



EUROPEAN
COMMISSION

Brussels, 6.10.2014
COM(2014) 617 final

ANNEXES 1 to 4

ANNEXES

**Methodology for the calculation and reporting of the life cycle greenhouse gas intensity
of fuels and energy by fuel suppliers**

to the

**Proposal for a Council Directive on laying down calculation methods and reporting
requirements pursuant to Directive 98/70/EC of the European Parliament and of the
Council relating to the quality of petrol and diesel fuels**

{ SWD(2014) 295 final }

{ SWD(2014) 296 final }

Annex I

Methodology for the calculation and reporting of the life cycle greenhouse gas intensity of fuels and energy by fuel suppliers

Part 1:

When calculating a fuel supplier's greenhouse gas intensity of fuels and energy:

1. The greenhouse gas intensity for fuels and energy is expressed in terms of grams of carbon dioxide equivalent per Mega Joule of fuel (gCO₂eq/MJ);
2. The greenhouse gases taken into account for the purposes of calculating the greenhouse gas intensity of fuel is carbon dioxide (CO₂), nitrous oxide (N₂O) and methane (CH₄). For the purpose of calculating CO₂ equivalence, emissions of those gases are valued in terms of CO₂ equivalent emissions as follows:
CO₂: 1; CH₄: 25; N₂O: 298
3. Emissions from the manufacture of machinery and equipment utilized in extraction, production, refining and consumption of fossil fuels shall not be taken into account in the greenhouse gas calculation.
4. A fuel supplier's greenhouse gas intensity from the life cycle of all fuels supplied shall be calculated in accordance with the formula below:

$$\text{A supplier's greenhouse gas intensity } (\#) = \frac{\sum_x (GHGi_x \times AF \times MJ_x) - UER}{\sum_x MJ_x}$$

Where:

- (a) “#” means the supplier’s identification (person liable to pay duty) defined in Regulation (EC) No 684/2009 as the Trader Excise Number (SEED registration number or VAT ID number in Table 1 point 5 (a) of Annex I to that Regulation for Destination Type codes 1, 2, 3, 4, 5 and 8) which is also the entity liable to pay the excise duty in accordance with Article 8 of Council Directive 2008/118/EC at the time excise duty became chargeable in accordance with Article 7(2) of Directive 2008/118/EC. If this identification is not available Member States shall ensure that an equivalent means of identification is established in accordance with a national excise duty reporting scheme.
- (b) “x” means the fuel and energy types falling within the scope of this Directive as expressed in Table 1 - point 17(c) of Annex I to Regulation (EC) No 684/2009. If these data are not available, Member States shall collect equivalent data in accordance with a nationally established excise duty reporting scheme.
- (c) “MJ_x” means the total energy supplied and converted from reported volumes of fuel “x” expressed in Mega Joules. This is calculated as follows:

The quantity of each fuel per fuel type

Is derived from data reported pursuant to Table 1 – point 17 (d), (f), and (o) of Annex I to Regulation (EC) No 684/2009. Biofuel quantities are converted to

their lower-heat-value energy content pursuant to the energy densities set out in Annex III to Directive 2009/28/EC¹. Quantities of fuels from non-biological origin are converted to their lower-heat-value energy content pursuant to energy densities set out in Appendix 1 to the JEC Well-to-Tank report².

Simultaneous co-processing of fossil fuels and biofuels

Processing includes any modification during the life cycle of a fuel or energy supplied causing a change to the molecular structure of the product. The addition of denaturant does not fall under this processing. The volume of biofuels co-processed with fuels from non-biological origin reflects the post-processing state of the biofuel. The energy quantity of the co-processed biofuel is determined according to the energy balance and efficiency of the co-processing process as set out in Annex IV (17) of Directive 98/70/EC.

Where multiple biofuels are blended with fossil fuels the quantity and type of each biofuel is taken into account in the calculation and reported by suppliers to the Member States.

The volume of biofuel supplied that does not meet the requirements of Article 7b(1) of Directive 98/70/EC is counted as fossil fuel.

E85 petrol-ethanol blend shall be calculated as a separate fuel for the purpose of Article 6 of Regulation (EC) No 443/2009 of the European Parliament and of the Council³.

If quantities are not collected pursuant to Regulation (EC) No 684/2009, Member States shall collect equivalent data in accordance with a nationally established excise duty reporting scheme.

Quantity of electric energy consumed

Is the amount of electricity consumed in road vehicles or motorcycles where an energy supplier reports this amount of energy to the relevant authority in the Member State in accordance with the following formula:

Electric energy consumed = distance travelled (km) x electric energy consumption efficiency (MJ/km).

(d) UER

“UER” is the upstream emission reduction of greenhouse gases claimed by a fuel supplier measured in gCO₂eq if quantified and reported in accordance with the following requirements:

¹ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (OJ L 140, 5.6.2009, p.16).

² http://iet.jrc.ec.europa.eu/about-jec/sites/about-jec/files/documents/report_2013/wtt_report_v4_july_2013_final.pdf

³ OJ L 140, 5.6.2009, p. 1.

