	1.0
4	Fatty Amines	1.0
5	Glycerine	1.0
6	Cocamidopropyl Betaine	0.6
7	Sodium Lauryl Sulfate	0.7
8	Sodium Laureth-1 Sulfate	0.6
9	Sodium Laureth-2 Sulfate	0.5
10	Sodium Laureth-3 Sulfate	0.5
11	Sodium Stearate	0.9
12	Sodium Palm Kernelate	0.9
13	Laureth-7	0.4
14	Steareth-7	0.8
15	Cocamide MEA	0.8
16	Cocamide DEA	0.6
17	Stearamidopropyldimethylamine	0.7
18	Cetyltrimethylammonium chloride	0.8
19	Isopropyl Esters (e.g. IPM, IPP)	0.8
21	Caprylic/Capric Triglyceride (e.g. MCT)	1.0
22	Fatty Isethionate (e.g. Sodium Cocoyl Isethionate)	0.6
23	Alkylpolyglycoside	0.4
24	Glycerol Esters (Mono-, Di- and Triglycerides)	1.0
25	Polyglycerol Esters	1.0
26	Sorbitan Monoglyceride	0.7
27	Sorbitan Triglyceride	0.9
28	Polysorbate 60 (Ethoxylated SMS), Polysorbate 80 (Ethoxylated SMO)	0.2
29	Polysorbate 65 (Ethoxylated STS)	0.5
30	Propylene Glycol Monoester	0.9
31	Lactylated Monoglycerides	0.8
32	Metallic Salts of Lactylic Esters of Fatty Acids (Sodium Stearoyl Lactylate, Calcium Stearoyl Lactylate)	0.6

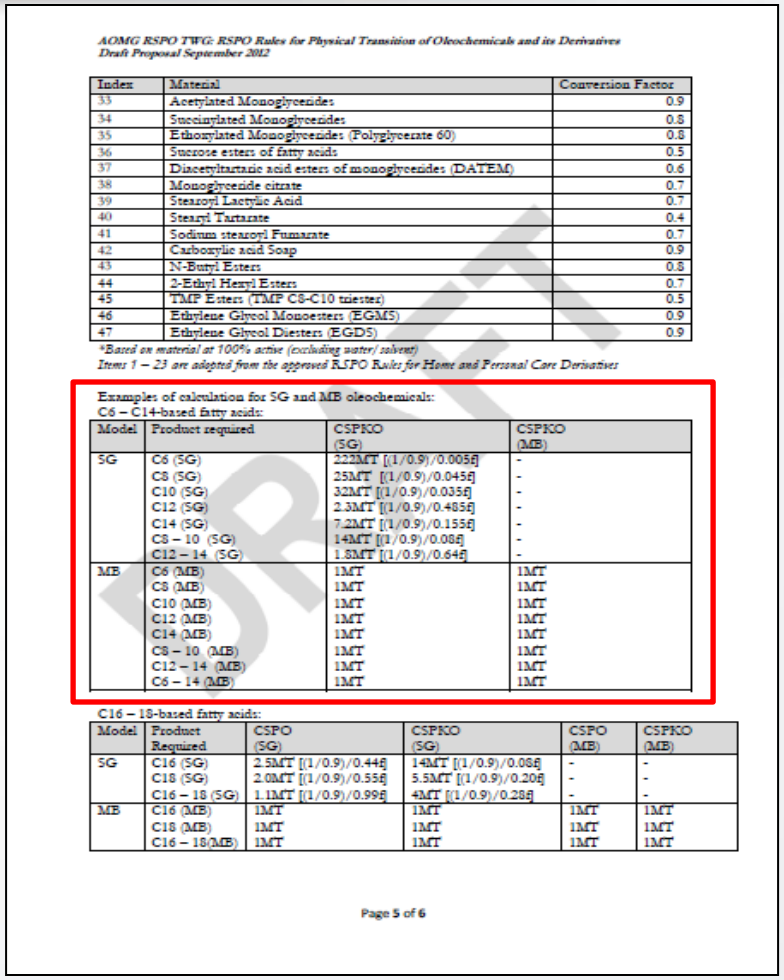
Page 4 of 6

RSPO Rules for Physical Transition of Oleochemicals and Derivates

RSPO
Roundtable on Sustainable Palm Oil

Key Issues

- Showing key elements of SG vs MB approach
- 1:1 approach for fractions of products is evident and here the key message
- vs. a SG structure where in a diverging production the c chain composition is key for calculations



AOMG RSPO TWG: RSPO Rules for Physical Transition of Oleochemicals and its Derivatives
Draft Proposal September 2012

Index	Material	Conversion Factor
33	Acetylated Monoglycerides	0.9
34	Succinylated Monoglycerides	0.8
35	Ethoxylated Monoglycerides (Polyglycerate 60)	0.8
36	Sucrose esters of fatty acids	0.5
37	Diacetyltartaric acid esters of monoglycerides (DATEM)	0.6
38	Monoglyceride citrate	0.7
39	Stearoyl Lactylic Acid	0.7
40	Stearyl Tartarate	0.4
41	Sodium stearoyl Fumarate	0.7
42	Carboxylic acid Soap	0.9
43	N-Butyl Esters	0.8
44	2-Ethyl Hexyl Esters	0.7
45	TMP Esters (TMP C8-C10 triester)	0.5
46	Ethylene Glycol Monoesters (EGMS)	0.9
47	Ethylene Glycol Diesters (EGDS)	0.9

**Based on material at 100% active (excluding water/ solvent)*
Items 1 – 23 are adopted from the approved RSPO Rules for Home and Personal Care Derivatives

Examples of calculation for SG and MB oleochemicals:
C6 – C14-based fatty acids:

Model	Product required	CSPKO (SG)	CSPKO (MB)
SG	C6 (SG)	222MT [(1/0.9)/0.005$]	-
	C8 (SG)	25MT [(1/0.9)/0.045$]	-
	C10 (SG)	32MT [(1/0.9)/0.035$]	-
	C12 (SG)	2.3MT [(1/0.9)/0.485$]	-
	C14 (SG)	7.2MT [(1/0.9)/0.155$]	-
	C8 – 10 (SG)	14MT [(1/0.9)/0.08$]	-
	C12 – 14 (SG)	1.8MT [(1/0.9)/0.64$]	-
MB	C6 (MB)	1MT	1MT
	C8 (MB)	1MT	1MT
	C10 (MB)	1MT	1MT
	C12 (MB)	1MT	1MT
	C14 (MB)	1MT	1MT
	C8 – 10 (MB)	1MT	1MT
	C12 – 14 (MB)	1MT	1MT
	C6 – 14 (MB)	1MT	1MT

C16 – 18-based fatty acids:

Model	Product Required	CSPO (SG)	CSPKO (SG)	CSPO (MB)	CSPKO (MB)
SG	C16 (SG)	2.5MT [(1/0.9)/0.44$]	14MT [(1/0.9)/0.08$]	-	-
	C18 (SG)	2.0MT [(1/0.9)/0.55$]	5.5MT [(1/0.9)/0.20$]	-	-
	C16 – 18 (SG)	1.1MT [(1/0.9)/0.99$]	4MT [(1/0.9)/0.28$]	-	-
MB	C16 (MB)	1MT	1MT	1MT	1MT
	C18 (MB)	1MT	1MT	1MT	1MT
	C16 – 18(MB)	1MT	1MT	1MT	1MT

Page 5 of 6