

EUBIONET3

Solutions for biomass fuel market barriers and raw material availability - IEE/07/777/SI2.499477

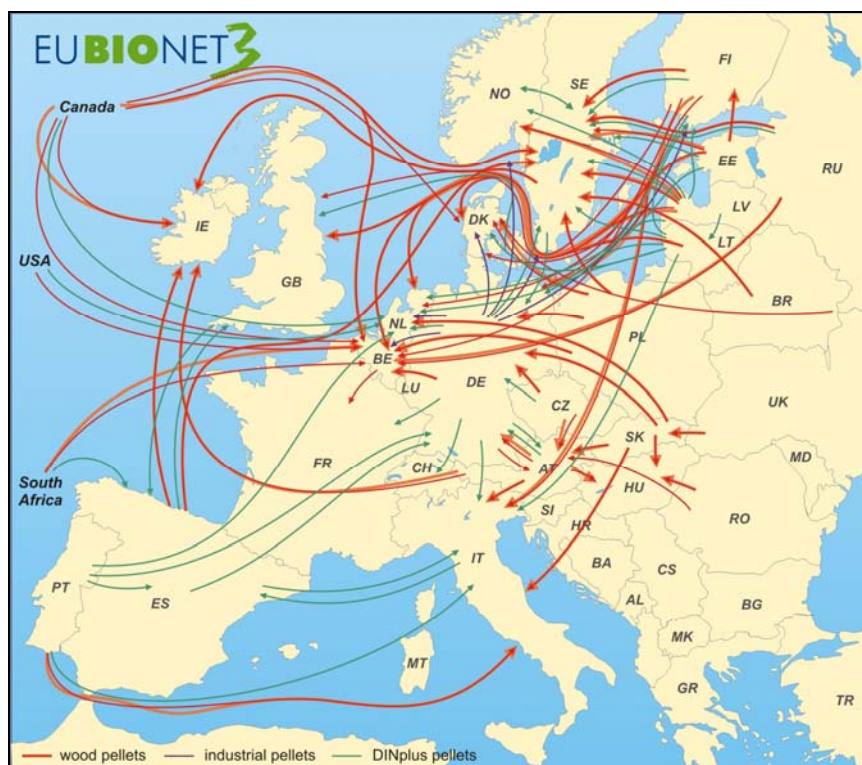
Combined Nomenclatures (CN codes) for biomass fuels

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Preface

This publication is part of the EUBIONET III Project (Solutions for biomass fuel market barriers and raw material availability - IEE/07/777/SI2.499477, www.eubionet.net) funded by the European Union's Intelligent Energy Programme. EUBIONETII is coordinated by VTT and other partners are Danish Technological Institute, DTI (Denmark), Energy Centre Bratislava, ECB (Slovakia), Ekodoma (Latvia), Fachagentur Nachwachsende Rohstoffe e.V., FNR (Germany), Swedish University of Agricultural Sciences, SLU (Sweden), Brno University of Technology, UPEI VUT (Czech), Norwegian University of Life Sciences, UMB (Norway), Centre wallon de Recherches agronomiques, CRA-W (Belgium), BLT-HBLuFA Francisco Josephinum, FJ-BLT (Austria), European Biomass Association, AEBIOM (Belgium), Centre for Renewable Energy Sources, CRES (Greece), Utrecht University, UU (Netherlands), University of Florence, UNIFI (Italy), Lithuanian Energy Institute, LEI (Lithuania), Imperial College of Science, Imperial (UK), Centro da Biomassa para a Energia, CBE (Portugal), Energy Restructuring Agency, ApE (Slovenia), Andalusian Energy Agency, AAE (Spain). EUBIONET III project will run 2008 – 2011.

The main objective of the project is to increase the use of biomass based fuels in the EU by finding ways to overcome the market barriers. The purpose is to promote international trade of biomass fuels to help demand and supply meet each other, while at the same time the availability of industrial raw material is to be secured at reasonable price. The EUBIONET III project will in the long run boost sustainable, transparent international biomass fuel trade, secure the most cost efficient and value-adding use of biomass for energy and industry, boost the investments on best practice technologies and new services on biomass heat sector and enhance sustainable and fair international trade of biomass fuels.

This report is a summary of the work carried out by EUBIONET III on Combined Nomenclature (CN) for biomass fuels.

Special thank to Mr. Jussi Ala-Kihniä from Eurostat, who advised us with the CN codes.

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Jyväskylä, February 2011

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1 Introduction

Development of a Combined Nomenclature that covers all potential biofuels is regarded as a major tool to expose traded forms of biomass to the bioenergy sector by increasing the transparency of the of the market. The aim of the EUBIONET III is to propose a comprehensive and detailed list of present and potential new raw materials for bioenergy. Based on the identified materials a proposal for a Combined Nomenclature that divides the raw materials into connected groups is created. The classification will be divided into the following parts:

- Woody biomass
- Herbaceous biomass (agrobiomass and new raw materials) and fruit biomass
- Liquid biofuels, both existing (e.g. vegetable oils, ethanol, tall oil) and new commodities (e.g. pyrolysis oil, biodiesel, transport fuels like Fischer Tropsch diesel, etc.)
- Aquatic biomass (like algae)
- Other biodegradable waste (e.g. manure, sewage sludge)

The Combined Nomenclature is an annually revised classification whose implementation date is always the first of January. As a consequence CN 2011 is operational from January 1st, 2011 until December 31st, 2011 [5]. About 14,400 headings (of which about 9,300 CN subheadings) organized in five hierarchical levels:

Level 1: sections coded by Roman numerals;

Level 2: chapters identified by two-digit numerical codes;

Level 3: headings identified by four-digit numerical codes;

Level 4: HS subheadings identified by six-digit numerical codes;

Level 5: CN subheadings identified by eight-digit numerical codes.