Eligibility

Voluntary greenhouse gas emission reductions at oil and gas production and extraction sites shall only be applied to the upstream emission's part of the default values for petrol, diesel, CNG or LPG.

Upstream greenhouse gas emission reductions originating from any country may be counted as a reduction in greenhouse gas emissions against fuels from any feedstock source supplied by any fuel supplier.

Upstream greenhouse gas emission reductions shall only be counted if they are associated with projects that have started after 1 January 2011

It is not necessary to prove that upstream emission reductions would not have taken place without the Article 7a reporting requirement.

Calculation

Greenhouse gas reductions associated with oil and gas upstream emissions will be estimated and validated in accordance with principles and standards identified in International Standards and in particular ISO 14064, ISO 14065 and ISO 14066.

The UERs and baseline emissions are to be monitored, reported and verified in accordance with ISO 14064 and providing results of equivalent confidence of Regulation (EU) No 600/2012 and Regulation (EU) No 601/2012. The verification of methods for estimating UERs must be done in accordance with ISO 14064-3 and the organisation verifying this must be accredited in accordance with ISO 14065.

- (e) “GHGix” is the unit greenhouse gas intensity of fuel “x” expressed in gCO₂eq/MJ. Fuel suppliers shall define the unit intensity of each fuel as follows:

Greenhouse gas intensity of fuels from a non-biological origin is the “weighted unit life cycle greenhouse gas intensity” per fuel type listed in the last column of the table under Part 2 point (5) of this Annex.

Electrical energy is calculated as described in Part 2 point (6) below.

Greenhouse gas intensity of biofuels

The greenhouse gas intensity of biofuels meeting the requirements of Article 7b(1) of Directive 98/70/EC is calculated in accordance with Article 7d of that Directive. In case data on the life cycle greenhouse gas emissions of biofuels was obtained in accordance with an agreement or scheme that has been the subject of a decision pursuant Article 7c(4) of Directive 98/70/EC covering Article 7b(2) of that Directive this data is also be used to establish the greenhouse gas intensity of biofuels under Article 7b(1) of that Directive. The greenhouse gas intensity for biofuels not meeting the requirements of Article

7b(1) of Directive 98/70/EC is equal to the greenhouse intensity of the respective fossil fuel derived from conventional crude oil or gas.

Simultaneous co-processing of fuels from non-biological origin and biofuels

The greenhouse gas intensity of biofuels co-processed with fossil fuels shall reflect the post-processing state of the biofuel.

- (f) “AF” represents the adjustment factors for powertrain efficiencies:

| Predominant conversion technology | Efficiency factor |
|--|-------------------|
| Internal combustion engine | 1 |
| Battery electric powertrain | 0.4 |
| Hydrogen fuel cell electric powertrain | 0.4 |

Part 2: Reporting by fuel suppliers

(1) Upstream Emissions reductions (UERs)

In order for upstream emissions reductions to be eligible for the purposes of this methodology fuel suppliers shall report to the authority designated by the Member States the:

- (i) starting date of the project which must be after 1 January 2011;
- (ii) annual emission reductions in gCO₂eq;
- (iii) duration for which the claimed reductions occurred;
- (iv) project location closest to the source of the emissions in latitude and longitude coordinates in degrees to the fourth decimal place;
- (v) baseline annual emissions prior to installation of reduction measures and annual emissions after the reduction measures have been implemented in gCO₂eq/MJ of feedstock produced;
- (vi) non-reusable certificate number uniquely identifying the scheme and the claimed greenhouse gas reductions
- (vii) non-reusable number uniquely identifying the calculation method and the associated scheme;
- (viii) where the project relates to oil extraction, the average annual historical and reporting year gas-to-oil ratio (GOR) in solution, reservoir pressure, depth and well production rate of the crude oil.

(2) Origin

"Origin" means the feedstock trade name listed in Part 2 point (7) of this Annex but only where fuel suppliers hold the necessary information by virtue of (i) being a person or undertaking importing crude oil from third countries or receiving a crude oil delivery from another Member State pursuant to Article 1 of Council Regulation (EC) No 2964/95; or (ii) arrangements to share information agreed with other fuel suppliers. In all other cases, origin shall refer to whether the fuel is of EU or non-EU origin.

The information collected and reported by fuel suppliers to the Member States concerning the origin of fuels shall be confidential but this shall not prevent the publication by the Commission of general information or information in summary form which does not contain details relating to individual undertakings.

For biofuels origin means the biofuel production pathway set out in Annex IV of Directive 98/70/EC.

Where multiple feedstocks are used, the quantity in metric tonnes of finished product per type of each feedstock produced in the respective processing facility during the reporting year shall be provided.

(3) Place of purchase

"Place of purchase" means the country and name of the processing facility where the fuel or energy underwent the last substantial transformation used to confer the origin of the fuel or energy in accordance with Commission Regulation (EEC) No 2454/93.

