



The Purpose of this Special Newsletter

This newsletter provides information and guidance to businesses and government departments on sourcing baked goods and prepared foods made with sustainable palm oil and palm kernel oil and their derivatives. It outlines the complexities in the palm oil supply chain, explains why sustainable palm oil and palm-based derivatives have been difficult to source in the past, and provides an overview of what manufacturers are currently doing to manufacture baked good and prepared foods made with sustainable and traceable palm oil. It also provides a quick guide to sourcing certified palm oil in food products.

Introduction to Palm-based Derivative Supply Chain

Palm oil and palm kernel oil are complex commodities due to the demand for a large number of fractions and derivatives of the oils. In fact, about 60% of the palm oil and palm kernel oil consumed globally is in the form of derivatives such as olein and stearin.¹ The versatility of palm makes it an attractive commodity, but the supply chains for these derivatives are multi-layered and have been historically difficult to trace. Although traceability is improving, the derivatives can be challenging to source as sustainable.

At the most basic level of the refining process, palm oil and palm kernel oil are split, fractionated, and separated into liquid palm olein and solid palm stearin at a ratio of 4:1. Further fractionation, hydrogenation, refining and blending can then be carried out to produce different oil derivatives with unique physical and chemical properties. Please see Figure 1 below regarding palm oil processing.