The Combined Nomenclature is the goods classification used within the EU for the purposes of foreign trade statistics. It is also used by Directorate General "Taxation and Customs Union" of the European Commission for customs duty purposes. The classification is maintained by Eurostat for the statistical aspects and by Taxation and Customs Union DG for the tariff aspects. There are also several subheading and explanatory notes [6], which support the usage of CN codes. The CN code system is quite complicated system.

The classification is based on the Harmonized System (HS) which it sub-divides where necessary for purposes of external trade, agricultural regulation and customs duties. The CN was introduced in 1988 together with the HS. Subheadings in the CN are identified by means of an eight-digit numerical code. The very considerable number of subdivisions within the CN was introduced with the EU's specific customs and foreign trade statistics requirements in mind. The CN is revised annually and, as a Council Regulation, is binding on the Member States. It appears in all EU official languages (except Irish).

Linked classification(s):

- 1) Harmonized System (HS): Full agreement at six-digit level;
- 2) Central Product Classification (CPC);
- 3) Statistical Classification of Products by Activity in the European Economic Community (CPA);
- 4) International Standard Industrial Classification of All Economic Activities, (ISIC);
- 5) Statistical Classification of Economic Activities in the European Community (NACE);
- 6) Standard International Trade Classification (SITC);
- 7) PRODCOM List.

It is used for products and main statistical application is external trade statistics.

Customs' statistics record volumes and values of the traded products but do not differentiate the end use purposes of the materials into energy use and raw material consumption. For some products like palm oil and fat products there is also a special category for other than food use: "For technical or industrial uses other than the manufacture of foodstuffs for human consumption".

2 CN codes for solid biomass

2.1 Woody biomass

"Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms" are listed in main CN code 4410 and "wood charcoal" under CN code 4402 and "round wood" under CN code 4403. Main groups are listed in Table 1. More detailed CN codes for wood fuels and main codes for other wood products are listed in App.1.

Table 1. The main CN codes for woody biomass and wood fuels.

Product	CN code(s)
Round wood	4403 2031, 4403 2039, 4403 2011, 4403 2019, 4403 2091, 4403 2099, 4403 9951, 4403 9959, 4403 4100 ... 4403 9910 and 4403 9995
Chips	4401 2100 (from soft wood), 4401 2200 (other)
Sawdust, wood waste & scrap	4401 3000
Sawdust from wood	4401 3010
Wood waste and scrap	4401 3090
Fuel wood	4401 1000
Charcoal	4402 1000, 4402 9000
Waste paper (not recyclable)	4707 9000

Trade statistics do not differentiate end purposes of the materials between energy and raw material use. For example "round wood" includes also bark and bark is

delimbed during processing in mechanical or chemical industry and bark is used for energy or as a raw material for wood pellets or briquettes. This can be called indirect trade of solid biofuels.

The category "bark" includes import flows under the CN-code *4401 3090*, i.e. wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms excluding sawdust, which is under CN-code *4401 3010*.

"Chips" includes the CN-codes *4401 2100* and *4401 2200*.

The category "firewood" includes fuel trade under the CN-code *4401 1000*, i.e. fuel wood in logs, billets, twigs faggots or similar forms.

"Wine yard prunings" and "roots" are under *4401 3080* [2].

EUBIONET III project has cooperated with EUROSTAT to develop new code for wood pellets (*4401 3020*) [1]. The previous subheading *4401 30* "Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms" will be deleted and substitute with [1, App.1]:

- *4401 31* – Wood pellets
- *4401 39* – Other

This new system will be in force in 2012.

Subheading Note. Subheading 4401 31

For the purposes of subheading 4401 31, the expression "wood pellets", means by-products such as cutter shavings, sawdust of chips, of the mechanical wood processing industry, furniture-making industry and other wood transformation activities, which have been agglomerated either directly by compression or by the addition of binder not exceeding 3% by weight. Such pellets are cylindrical with a diameter not exceeding 25 mm and a length not exceeding 100 mm,

In the subheading note the length of pellets is very high, usually maximum length of the pellets is 45 mm according European standards: EN 14961:2010 and EN 14961:2011. There pellets standards will also be developed international ISO standards during 2011 and 2012. Also pellets produced from stem wood, which is originated directly from forests, are in the market.

The first statistics of wood pellet trade was published in 2009. In 2009, about 3.3 million tonnes of pellet export was registered (Eurostat 2010), of which 98% was traded with the EU. The EU import was about 3.8 million tonnes, of which about 53% was covered by intra-trade. The biggest trade volumes are recorded by the Netherlands, Belgium and Sweden [4].

Note also that wood pellets can be also used for animal bedding e.g. for cats. Agrobiomass biomass pellets, which are made from different biomass material are categorized under CN code *1213 000* "Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets" [3]. Also blended pellets with agrobiomass and woody biomass are produced. Agrobiomass can cause slagging and fouling in biomass boilers and to prevent this peat is blended with agrobiomass before pelletizing.

Also torrefied pellets are not taken into account in current system (see chapter 3).