(4) Small and medium-sized enterprises

By way of derogation for fuel suppliers that are small and medium-sized enterprises, "origin" and "place of purchase" is either EU or non-EU, as appropriate, irrespective of whether they import crude oil or they supply petroleum oils and oils obtained from bituminous materials.

(5) 2010 average life cycle greenhouse gas default values for fuels other than biofuels and electric energy

| Raw material source and process | Fuel or energy type placed on the market | Life cycle unit GHG intensity (gCO ₂ eq/MJ) | Weighted life cycle unit GHG intensity (gCO ₂ eq/MJ) |
|---------------------------------|--|--|---|
| Conventional crude | Petrol | 93.2 | 93.3 |
| Natural Gas-to-Liquid | | 94.3 | |
| Coal-to-Liquid | | 172 | |
| Natural bitumen | | 107 | |
| Oil shale | | 131.3 | |
| | | | |
| Conventional crude | Diesel or gasoil | 95 | 95.1 |
| Natural Gas-to-Liquid | | 94.3 | |
| Coal-to-Liquid | | 172 | |
| Natural bitumen | | 108.5 | |
| Oil shale | | 133.7 | |
| | | | |

| | | | |
|---|---|-------|-------|
| Any fossil sources | Liquefied Petroleum Gas in a spark ignition engine | 73.6 | 73.6 |
| Natural Gas, EU mix | Compressed Gas in a spark ignition engine | 69.3 | 69.3 |
| Natural Gas, EU mix | Liquefied Gas in a spark ignition engine | 74.5 | 74.5 |
| Sabatier reaction of hydrogen from non-biological renewable energy electrolysis | Compressed synthetic methane in a spark ignition engine | 3.3 | 3.3 |
| Natural gas using steam reforming | Compressed Hydrogen in a fuel cell | 104.3 | 104.3 |
| Electrolysis fully powered by non-biological renewable energy | Compressed Hydrogen in a fuel cell | 9.1 | 9.1 |
| Coal | Compressed Hydrogen in a fuel cell | 234.4 | 234.4 |
| Coal with Carbon Capture and Storage of process emissions | Hydrogen in a fuel cell | 52.7 | 52.7 |
| Waste plastic derived from fossil feedstocks | Petrol, diesel or gasoil | 86 | 86 |

(6) Electrical energy

For the reporting by energy suppliers of electricity consumed by electric vehicles and motorcycles, Member States should calculate national average life cycle default values in accordance with appropriate International Standards.

Alternatively Member States may permit their suppliers to establish unit greenhouse gas intensity values (gCO₂eq/MJ) for electricity from data reported by Member States on the basis of:

- (i) Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics or,
- (ii) Regulation (EU) No 525/2013 of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change or,
- (iii) Commission delegated regulation (EU) No 666/2014 establishing substantive requirements for a Union inventory system and taking into account changes in the global warming potentials and internationally agreed inventory guidelines pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council.