Source: geographical.co.uk

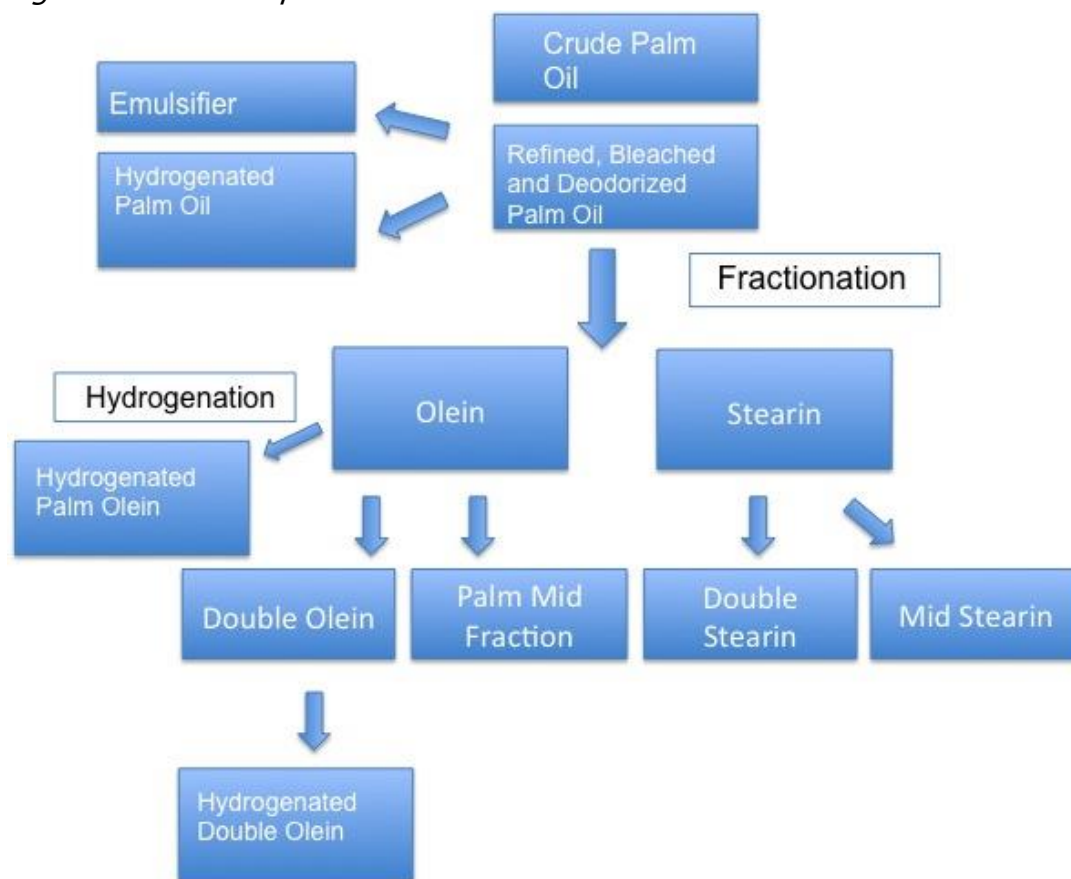


Source: grabandco.co.uk

Food products use various fractions and derivatives of palm oil and palm kernel oil. Liquid palm olein is naturally liquid at room temperature in warm climates. Widely used for frying foods, it blends well with other vegetable oils and is valued for its resistance to oxidation and therefore long shelf life. Solid palm stearin, the solid part left after liquid palm olein is removed during the splitting process, is useful in the production of margarine and shortening and in baked goods requiring the use of hard fats. Palm oil fractions can be split a second time to produce double-fractionated palm olein. Also called “super olein,” this derivative cooking oil is liquid in temperate climates and blends well with various seed oils. Another product of the double-fractionating process, palm mid fraction, commonly appears in the manufacture of margarine and snack foods.

¹ <http://www.sustainablepalmoil.org/refineries-manufacturers/refineries/palm-oil-derivatives/>

Figure 1 – Palm oil process²



Palm Oil and Palm Kernel Oil – which foods contain them?

Margarine and spreads

Margarines and spreads, which are used both by consumers as well as in industrial baking and processed food manufacture, are made from fat and water. Typically, the fat content includes a blend of oils including palm oil, palm kernel oil, palm olein, palm kernel olein, rapeseed oil and may also contain soy oil, coconut oil, sunflower oil or cottonseed oil. The UK, where margarine is manufactured by edible oil refineries, is a significant manufacturer of margarine in the EU.



Source: freeimages.com

Emulsifiers, flavours, colourings

Palm oil and palm kernel oil can be fractionated and chemically modified into palm-derived food additives. Food additives include colours, preservatives, antioxidants, sweeteners, emulsifiers, stabilisers, thickeners and gelling agents. These typically contain less than 1% palm oil and palm kernel oil oleochemical derivatives (in addition to several other types of vegetable oils). However, they are present in many foods.

Biscuits

Both sweet biscuits (cookies) and savoury biscuits (crackers) are made with margarines, spreads and shortening sourced from refineries and distributors. Smaller amounts of bakery fats containing palm oil, palm olein, palm stearin, and hydrogenated palm kernel oil are used in centre fillings and chocolate coatings.

² <http://www.proforest.net/proforest/en/files/mapping-palm-oil-supply-chains-report> or <http://randd.defra.gov.uk/default.aspx?Module=More&Location=None&ProjectID=17170>

Bakery

Bread, cakes and pastries are also made with margarines, spreads and shortening sourced from refineries and distributors, as well as with smaller amounts of bakery fats for fillings, coating and creams and food additives (colour, flavour and emulsifiers). Industrial bakeries source palm ingredients and palm-containing products directly from refineries that produce primary baking ingredients, as well as from margarine manufacturers, oils and fats blenders, packers, distributors, and specialised baking ingredients distributors.

Confectionery

Chocolate bars, blocks, boxed chocolates, fudge, and bite-size products and sugar confectionery (including fruit sweets, mints and chewing gum), use confectionery fats, Cocoa Butter Replacers (CBR) and Cocoa Butter Equivalents (CBE) made from palm oil.



Source: moetal.com

Dairy and Dairy replacers

In dairy products such as ice cream, whipped cream, coffee whiteners, milk fillers, and processed cheese, milk fats can be substituted with products such as palm oil, palm kernel oil, hydrogenated palm oil and palm kernel oil.