2.2 Agrobiomass and agroindustry residues

In EUBIONET III project under workpackage 5 new agrobiomass residues were identified. In Table 2 there is a proposal for CN codes for these agrobiomass and new materials [2] and App.2 – 4 lists the detailed categories.

Table 2. CN codes for agrobiomass and new materials [2, 3, 5].

Name and type	Existing CN	Explanation
Manure		
Horselitter	3101 0000	Animal or vegetable fertilisers, whether or not mixed together or chemically treated;
Chickenlitter	3101 0000	Animal or vegetable fertilisers, whether or not mixed together or chemically treated;
Solid fraction manure	3101 0000	Animal or vegetable fertilisers, whether or not mixed together or chemically treated;
Straw and grasses		
Straw	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Hay	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Reed Canary Grass and pellets	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Miscanthus pellets	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Strawpellets (Galega)	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Cotton stalks	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Industrial biomass residues		
Sunflower shells	2306 3000	Oilcake of sunflower seeds and other solid residues, whether or not ground or in the form of pellets
Rape cake	2306 4100	Oilcake of rape or colza seeds and other solid residues, whether or not ground or in the form of pellets
Sheanut shells	2306 4900	Oilcake and other solid residues, whether or not ground or in the form of pellets
Fruit kernels	2308 0019	Vegetable materials, vegetable waste and by-products, whether or not in the form of pellets
Beet pulp pellets	2303 2010	Beet-pulp of sugar manufacture
Mash from brewery	2303 3000	Brewing or distilling dregs and waste
Grape residues	2308 0011	Grape Marc. Alcoholic strength by mass not exceeding 4,3 % mass and DM content not less than 40% by weight
Juice residues	2308 0019	Vegetable materials, vegetable waste and by-products, whether or not in the form of pellets
Cheese residues	2308 0019	Vegetable materials, vegetable waste and by-products, whether or not in the form of pellets
Bock wheat shells	2302 1090	Bran, sharps and other residues, whether or not in the form of pellets, derived from working of cereals
Cork waste	4501 9000	Natural cork, raw or simply prepared; waste cork; crushed, granulated or ground cork
Olive residues	2306 9011	Oilcake and other residues resulting from the extraction of olive oil containing 3% or less of olive oil

Name and type	Existing CN	Explanation
Palm kernel shells (PKS)	2306 6000	Oilcake and other solid residues from palm nuts or kernels, whether or not ground or in the form of pellets, resulting from the extraction of vegetable fats or oils
Chocolate residues	2306 4900	Oilcake and other solid residues, whether or not ground or in the form of pellets
Almond shells	2306 4900	Oilcake and other solid residues, whether or not ground or in the form of pellets
Coffee waste	0901 9010	Coffee husks and skins
Tobacco waste	2401 3000	Tobacco refuse
Grain pretreatment and seeds		
Grain screenings	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Rice husk	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Oat husk	1213 0000	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
Rape or colza seeds	1205	Rape or colza seeds, whether or not broken
Sunflower seeds	1206 00	Other oil seeds and oleaginous fruits, whether or not broken
Other oil seeds and oleaginous fruits	1207	Other oil seeds and oleaginous fruits, whether or not broken
Others		
Algae	1212 2000	Seaweeds and other algae
Municipal waste ¹	3825 1000	Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes Includes also renewable part ¹
Fuel peat ²	2703 0000	Mineral fuels, Peat (including peat litter), whether or not agglomerated. Note peat can also be used for horticulture.

2.3 Liquid biofuels

“Tall oil, whether or not refined” (CN code *3803 00*) can be used in energy production. However, they can be recorded under 3 separate CN codes (see Table 3 and [3]).

- *3803 0010* (crude tall oil, see table 3),
- *3803 0090* (tall oil, whether or not refined, excluding crude tall oil) and

¹ Renewable part of municipal waste is usually 40 – 60%. For example in the Netherlands, about 47% of municipal waste includes renewable part, and in Finland renewable part is about 60%.

² In some countries like Finland, Estonia, Latvia, Sweden and Ireland fuel peat is cofired with high-alkali biomass fuels like forest residues to prevent slagging, fouling and hot corrosion in steam boilers. Fuel peat is classified as a slowly renewable biomass fuel.

- 3807 00 (“Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewers' pitch and similar preparations based on rosin, resin acids or on vegetable pitch”).

Pyrolysis oil is also not taken into account in the CN codes. Transport fuels based on Fischer-Tropsch are under demonstration phase.

Table 3. CN codes for liquid biofuels and raw materials [3, 5]

Name and type	CN code	Explanation
Crude palm oil	1511 1010	Palm oil and its fractions, whether or not refined, but not chemically modified. For technical or industrial uses other than the manufacture of foodstuffs for human consumption
Ethanol	2207 1000 2207 2000	Undenatured ethyl alcohol of an alcoholic strength by volume of 80 % vol or higher. Ethyl alcohol and other spirits, denatured, of any strength
ETBE	2909 1910	Tert-butyl ethyl ether (ethyl-tertio-butyl-ether, ETBE, made from (bio) ethanol and isobutylene. The ETBE biofuel can be blended with petrol.
MTBE	2909 1990	MTBE is methyl tertiary butyl ether. MTBE is an additive for gasoline.
Talloil	3803 00	38 Miscellaneous chemical products,
Black liquor	3804 0000	Residual lyes from the manufacture of wood pulp, whether or not concentrated, desugared or chemically treated, including lignin sulphonates, but excluding tall oil of heading 3803
Wood tar oils	3807 00	Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewers' pitch and similar preparations based on rosin, resin acids or on vegetable pitch
Fatty acids and acid oils	3823	Industrial monocarboxylic fatty acids; acid oils from refining; industrial fatty alcohols
FAMAE (biodiesel)	3824 9091	Fatty-acid mono-alkyl esters, containing by volume 96.5 % or more of esters (FAMAE). Needs to be blended with fossil diesel.
Sewage sludge	3825 2000	Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes

3 Proposals of new CN codes

There are new solid biomass energy carriers under development. One important new energy carrier is torrefied biomass or thermally treated biomass. Torrefaction is a mild pre-treatment of biomass at a temperature between 200°C to 300°C without oxygen. Torrefied biomass product is usually refined to pellets or briquettes. Torrefaction is developed in several countries will be used for cofiring in coal-fired plants like currently wood pellets are used. Torrefied biomass is coal-like product with low moisture content, 3–5w-%, (wood pellets less than < 10w-%), higher net calorific value 19–23 MJ/kg (wood pellets 16.5 MJ/kg) and higher bulk density for torrefied pellets, 750–850 kg/m³ (wood pellets 600–650 kg/m³). First commercial plants have started operation. Raw material can be all kind of biomass. ISO technical committee 238 for solid biofuels are also starting to develop classification for torrefied biomass products (Figure 1).



Figure 1. Left: torrefied wood chips and right: torrefied pellets. Photo: VTT

Pyrolysis oil is liquid biofuel produced in fast pyrolysis by heating wood (moisture content less than 10 w-%) up to 500–600 °C for very short time. The organic particles are transformed into gas, which is then converted to a liquid (oil). In general, the bio-oil yield is about 70w-%.

4 Conclusions

CN codes include categories for all kinds products traded internationally. Biomass fuels are mainly classified under the following sectors:

- Wood fuels 4410 and 4402
- Agrobiomass and raw material for fuels: 3101 (manure), 1213 (straw, grains and grasses), agroindustrial biomass residues (2306, 2308, 4501, 0901, 2401, 1205) and algae (1212)
- Liquid biofuels or raw material for fuels: 3803, 1511, 2207, 2909, 3823, 3824 and 3825.
- Sewage and municipal waste 3825

Most of the biomass fuels can be categorized according the existing categories. Trade statistics do not differentiate end purposes of the materials between energy and raw material use. In some oil products, which are also used for food the following category is used: "For technical or industrial uses other than the manufacture of foodstuffs for human consumption". Perhaps this kind of classification could be developed for other agrobiomass, which are not used for food or feed production.

EUBIONET III identified torrefied biomass (usually traded as pellets or briquettes) as a new commodity, which will be soon internationally traded. In the future new code will be needed for this product. Difficulty is that raw material can be different kind of biomass. Torrefied pellets can be classified separately or CN codes 4401 31 – Wood pellets and CN code 1213 000 "Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets" can be modified in subheading note and changed that pellets can be also thermally treated before compression.

Pyrolysis oil can be used as heating oil or further refined to transport fuel. It will need also own CN code. Biobased pyrolysis oil based is mainly produced from woody biomass. Also other materials like used rubber tyres can be used.

References

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3. *Sikkema, R., Junginger, M. & Faaij, A.* Development of meaningful statistics for sustainable bioenergy trade and identification of stakeholders´ initiatives, Final Working Paper, 2009, Sustainable international bioenergy trade, workshop on 25 February 2008. p. 36.
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5. CN codes in 2011 : http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LS_T_CLS_DLD&StrNom=CN_2011&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
6. Explanatory notes to the Combined Nomenclature of The European Communities (2008/C133/01), Publication made in accordance with Article 9(1) of Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff, Official Journal of the European Union, C133, 402 p. 30.5.2008.

Appendix 1– CN codes for wood for energy purposes and main codes for other wood products [5]

CN	DASHES AND DM
4401	Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms
4401 10 00	- Fuel wood, in logs, in billets, in twigs, in faggots or in similar forms
	- Wood in chips or particles
4401 21 00	-- Coniferous
4401 22 00	-- Non-coniferous
4401 30 ¹⁾	- Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms
4401 30 20	-- Pellets
	-- Other
4401 30 40	--- Sawdust
4401 30 80	--- Other
4402	Wood charcoal (including shell or nut charcoal), whether or not agglomerated
4402 10 00	- Of bamboo
4402 90 00	- Other

¹⁾ In 2012 the previous subheading *4401 30* "Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms" will be deleted and substituted with:

- *4401 31* – Wood pellets
- *4401 39* – Other

App. 2. Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder [5]