(7) Feedstock trade name

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|--------------------------------------|------|--------------------|
| Abu Dhabi | Al Bunduq | 38.5 | 1.1 |
| Abu Dhabi | Mubarraz | 38.1 | 0.9 |
| Abu Dhabi | Murban | 40.5 | 0.8 |
| Abu Dhabi | Zakum (Lower Zakum/Abu Dhabi Marine) | 40.6 | 1 |
| Abu Dhabi | Umm Shaif (Abu Dhabi Marine) | 37.4 | 1.5 |
| Abu Dhabi | Arzanah | 44 | 0 |
| Abu Dhabi | Abu Al Bu Khoosh | 31.6 | 2 |
| Abu Dhabi | Murban Bottoms | 21.4 | NOT AVAILABLE (NA) |
| Abu Dhabi | Top Murban | 21 | NA |
| Abu Dhabi | Upper Zakum | 34.4 | 1.7 |
| Algeria | Arzew | 44.3 | 0.1 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------|------------------------------|------|----------------|
| Algeria | Hassi Messaoud | 42.8 | 0.2 |
| Algeria | Zarzaitine | 43 | 0.1 |
| Algeria | Algerian | 44 | 0.1 |
| Algeria | Skikda | 44.3 | 0.1 |
| Algeria | Saharan Blend | 45.5 | 0.1 |
| Algeria | Hassi Ramal | 60 | 0.1 |
| Algeria | Algerian Condensate | 64.5 | NA |
| Algeria | Algerian Mix | 45.6 | 0.2 |
| Algeria | Algerian Condensate (Arzew) | 65.8 | 0 |
| Algeria | Algerian Condensate (Bejaia) | 65.0 | 0 |
| Algeria | Top Algerian | 24.6 | NA |
| Angola | Cabinda | 31.7 | 0.2 |
| Angola | Takula | 33.7 | 0.1 |
| Angola | Soyo Blend | 33.7 | 0.2 |
| Angola | Mandji | 29.5 | 1.3 |
| Angola | Malongo (West) | 26 | NA |
| Angola | Cavala-1 | 42.3 | NA |
| Angola | Sulele (South-1) | 38.7 | NA |
| Angola | Palanca | 40 | 0.14 |
| Angola | Malongo (North) | 30 | NA |
| Angola | Malongo (South) | 25 | NA |
| Angola | Nemba | 38.5 | 0 |
| Angola | Girassol | 31.3 | NA |
| Angola | Kuito | 20 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|----------------------------|-------|----------------|
| Angola | Hungo | 28.8 | NA |
| Angola | Kissinje | 30.5 | 0.37 |
| Angola | Dalia | 23.6 | 1.48 |
| Angola | Gimboa | 23.7 | 0.65 |
| Angola | Mondo | 28.8 | 0.44 |
| Angola | Plutonio | 33.2 | 0.036 |
| Angola | Saxi Batuque Blend | 33.2 | 0.36 |
| Angola | Xikomba | 34.4 | 0.41 |
| Argentina | Tierra del Fuego | 42.4 | NA |
| Argentina | Santa Cruz | 26.9 | NA |
| Argentina | Escalante | 24 | 0.2 |
| Argentina | Canadon Seco | 27 | 0.2 |
| Argentina | Hidra | 51.7 | 0.05 |
| Argentina | Medanito | 34.93 | 0.48 |
| Armenia | Armenian Miscellaneous | NA | NA |
| Australia | Jabiru | 42.3 | 0.03 |
| Australia | Kooroopa (Jurassic) | 42 | NA |
| Australia | Talgeberry (Jurassic) | 43 | NA |
| Australia | Talgeberry (Up Cretaceous) | 51 | NA |
| Australia | Woodside Condensate | 51.8 | NA |
| Australia | Saladin-3 (Top Barrow) | 49 | NA |
| Australia | Harriet | 38 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|------------|----------------------------|------|----------------|
| Australia | Skua-3 (Challis Field) | 43 | NA |
| Australia | Barrow Island | 36.8 | 0.1 |
| Australia | Northwest Shelf Condensate | 53.1 | 0 |
| Australia | Jackson Blend | 41.9 | 0 |
| Australia | Cooper Basin | 45.2 | 0.02 |
| Australia | Griffin | 55 | 0.03 |
| Australia | Buffalo Crude | 53 | NA |
| Australia | Cossack | 48.2 | 0.04 |
| Australia | Elang | 56.2 | NA |
| Australia | Enfield | 21.7 | 0.13 |
| Australia | Gippsland (Bass Strait) | 45.4 | 0.1 |
| Azerbaijan | Azeri Light | 34.8 | 0.15 |
| Bahrain | Bahrain Miscellaneous | NA | NA |
| Belarus | Belarus Miscellaneous | NA | NA |
| Benin | Seme | 22.6 | 0.5 |
| Benin | Benin Miscellaneous | NA | NA |
| Belize | Belize Light Crude | 40 | NA |
| Belize | Belize Miscellaneous | NA | NA |
| Bolivia | Bolivian Condensate | 58.8 | 0.1 |
| Brazil | Garoupa | 30.5 | 0.1 |
| Brazil | Sergipano | 25.1 | 0.4 |