Prepared foods

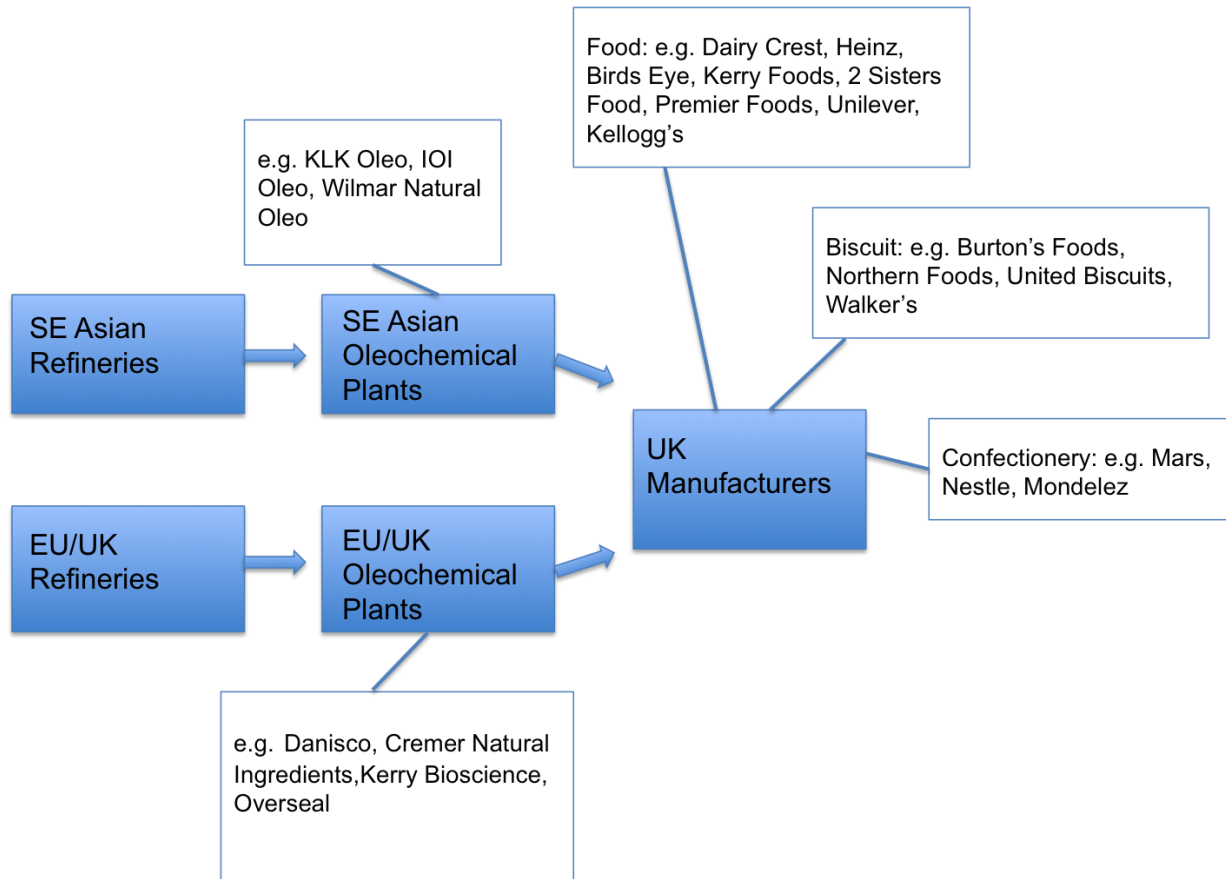
Prepared foods such as yoghurts, salads, sandwiches, pizza, peanut butter, quiche, dressing, sauces, and microwave meals may contain palm oil, though the volume will vary greatly among products. Small amounts of palm oil derivatives or palm kernel oil are even used for the wax-like coating on vegetables and fruit.

Palm-Based Oleochemicals in the UK

In 2011 Proforest was commissioned by Defra to publish a report³ estimating the use of palm oil, palm kernel oil and palm derived ingredients in the UK by sector. Unfortunately, this is the most up to date report on usage per sector. The food sector was estimated to consume about 68% of the UK total (435,000 mt). It was not always possible to disaggregate between products manufactured in the UK and finished products containing palm oil that are imported and sold on the UK market. Biscuits made up the largest share of this, likely using over 20% of the total import of palm oil. Margarine and spreads, baked goods, confectionery, dairy and dairy replacers also used significant amounts of palm. Figure 2 below describes the UK supply chain for palm oil and palm kernel oil in food products, including examples of large suppliers.

³ <http://randd.defra.gov.uk/default.aspx?Module=More&Location=None&ProjectID=17170>

Figure 2 - Structure of UK supply chains for palm oil and palm kernel oil in food products⁴



Challenges in sourcing sustainable palm derivatives

Palm based ingredients for food production can be difficult to source from sustainable sources, due to the restraints of the supply chain. First, because the certified sustainable cost premium must apply to the original feedstock and then be carried from derivative to derivative, the impetus for all facilities along the derivative chain to become certified is not always present. This applies to all parties within the supply chain, whether manufactures of brand or private label or the many other manufactures upstream supplying a range of ingredients with derivatives. Some are unwilling to bear the cost of certification due to cost implications – especially when the volume of a palm derivative in products is very low.