CN	DASHES AND DM
12	CHAPTER 12 - OIL SEEDS AND OLEAGINOUS FRUITS; MISCELLANEOUS GRAINS, SEEDS AND FRUIT; INDUSTRIAL OR MEDICINAL PLANTS; STRAW AND FODDER
1201 00	Soya beans, whether or not broken
1201 00 10	- For sowing
1201 00 90	- Other
1202	Groundnuts, not roasted or otherwise cooked, whether or not shelled or broken
1202 10	- In shell
1202 10 10	-- For sowing
1202 10 90	-- Other
1202 20 00	- Shelled, whether or not broken
1203 00 00	Copra
1204 00	Linseed, whether or not broken
1204 00 10	- For sowing
1204 00 90	- Other
1205	Rape or colza seeds, whether or not broken
1205 10	- Low erucic acid rape or colza seeds
1205 10 10	-- For sowing
1205 10 90	-- Other
1205 90 00	- Other
1206 00	Sunflower seeds, whether or not broken
1206 00 10	- For sowing
	- Other
1206 00 91	-- Shelled; in grey-and-white-striped shell
1206 00 99	-- Other
1207	Other oil seeds and oleaginous fruits, whether or not broken
1207 20	- Cotton seeds
1207 20 10	-- For sowing
1207 20 90	-- Other
1207 40	- Sesamum seeds
1207 40 10	-- For sowing
1207 40 90	-- Other
1207 50	- Mustard seeds
1207 50 10	-- For sowing
1207 50 90	-- Other
	- Other
1207 91	-- Poppy seeds
1207 91 10	--- For sowing
1207 91 90	--- Other
1207 99	-- Other
1207 99 15	--- For sowing
	--- Other
1207 99 91	---- Hemp seeds
1207 99 97	---- Other
1208	Flours and meals of oil seeds or oleaginous fruits, other than those of mustard
1208 10 00	- Of soya beans
1208 90 00	- Other

CN	DASHES AND DM
1209	Seeds, fruit and spores, of a kind used for sowing
1209 10 00	- Sugar beet seed
	- Seeds of forage plants
1209 21 00	-- Lucerne (alfalfa) seed
1209 22	-- Clover (<i>Trifolium</i> spp.) seed
1209 22 10	--- Red clover (<i>Trifolium pratense</i> L.)
1209 22 80	--- Other
1209 23	-- Fescue seed
1209 23 11	--- Meadow fescue (<i>Festuca pratensis</i> Huds.) seed
1209 23 15	--- Red fescue (<i>Festuca rubra</i> L.) seed
1209 23 80	--- Other
1209 24 00	-- Kentucky blue grass (<i>Poa pratensis</i> L.) seed
1209 25	-- Ryegrass (<i>Lolium multiflorum</i> Lam., <i>Lolium perenne</i> L.) seed
1209 25 10	--- Italian ryegrass (including westerwolds) (<i>Lolium multiflorum</i> Lam.)
1209 25 90	--- Perennial ryegrass (<i>Lolium perenne</i> L.)
1209 29	-- Other
1209 29 10	--- Vetch seed; seeds of the genus <i>Poa</i> (<i>Poa palustris</i> L., <i>Poa trivialis</i> L.); cocksfoot grass (<i>Dactylis glomerata</i> L.); bent grass (<i>Agrostis</i>)
1209 29 35	--- Timothy grass seed
1209 29 50	--- Lupine seed
1209 29 60	--- Fodder beet seed (<i>Beta vulgaris</i> var. <i>alba</i>)
1209 29 80	--- Other
1209 30 00	- Seeds of herbaceous plants cultivated principally for their flowers
	- Other
1209 91	-- Vegetable seeds
1209 91 10	--- Kohlrabi seeds (<i>Brassica oleracea</i> , var. <i>caulorapa</i> and <i>gongylodes</i> L.)
1209 91 30	--- Salad beet seed or beetroot seed (<i>Beta vulgaris</i> var. <i>conditiva</i>)
1209 91 90	--- Other
1209 99	-- Other
1209 99 10	--- Forest-tree seeds
	--- Other
1209 99 91	---- Seeds of plants cultivated principally for their flowers, other than those of subheading 120930
1209 99 99	---- Other
1210	Hop cones, fresh or dried, whether or not ground, powdered or in the form of pellets; lupulin
1210 10 00	- Hop cones, neither ground nor powdered nor in the form of pellets
1210 20	- Hop cones, ground, powdered or in the form of pellets; lupulin
1210 20 10	-- Hop cones, ground, powdered or in the form of pellets, with higher lupulin content; lupulin
1210 20 90	-- Other
1211	Plants and parts of plants (including seeds and fruits), of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not cut, crushed or powdered
1211 20 00	- Ginseng roots

CN	DASHES AND DM
1211 30 00	- Coca leaf
1211 40 00	- Poppy straw
1211 90	- Other
1211 90 30	-- Tonquin beans
1211 90 85	-- Other
1212	Locust beans, seaweeds and other algae, sugar beet and sugar cane, fresh, chilled, frozen or dried, whether or not ground; fruit stones and kernels and other vegetable products (including unroasted chicory roots of the variety <i>Cichorium intybus sativum</i>) of a kind used primarily for human consumption, not elsewhere specified or included
1212 20 00	- Seaweeds and other algae
	- Other
1212 91	-- Sugar beet
1212 91 20	--- Dried, whether or not ground
1212 91 80	--- Other
1212 99	-- Other
1212 99 20	--- Sugar cane
1212 99 30	--- Locust beans
	--- Locust bean seeds
1212 99 41	---- Not decorticated, crushed or ground
1212 99 49	---- Other
1212 99 70	--- Other
1213 00 00	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets
1214	Swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets
1214 10 00	- Lucerne (alfalfa) meal and pellets
1214 90	- Other
1214 90 10	-- Mangolds, swedes and other fodder roots
1214 90 90	-- Other

App. 3. Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes [5]