| Brazil | Campos Basin | 20 | NA |
| Brazil | Urucu (Upper Amazon) | 42 | NA |
| Brazil | Marlim | 20 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|----------|--------------------------|------|----------------|
| Brazil | Brazil Polvo | 19.6 | 1.14 |
| Brazil | Roncador | 28.3 | 0.58 |
| Brazil | Roncador Heavy | 18 | NA |
| Brazil | Albacora East | 19.8 | 0.52 |
| Brunei | Seria Light | 36.2 | 0.1 |
| Brunei | Champion | 24.4 | 0.1 |
| Brunei | Champion Condensate | 65 | 0.1 |
| Brunei | Brunei LS Blend | 32 | 0.1 |
| Brunei | Brunei Condensate | 65 | NA |
| Brunei | Champion Export | 23.9 | 0.12 |
| Cameroon | Kole Marine Blend | 34.9 | 0.3 |
| Cameroon | Lokele | 21.5 | 0.5 |
| Cameroon | Moudi Light | 40 | NA |
| Cameroon | Moudi Heavy | 21.3 | NA |
| Cameroon | Ebome | 32.1 | 0.35 |
| Cameroon | Cameroon Miscellaneous | NA | NA |
| Canada | Peace River Light | 41 | NA |
| Canada | Peace River Medium | 33 | NA |
| Canada | Peace River Heavy | 23 | NA |
| Canada | Manyberries | 36.5 | NA |
| Canada | Rainbow Light and Medium | 40.7 | NA |
| Canada | Pembina | 33 | NA |
| Canada | Bells Hill Lake | 32 | NA |
| Canada | Fosterton Condensate | 63 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------|------------------------|------|----------------|
| Canada | Rangeland Condensate | 67.3 | NA |
| Canada | Redwater | 35 | NA |
| Canada | Lloydminster | 20.7 | 2.8 |
| Canada | Wainwright- Kinsella | 23.1 | 2.3 |
| Canada | Bow River Heavy | 26.7 | 2.4 |
| Canada | Fosterton | 21.4 | 3 |
| Canada | Smiley-Coleville | 22.5 | 2.2 |
| Canada | Midale | 29 | 2.4 |
| Canada | Milk River Pipeline | 36 | 1.4 |
| Canada | Ipl-Mix Sweet | 40 | 0.2 |
| Canada | Ipl-Mix Sour | 38 | 0.5 |
| Canada | Ipl Condensate | 55 | 0.3 |
| Canada | Aurora Light | 39.5 | 0.4 |
| Canada | Aurora Condensate | 65 | 0.3 |
| Canada | Reagan Field | 35 | 0.2 |
| Canada | Synthetic Canada | 30.3 | 1.7 |
| Canada | Cold Lake | 13.2 | 4.1 |
| Canada | Cold Lake Blend | 26.9 | 3 |
| Canada | Canadian Federated | 39.4 | 0.3 |
| Canada | Chauvin | 22 | 2.7 |
| Canada | Gcos | 23 | NA |
| Canada | Gulf Alberta L & M | 35.1 | 1 |
| Canada | Light Sour Blend | 35 | 1.2 |
| Canada | Lloyd Blend | 22 | 2.8 |
| Canada | Peace River Condensate | 54.9 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------|----------------------------|------|----------------|
| Canada | Sarnium Condensate | 57.7 | NA |
| Canada | Saskatchewan Light | 32.9 | NA |
| Canada | Sweet Mixed Blend | 38 | 0.5 |
| Canada | Syncrude | 32 | 0.1 |
| Canada | Rangeland – South L & M | 39.5 | 0.5 |
| Canada | Northblend Nevis | 34 | NA |
| Canada | Canadian Common Condensate | 55 | NA |
| Canada | Canadian Common | 39 | 0.3 |
| Canada | Waterton Condensate | 65.1 | NA |
| Canada | Panuke Condensate | 56 | NA |
| Canada | Federated Light and Medium | 39.7 | 2 |
| Canada | Wabasca | 23 | NA |
| Canada | Hibernia | 37.3 | 0.37 |
| Canada | BC Light | 40 | NA |
| Canada | Boundary | 39 | NA |
| Canada | Albian Heavy | 21 | NA |
| Canada | Koch Alberta | 34 | NA |
| Canada | Terra Nova | 32.3 | NA |
| Canada | Echo Blend | 20.6 | 3.15 |
| Canada | Western Canadian Blend | 19.8 | 3 |
| Canada | Western Canadian Select | 20.5 | 3.33 |
| Canada | White Rose | 31.0 | 0.31 |
| Canada | Access | 22 | NA |
| Canada | Premium Albian Synthetic | 20.9 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------|--------------------------------|-------|----------------|
| | Heavy | | |
| Canada | Albian Residuum Blend (ARB) | 20.03 | 2.62 |
| Canada | Christina Lake | 20.5 | 3 |
| Canada | CNRL | 34 | NA |