Second, because fractionation results in unequal ratios of fractions (i.e. 4:1 olein vs. stearin), certain derivatives of these fractions are more difficult to source. In order for 1 tonne of certified stearin to exist, 4 times the amount of certified olein must be produced. Furthermore, palm kernel oil has a more complex supply base than palm oil. The kernels are frequently sent to crushing facilities (as opposed to processed by the palm oil mills that produce palm oil from the palm oil fruit) where they can be mixed with uncertified palm kernel. At present, only some of these facilities are RSPO certified. Again, because the certified sustainable cost premium must apply to the original feedstock and then be carried from derivative to derivative, the impetus for crushing facilities to become certified is not always present.

Finally, major buyers do not buy fractions or derivatives but finished ingredients containing them. They may not have access to information about the feedstock origin of the derivatives they

⁴ <http://www.proforest.net/proforest/en/files/mapping-palm-oil-supply-chains-report> or <http://randd.defra.gov.uk/default.aspx?Module=More&Location=None&ProjectID=17170>

buy. The derivatives can vary and be replaced by other plant-based oils and fats (i.e. from coconut), depending on market price. Therefore, they are often not tracked.

What can be done? Industry responses

Several major food manufacturing players have begun working with their suppliers to identify sources of sustainable feedstock and derivatives, and encourage sustainable production. Many key players in the UK food manufacture market had commitments to source sustainable palm oil by 2015 and met these, with some even establishing vertically integrated supply chains that can source segregated material for food production.

In margarines and spreads, the main UK manufacturers (the edible oil refineries) all produce RSPO certified palm oil used to make margarine. Food additives, which are made from palm-based oleochemical derivatives, face a separate set of challenges in achieving certification (please see our info briefing on Oleochemical Derivatives in Cleaning and Personal Care Products), but are increasingly available as certified. Bread, pastries, cakes and biscuits use several different palm oil and palm oil derivatives, often in fairly low volumes. The bread market in the UK is very consolidated among the 'Big Three' UK plant bakers – Allied Bakeries, Hovis, and Warburtons. 2 of these 3 companies have achieved their commitments of sourcing 100% physical CSPO by the end of 2015. The market for pastries and cakes is difficult to assess, as it is much more fragmented, but the main players (as named in the 2011 Proforest report) are all currently sourcing RSPO certified materials, using GreenPalm certificates, mass balance, or segregated supply chain models. For biscuits and the confectionery market, the main players are also all currently sourcing RSPO certified material, to different levels of certification. The ice cream market, which is populated over 50% by small-scale producers, is more difficult to change due to fragmentation, but larger suppliers are sourcing certified material.



Source: altnet.com

Many companies with sustainable palm oil commitments have achieved physical sourcing of CSPO. Some are meeting their commitments by redeeming GreenPalm certificates, which can help drive change and move the industry towards providing a larger volume of physical CSPO. Many food product manufacturers in the UK also have commitments to source physically traceable palm oil and palm kernel oil in the near future. As traceability continues to improve, it is worthwhile working with suppliers to source products made with mass balance or segregated certified sustainable palm oil.

What you can do to start sourcing certified sustainable palm oil and palm-derivatives

It is important to understand what palm-based derivatives the products that you source may have in their formulations, and map your supply chain. This will allow you to engage with your suppliers, evaluate certification options, and ensure you are sourcing 100% certified product. The steps below produce an overview of the process.

1. Calculate the volume of palm-derived ingredients used in your company or organisation

(separate for palm oil and palm kernel oil derivatives).

2. Ask your supplier to deliver mass balance or segregated certified palm derived ingredients. If they cannot deliver this, work with them to achieve certification, or switch suppliers.
3. Cover any non-certified volume with GreenPalm certificates, in order to directly send an incentive to growers.
4. Claim the use of sustainable palm oil (voluntary).

For more information on sourcing sustainable palm oil, please visit the ZSL sustainable palm oil [website](#).

Further Information

For further information on the palm oil and palm kernel supply chains, please see GreenPalm's [Infographic](#). It identifies the various processes of manufacture and fractionation, as well as provides example of products.

For more information on RSPO certification, please see <http://www.rspo.org>. For more information on GreenPalm certificates, please see www.greenpalm.org.