CN	DASHES AND DM
15	CHAPTER 15 - ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE FATS; ANIMAL OR VEGETABLE WAXES
1501 00	Pig fat (including lard) and poultry fat, other than that of heading 0209 or 1503
	- Pig fat (including lard)
1501 00 11	-- For industrial uses other than the manufacture of foodstuffs for human consumption
1501 00 19	-- Other
1501 00 90	- Poultry fat
1502 00	Fats of bovine animals, sheep or goats, other than those of heading 1503
1502 00 10	- For industrial uses other than the manufacture of foodstuffs for human consumption
1502 00 90	- Other
1503 00	Lard stearin, lard oil, oleostearin, oleo-oil and tallow oil, not emulsified or mixed or otherwise prepared
	- Lard stearin and oleostearin
1503 00 11	-- For industrial uses
1503 00 19	-- Other
1503 00 30	- Tallow oil for industrial uses other than the manufacture of foodstuffs for human consumption
1503 00 90	- Other
1504	Fats and oils and their fractions, of fish or marine mammals, whether or not refined, but not chemically modified
1504 10	- Fish-liver oils and their fractions
1504 10 10	-- Of a vitamin A content not exceeding 2500 International Units per gram
	-- Other
1504 10 91	--- Of halibut
1504 10 99	--- Other
1504 20	- Fats and oils and their fractions, of fish, other than liver oils
1504 20 10	-- Solid fractions
1504 20 90	-- Other
1504 30	- Fats and oils and their fractions, of marine mammals
1504 30 10	-- Solid fractions
1504 30 90	-- Other
1505 00	Wool grease and fatty substances derived therefrom (including lanolin)
1505 00 10	- Wool grease, crude
1505 00 90	- Other
1506 00 00	Other animal fats and oils and their fractions, whether or not refined, but not chemically modified
1507	Soya-bean oil and its fractions, whether or not refined, but not chemically modified
1507 10	- Crude oil, whether or not degummed
1507 10 10	-- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1507 10 90	-- Other
1507 90	- Other

CN	DASHES AND DM
1507 90 10	-- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1507 90 90	-- Other
1508	Groundnut oil and its fractions, whether or not refined, but not chemically modified
1508 10	- Crude oil
1508 10 10	-- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1508 10 90	-- Other
1508 90	- Other
1508 90 10	-- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1508 90 90	-- Other
1509	Olive oil and its fractions, whether or not refined, but not chemically modified
1509 10	- Virgin
1509 10 10	-- Lampante olive oil
1509 10 90	-- Other
1509 90 00	- Other
1510 00	Other oils and their fractions, obtained solely from olives, whether or not refined, but not chemically modified, including blends of these oils or fractions with oils or fractions of heading 1509
1510 00 10	- Crude oils
1510 00 90	- Other
1511	Palm oil and its fractions, whether or not refined, but not chemically modified
1511 10	- Crude oil
1511 10 10	-- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1511 10 90	-- Other
1511 90	- Other
	-- Solid fractions
1511 90 11	--- In immediate packings of a net content not exceeding 1 kg
1511 90 19	--- Other
	-- Other
1511 90 91	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1511 90 99	--- Other
1512	Sunflower-seed, safflower or cotton-seed oil and fractions thereof, whether or not refined, but not chemically modified
	- Sunflower-seed or safflower oil and fractions thereof
1512 11	-- Crude oil
1512 11 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	--- Other
1512 11 91	---- Sunflower-seed oil
1512 11 99	---- Safflower oil
1512 19	-- Other
1512 19 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1512 19 90	--- Other
	- Cotton-seed oil and its fractions

CN	DASHES AND DM
1512 21	-- Crude oil, whether or not gossypol has been removed
1512 21 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1512 21 90	--- Other
1512 29	-- Other
1512 29 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1512 29 90	--- Other
1513	Coconut (copra), palm kernel or babassu oil and fractions thereof, whether or not refined, but not chemically modified
	- Coconut (copra) oil and its fractions
1513 11	-- Crude oil
1513 11 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	--- Other
1513 11 91	---- In immediate packings of a net content not exceeding 1 kg
1513 11 99	---- Other
1513 19	-- Other
	--- Solid fractions
1513 19 11	---- In immediate packings of a net content not exceeding 1 kg
1513 19 19	---- Other
	--- Other
1513 19 30	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	---- Other
1513 19 91	----- In immediate packings of a net content not exceeding 1 kg
1513 19 99	----- Other
	- Palm kernel or babassu oil and fractions thereof
1513 21	-- Crude oil
1513 21 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	--- Other
1513 21 30	---- In immediate packings of a net content not exceeding 1 kg
1513 21 90	---- Other
1513 29	-- Other
	--- Solid fractions
1513 29 11	---- In immediate packings of a net content not exceeding 1 kg
1513 29 19	---- Other
	--- Other
1513 29 30	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	---- Other
1513 29 50	----- In immediate packings of a net content not exceeding 1 kg
1513 29 90	----- Other
1514	Rape, colza or mustard oil and fractions thereof, whether or not refined, but not chemically modified
	- Low erucic acid rape or colza oil and its fractions

CN	DASHES AND DM
1514 11	-- Crude oil
1514 11 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1514 11 90	--- Other
1514 19	-- Other
1514 19 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1514 19 90	--- Other
	- Other
1514 91	-- Crude oil
1514 91 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1514 91 90	--- Other
1514 99	-- Other
1514 99 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1514 99 90	--- Other
1515	Other fixed vegetable fats and oils (including jojoba oil) and their fractions, whether or not refined, but not chemically modified
	- Linseed oil and its fractions
1515 11 00	-- Crude oil
1515 19	-- Other
1515 19 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 19 90	--- Other
	- Maize (corn) oil and its fractions
1515 21	-- Crude oil
1515 21 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 21 90	--- Other
1515 29	-- Other
1515 29 10	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 29 90	--- Other
1515 30	- Castor oil and its fractions
1515 30 10	-- For the production of aminoundecanoic acid for use in the manufacture of synthetic textile fibres or of artificial plastic materials
1515 30 90	-- Other
1515 50	- Sesame oil and its fractions
	-- Crude oil
1515 50 11	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 50 19	--- Other
	-- Other
1515 50 91	--- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 50 99	--- Other
1515 90	- Other
1515 90 11	-- Tung oil; jojoba and oiticica oils; myrtle wax and Japan wax; their fractions
	-- Tobacco-seed oil and its fractions
	--- Crude oil