| Canada | Husky Synthetic Blend | 31.91 | 0.11 |
| Canada | Premium Albian Synthetic (PAS) | 35.5 | 0.04 |
| Canada | Seal Heavy(SH) | 19.89 | 4.54 |
| Canada | Suncor Synthetic A (OSA) | 33.61 | 0.178 |
| Canada | Suncor Synthetic H (OSH) | 19.53 | 3.079 |
| Canada | Peace Sour | 33 | NA |
| Canada | Western Canadian Resid | 20.7 | NA |
| Canada | Christina Dilbit Blend | 21.0 | NA |
| Canada | Christina Lake Dilbit | 38.08 | 3.80 |
| Chile | Chile Miscellaneous | NA | NA |
| Chad | Doba Blend (Early Production) | 24.8 | 0.14 |
| Chad | Doba Blend (Later Production) | 20.8 | 0.17 |
| China | Taching (Daqing) | 33 | 0.1 |
| China | Shengli | 24.2 | 1 |
| China | Beibu | NA | NA |
| China | Chengbei | 17 | NA |
| China | Lufeng | 34.4 | NA |
| China | Xijiang | 28 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------------------|----------------------|-------|----------------|
| China | Wei Zhou | 39.9 | NA |
| China | Liu Hua | 21 | NA |
| China | Boz Hong | 17 | 0.282 |
| China | Peng Lai | 21.8 | 0.29 |
| China | Xi Xiang | 32.18 | 0.09 |
| Colombia | Onto | 35.3 | 0.5 |
| Colombia | Putamayo | 35 | 0.5 |
| Colombia | Rio Zulia | 40.4 | 0.3 |
| Colombia | Orito | 34.9 | 0.5 |
| Colombia | Cano-Limon | 30.8 | 0.5 |
| Colombia | Lasmo | 30 | NA |
| Colombia | Cano Duya-1 | 28 | NA |
| Colombia | Corocora-1 | 31.6 | NA |
| Colombia | Suria Sur-1 | 32 | NA |
| Colombia | Tunane-1 | 29 | NA |
| Colombia | Casanare | 23 | NA |
| Colombia | Cusiana | 44.4 | 0.2 |
| Colombia | Vasconia | 27.3 | 0.6 |
| Colombia | Castilla Blend | 20.8 | 1.72 |
| Colombia | Cupiaga | 43.11 | 0.082 |
| Colombia | South Blend | 28.6 | 0.72 |
| Congo (Brazzaville) | Emeraude | 23.6 | 0.5 |
| Congo (Brazzaville) | Djeno Blend | 26.9 | 0.3 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------------------|----------------------|------|----------------|
| Congo (Brazzaville) | Viodo Marina-1 | 26.5 | NA |
| Congo (Brazzaville) | Nkossa | 47 | 0.03 |
| Congo (Kinshasa) | Muanda | 34 | 0.1 |
| Congo (Kinshasa) | Congo/Zaire | 31.7 | 0.1 |
| Congo (Kinshasa) | Coco | 30.4 | 0.15 |
| Cote d'Ivoire | Espoir | 31.4 | 0.3 |
| Cote d'Ivoire | Lion Cote | 41.1 | 0.101 |
| Denmark | Dan | 30.4 | 0.3 |
| Denmark | Gorm | 33.9 | 0.2 |
| Denmark | Danish North Sea | 34.5 | 0.26 |
| Dubai | Dubai (Fateh) | 31.1 | 2 |
| Dubai | Margham Light | 50.3 | 0 |
| Ecuador | Oriente | 29.2 | 1 |
| Ecuador | Quito | 29.5 | 0.7 |
| Ecuador | Santa Elena | 35 | 0.1 |
| Ecuador | Limoncoha-1 | 28 | NA |
| Ecuador | Frontera-1 | 30.7 | NA |
| Ecuador | Bogi-1 | 21.2 | NA |
| Ecuador | Napo | 19 | 2 |
| Ecuador | Napo Light | 19.3 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-------------------|----------------------|------|----------------|
| Egypt | Belayim | 27.5 | 2.2 |
| Egypt | El Morgan | 29.4 | 1.7 |
| Egypt | Rhas Gharib | 24.3 | 3.3 |
| Egypt | Gulf of Suez Mix | 31.9 | 1.5 |
| Egypt | Geysum | 19.5 | NA |
| Egypt | East Gharib (J-1) | 37.9 | NA |
| Egypt | Mango-1 | 35.1 | NA |
| Egypt | Rhas Budran | 25 | NA |
| Egypt | Zeit Bay | 34.1 | 0.1 |
| Egypt | East Zeit Mix | 39 | 0.87 |
| Equatorial Guinea | Zafiro | 30.3 | NA |
| Equatorial Guinea | Alba Condensate | 55 | NA |
| Equatorial Guinea | Ceiba | 30.1 | 0.42 |
| Gabon | Gamba | 31.8 | 0.1 |
| Gabon | Mandji | 30.5 | 1.1 |
| Gabon | Lucina Marine | 39.5 | 0.1 |
| Gabon | Oguendjo | 35 | NA |
| Gabon | Rabi-Kouanga | 34 | 0.6 |
| Gabon | T'Catamba | 44.3 | 0.21 |
| Gabon | Rabi | 33.4 | 0.06 |
| Gabon | Rabi Blend | 34 | NA |
| Gabon | Rabi Light | 37.7 | 0.15 |
| Gabon | Etame Marin | 36 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|------------------------|------|----------------|
| Gabon | Olende | 17.6 | 1.54 |
| Gabon | Gabonian Miscellaneous | NA | NA |
| Georgia | Georgian Miscellaneous | NA | NA |
| Ghana | Bonsu | 32 | 0.1 |
| Ghana | Salt Pond | 37.4 | 0.1 |
| Guatemala | Coban | 27.7 | NA |
| Guatemala | Rubelsanto | 27 | NA |
| India | Bombay High | 39.4 | 0.2 |
| Indonesia | Minas (Sumatron Light) | 34.5 | 0.1 |
| Indonesia | Ardjuna | 35.2 | 0.1 |
| Indonesia | Attaka | 42.3 | 0.1 |
| Indonesia | Suri | 18.4 | 0.2 |
| Indonesia | Sanga Sanga | 25.7 | 0.2 |
| Indonesia | Sepinggan | 37.9 | 0.9 |
| Indonesia | Walio | 34.1 | 0.7 |
| Indonesia | Arimbi | 31.8 | 0.2 |
| Indonesia | Poleng | 43.2 | 0.2 |
| Indonesia | Handil | 32.8 | 0.1 |
| Indonesia | Jatibarang | 29 | 0.1 |
| Indonesia | Cinta | 33.4 | 0.1 |
| Indonesia | Bekapai | 40 | 0.1 |
| Indonesia | Katapa | 52 | 0.1 |
| Indonesia | Salawati | 38 | 0.5 |
| Indonesia | Duri (Sumatran Heavy) | 21.1 | 0.2 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|-------------------------|------|----------------|
| Indonesia | Sembakung | 37.5 | 0.1 |
| Indonesia | Badak | 41.3 | 0.1 |
| Indonesia | Arun Condensate | 54.5 | NA |
| Indonesia | Udang | 38 | 0.1 |
| Indonesia | Klamono | 18.7 | 1 |
| Indonesia | Bunya | 31.7 | 0.1 |
| Indonesia | Pamusian | 18.1 | 0.2 |
| Indonesia | Kerindigan | 21.6 | 0.3 |
| Indonesia | Melahin | 24.7 | 0.3 |
| Indonesia | Bunyu | 31.7 | 0.1 |
| Indonesia | Camar | 36.3 | NA |
| Indonesia | Cinta Heavy | 27 | NA |
| Indonesia | Lalang | 40.4 | NA |
| Indonesia | Kakap | 46.6 | NA |
| Indonesia | Sisi-1 | 40 | NA |
| Indonesia | Giti-1 | 33.6 | NA |
| Indonesia | Ayu-1 | 34.3 | NA |
| Indonesia | Bima | 22.5 | NA |
| Indonesia | Padang Isle | 34.7 | NA |
| Indonesia | Intan | 32.8 | NA |
| Indonesia | Sepinggan - Yakin Mixed | 31.7 | 0.1 |
| Indonesia | Widuri | 32 | 0.1 |
| Indonesia | Belida | 45.9 | 0 |
| Indonesia | Senipah | 51.9 | 0.03 |
| Iran | Iranian Light | 33.8 | 1.4 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------|---------------------------------|------|----------------|
| Iran | Iranian Heavy | 31 | 1.7 |
| Iran | Soroosh (Cyrus) | 18.1 | 3.3 |
| Iran | Dorrood (Darius) | 33.6 | 2.4 |
| Iran | Rostam | 35.9 | 1.55 |
| Iran | Salmon (Sassan) | 33.9 | 1.9 |
| Iran | Foroozan (Fereidoon) | 31.3 | 2.5 |
| Iran | Aboozar (Ardeshir) | 26.9 | 2.5 |
| Iran | Sirri | 30.9 | 2.3 |
| Iran | Bahrgansar/Nowruz (SIRIP Blend) | 27.1 | 2.5 |
| Iran | Bahr/Nowruz | 25.0 | 2.5 |
| Iran | Iranian Miscellaneous | NA | NA |
| Iraq | Basrah Light (Pers. Gulf) | 33.7 | 2 |
| Iraq | Kirkuk (Pers. Gulf) | 35.1 | 1.9 |
| Iraq | Mishrif (Pers. Gulf) | 28 | NA |
| Iraq | Bai Hasson (Pers. Gulf) | 34.1 | 2.4 |
| Iraq | Basrah Medium (Pers. Gulf) | 31.1 | 2.6 |
| Iraq | Basrah Heavy (Pers. Gulf) | 24.7 | 3.5 |
| Iraq | Kirkuk Blend (Pers. Gulf) | 35.1 | 2 |
| Iraq | N. Rumalia (Pers. Gulf) | 34.3 | 2 |
| Iraq | Ras el Behar | 33 | NA |
| Iraq | Basrah Light (Red Sea) | 33.7 | 2 |
| Iraq | Kirkuk (Red Sea) | 36.1 | 1.9 |
| Iraq | Mishrif (Red Sea) | 28 | NA |
| Iraq | Bai Hasson (Red Sea) | 34.1 | 2.4 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|------------|--------------------------------|------------|----------------|
| Iraq | Basrah Medium (Red Sea) | 31.1 | 2.6 |
| Iraq | Basrah Heavy (Red Sea) | 24.7 | 3.5 |
| Iraq | Kirkuk Blend (Red Sea) | 34 | 1.9 |
| Iraq | N. Rumalia (Red Sea) | 34.3 | 2 |
| Iraq | Ratawi | 23.5 | 4.1 |
| Iraq | Basrah Light (Turkey) | 33.7 | 2 |
| Iraq | Kirkuk (Turkey) | 36.1 | 1.9 |
| Iraq | Mishrif (Turkey) | 28 | NA |
| Iraq | Bai Hasson (Turkey) | 34.1 | 2.4 |