CN	DASHES AND DM
1515 90 21	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 90 29	---- Other
	--- Other
1515 90 31	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
1515 90 39	---- Other
	-- Other oils and their fractions
	--- Crude oils
1515 90 40	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	---- Other
1515 90 51	----- Solid, in immediate packings of a net content not exceeding 1 kg
1515 90 59	----- Solid, other; fluid
	--- Other
1515 90 60	---- For technical or industrial uses other than the manufacture of foodstuffs for human consumption
	---- Other
1515 90 91	----- Solid, in immediate packings of a net content not exceeding 1 kg
1515 90 99	----- Solid, other; fluid
1516	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised, whether or not refined, but not further prepared
1516 10	- Animal fats and oils and their fractions
1516 10 10	-- In immediate packings of a net content not exceeding 1 kg
1516 10 90	-- Other
1516 20	- Vegetable fats and oils and their fractions
1516 20 10	-- Hydrogenated castor oil, so called 'opal-wax'
	-- Other
1516 20 91	--- In immediate packings of a net content not exceeding 1 kg
	--- Other
1516 20 95	---- Colza, linseed, rapeseed, sunflower-seed, illipe, karite, makore, touloucouna or babassu oils, for technical or industrial uses other than the manufacture of foodstuffs for human consumption
	---- Other
1516 20 96	----- Groundnut, cotton-seed, soya-bean or sunflower-seed oils; other oils containing less than 50 % by weight of free fatty acids and excluding palm kernel, illipe, coconut, colza, rapeseed or copaiba oils
1516 20 98	----- Other
1517	Margarine; edible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, other than edible fats or oils or their fractions of heading 1516
1517 10	- Margarine, excluding liquid margarine
1517 10 10	-- Containing, by weight, more than 10 % but not more than 15 % of milkfats
1517 10 90	-- Other
1517 90	- Other
1517 90 10	-- Containing, by weight, more than 10 % but not more than 15 % of milkfats
	-- Other
1517 90 91	--- Fixed vegetable oils, fluid, mixed
1517 90 93	--- Edible mixtures or preparations of a kind used as mould-release preparations
1517 90 99	--- Other

CN	DASHES AND DM
1518 00	Animal or vegetable fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, blown, polymerised by heat in vacuum or in inert gas or otherwise chemically modified, excluding those of heading 1516; inedible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, not elsewhere specified or included
1518 00 10	- Linoxyn
	- Fixed vegetable oils, fluid, mixed, for technical or industrial uses other than the manufacture of foodstuffs for human consumption
1518 00 31	-- Crude
1518 00 39	-- Other
	- Other
1518 00 91	-- Animal or vegetable fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, blown, polymerised by heat in vacuum or in inert gas or otherwise chemically modified, excluding those of heading 1516
	-- Other
1518 00 95	--- Inedible mixtures or preparations of animal or of animal and vegetable fats and oils and their fractions
1518 00 99	--- Other
1520 00 00	Glycerol, crude; glycerol waters and glycerol lyes
1521	Vegetable waxes (other than triglycerides), beeswax, other insect waxes and spermaceti, whether or not refined or coloured
1521 10 00	- Vegetable waxes
1521 90	- Other
1521 90 10	-- Spermaceti, whether or not refined or coloured
	-- Beeswax and other insect waxes, whether or not refined or coloured
1521 90 91	--- Raw
1521 90 99	--- Other
1522 00	Degras; residues resulting from the treatment of fatty substances or animal or vegetable waxes
1522 00 10	- Degras
	- Residues resulting from the treatment of fatty substances or animal or vegetable waxes
	-- Containing oil having the characteristics of olive oil
1522 00 31	--- Soapstocks
1522 00 39	--- Other
	-- Other
1522 00 91	--- Oil foots and dregs; soapstocks
1522 00 99	--- Other

App. 4. Residues and waste from the food industries; prepared animal fodder[5]

CN	DASHES AND DM
23	CHAPTER 23 - RESIDUES AND WASTE FROM THE FOOD INDUSTRIES; PREPARED ANIMAL FODDER
2301	Flours, meals and pellets, of meat or meat offal, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption; greaves
2301 10 00	- Flours, meals and pellets, of meat or meat offal; greaves
2301 20 00	- Flours, meals and pellets, of fish or of crustaceans, molluscs or other aquatic invertebrates
2302	Bran, sharps and other residues, whether or not in the form of pellets, derived from the sifting, milling or other working of cereals or of leguminous plants
2302 10	- Of maize (corn)
2302 10 10	-- With a starch content not exceeding 35 % by weight
2302 10 90	-- Other
2302 30	- Of wheat
2302 30 10	-- Of which the starch content does not exceed 28 % by weight, and of which the proportion that passes through a sieve with an aperture of 0,2 mm does not exceed 10 % by weight or alternatively the proportion that passes through the sieve has an ash content, calculated on the dry product, equal to or more than 1,5 % by weight
2302 30 90	-- Other
2302 40	- Of other cereals
	-- Of rice
2302 40 02	--- With a starch content not exceeding 35 % by weight
2302 40 08	--- Other
	-- Other
2302 40 10	--- Of which the starch content does not exceed 28 % by weight, and of which the proportion that passes through a sieve with an aperture of 0,2 mm does not exceed 10 % by weight or alternatively the proportion that passes through the sieve has an ash content, calculated on the dry product, equal to or more than 1,5 % by weight
2302 40 90	--- Other
2302 50 00	- Of leguminous plants
2303	Residues of starch manufacture and similar residues, beet-pulp, bagasse and other waste of sugar manufacture, brewing or distilling dregs and waste, whether or not in the form of pellets
2303 10	- Residues of starch manufacture and similar residues
	-- Residues from the manufacture of starch from maize (excluding concentrated steeping liquors), of a protein content, calculated on the dry product
2303 10 11	--- Exceeding 40 % by weight
2303 10 19	--- Not exceeding 40 % by weight
2303 10 90	-- Other
2303 20	- Beet-pulp, bagasse and other waste of sugar manufacture
2303 20 10	-- Beet-pulp
2303 20 90	-- Other
2303 30 00	- Brewing or distilling dregs and waste
2304 00 00	Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting from the extraction of soya-bean oil

CN	DASHES AND DM
2305 00 00	Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting from the extraction of groundnut oil
2306	Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting from the extraction of vegetable fats or oils, other than those of heading 2304 or 2305
2306 10 00	- Of cotton seeds
2306 20 00	- Of linseed
2306 30 00	- Of sunflower seeds
	- Of rape or colza seeds
2306 41 00	-- Of low erucic acid rape or colza seeds
2306 49 00	-- Other
2306 50 00	- Of coconut or copra
2306 60 00	- Of palm nuts or kernels
2306 90	- Other
2306 90 05	-- Of maize (corn) germ
	-- Other
	--- Oilcake and other residues resulting from the extraction of olive oil
2306 90 11	---- Containing 3 % or less by weight of olive oil
2306 90 19	---- Containing more than 3 % by weight of olive oil
2306 90 90	--- Other
2307 00	Wine lees; argol
	- Wine lees
2307 00 11	-- Having a total alcoholic strength by mass not exceeding 7,9 % mas and a dry matter content not less than 25 % by weight
2307 00 19	-- Other
2307 00 90	- Argol
2308 00	Vegetable materials and vegetable waste, vegetable residues and by-products, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included
	- Grape marc
2308 00 11	-- Having a total alcoholic strength by mass not exceeding 4,3 % mas and a dry matter content not less than 40 % by weight
2308 00 19	-- Other
2308 00 40	- Acorns and horse-chestnuts; pomace or marc of fruit, other than grapes
2308 00 90	- Other
2309	Preparations of a kind used in animal feeding
2309 10	- Dog or cat food, put up for retail sale
	-- Containing starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup of subheadings 17023050, 17023090, 17024090, 17029050 and 21069055 or milk products
	--- Containing starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup
	---- Containing no starch or containing 10 % or less by weight of starch
2309 10 11	----- Containing no milk products or containing less than 10 % by weight of such products
2309 10 13	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 10 15	----- Containing not less than 50 % but less than 75 % by weight of milk products
2309 10 19	----- Containing not less than 75 % by weight of milk products
	---- Containing more than 10 % but not more than 30 % by weight of starch

CN	DASHES AND DM
2309 10 31	----- Containing no milk products or containing less than 10 % by weight of such products
2309 10 33	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 10 39	----- Containing not less than 50 % by weight of milk products
	---- Containing more than 30 % by weight of starch
2309 10 51	----- Containing no milk products or containing less than 10 % by weight of such products
2309 10 53	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 10 59	----- Containing not less than 50 % by weight of milk products
2309 10 70	--- Containing no starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup but containing milk products
2309 10 90	-- Other
2309 90	- Other
2309 90 10	-- Fish or marine mammal solubles
2309 90 20	-- Products referred to in additional note 5 to this chapter
	-- Other, including premixes
	--- Containing starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup of subheadings 17023050, 17023090, 17024090, 17029050 and 21069055 or milk products
	---- Containing starch, glucose, glucose syrup, maltodextrine or maltodextrin syrup
	----- Containing no starch or containing 10 % or less by weight of starch
2309 90 31	----- Containing no milk products or containing less than 10 % by weight of such products
2309 90 33	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 90 35	----- Containing not less than 50 % but less than 75 % by weight of milk products
2309 90 39	----- Containing not less than 75 % by weight of milk products
	----- Containing more than 10 % but not more than 30 % by weight of starch
2309 90 41	----- Containing no milk products or containing less than 10 % by weight of such products
2309 90 43	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 90 49	----- Containing not less than 50 % by weight of milk products
	----- Containing more than 30 % by weight of starch
2309 90 51	----- Containing no milk products or containing less than 10 % by weight of such products
2309 90 53	----- Containing not less than 10 % but less than 50 % by weight of milk products
2309 90 59	----- Containing not less than 50 % by weight of milk products
2309 90 70	---- Containing no starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup but containing milk products
	--- Other
2309 90 91	---- Beet-pulp with added molasses
	---- Other
2309 90 95	----- Containing by weight 49 % or more of choline chloride, on an organic or inorganic base
2309 90 99	----- Other