| Iraq | Basrah Medium (Turkey) | 31.1 | 2.6 |
| Iraq | Basrah Heavy (Turkey) | 24.7 | 3.5 |
| Iraq | Kirkuk Blend (Turkey) | 34 | 1.9 |
| Iraq | N. Rumalia (Turkey) | 34.3 | 2 |
| Iraq | FAO Blend | 27.7 | 3.6 |
| Kazakhstan | Kumkol | 42.5 | 0.07 |
| Kazakhstan | CPC Blend | 44.2 NA | 0.54 |
| Kuwait | Mina al Ahmadi (Kuwait Export) | 31.4 | 2.5 |
| Kuwait | Magwa (Lower Jurassic) | 38 | NA |
| Kuwait | Burgan (Wafra) | 23.3 | 3.4 |
| Libya | Bu Attifel | 43.6 | 0 |
| Libya | Amna (high pour) | 36.1 | 0.2 |
| Libya | Brega | 40.4 | 0.2 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-------------|----------------------|-------|----------------|
| Libya | Sirtica | 43.3 | 0.43 |
| Libya | Zueitina | 41.3 | 0.3 |
| Libya | Bunker Hunt | 37.6 | 0.2 |
| Libya | El Hofra | 42.3 | 0.3 |
| Libya | Dahra | 41 | 0.4 |
| Libya | Sarir | 38.3 | 0.2 |
| Libya | Zueitina Condensate | 65 | 0.1 |
| Libya | El Sharara | 42.1 | 0.07 |
| Malaysia | Miri Light | 36.3 | 0.1 |
| Malaysia | Tembungo | 37.5 | NA |
| Malaysia | Labuan Blend | 33.2 | 0.1 |
| Malaysia | Tapis | 44.3 | 0.1 |
| Malaysia | Tembungo | 37.4 | 0 |
| Malaysia | Bintulu | 26.5 | 0.1 |
| Malaysia | Bekok | 49 | NA |
| Malaysia | Pulai | 42.6 | NA |
| Malaysia | Dulang | 39 | 0.037 |
| Mauritania | Chinguetti | 28.2 | 0.51 |
| Mexico | Isthmus | 32.8 | 1.5 |
| Mexico | Maya | 22 | 3.3 |
| Mexico | Olmecca | 39 | NA |
| Mexico | Altamira | 16 | NA |
| Mexico | Topped Isthmus | 26.1 | 1.72 |
| Netherlands | Alba | 19.59 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|--------------|----------------------|------|----------------|
| Neutral Zone | Eocene (Wafra) | 18.6 | 4.6 |
| Neutral Zone | Hout | 32.8 | 1.9 |
| Neutral Zone | Khafji | 28.5 | 2.9 |
| Neutral Zone | Burgan (Wafra) | 23.3 | 3.4 |
| Neutral Zone | Ratawi | 23.5 | 4.1 |
| Neutral Zone | Neutral Zone Mix | 23.1 | NA |
| Neutral Zone | Khafji Blend | 23.4 | 3.8 |
| Nigeria | Forcados Blend | 29.7 | 0.3 |
| Nigeria | Escravos | 36.2 | 0.1 |
| Nigeria | Brass River | 40.9 | 0.1 |
| Nigeria | Qua Iboe | 35.8 | 0.1 |
| Nigeria | Bonny Medium | 25.2 | 0.2 |
| Nigeria | Pennington | 36.6 | 0.1 |
| Nigeria | Bomu | 33 | 0.2 |
| Nigeria | Bonny Light | 36.7 | 0.1 |
| Nigeria | Brass Blend | 40.9 | 0.1 |
| Nigeria | Gilli Gilli | 47.3 | NA |
| Nigeria | Adanga | 35.1 | NA |
| Nigeria | Iyak-3 | 36 | NA |
| Nigeria | Antan | 35.2 | NA |
| Nigeria | OSO | 47 | 0.06 |
| Nigeria | Ukpokiti | 42.3 | 0.01 |
| Nigeria | Yoho | 39.6 | NA |
| Nigeria | Okwori | 36.9 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|------------------|----------------------|-------|----------------|
| Nigeria | Bonga | 28.1 | NA |
| Nigeria | ERHA | 31.7 | 0.21 |
| Nigeria | Amenam Blend | 39 | 0.09 |
| Nigeria | Akpo | 45.17 | 0.06 |
| Nigeria | EA | 38 | NA |
| Nigeria | Agbami | 47.2 | 0.044 |
| Norway | Ekofisk | 43.4 | 0.2 |
| Norway | Tor | 42 | 0.1 |
| Norway | Statfjord | 38.4 | 0.3 |
| Norway | Heidrun | 29 | NA |
| Norway | Norwegian Forties | 37.1 | NA |
| Norway | Gullfaks | 28.6 | 0.4 |
| Norway | Oseberg | 32.5 | 0.2 |
| Norway | Norne | 33.1 | 0.19 |
| Norway | Troll | 28.3 | 0.31 |
| Norway | Draugen | 39.6 | NA |
| Norway | Sleipner Condensate | 62 | 0.02 |
| Oman | Oman Export | 36.3 | 0.8 |
| Papua New Guinea | Kutubu | 44 | 0.04 |
| Peru | Loreto | 34 | 0.3 |
| Peru | Talara | 32.7 | 0.1 |
| Peru | High Cold Test | 37.5 | NA |
| Peru | Bayovar | 22.6 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|----------------|-----------------------------------|-------|----------------|
| Peru | Low Cold Test | 34.3 | NA |
| Peru | Carmen Central-5 | 20.7 | NA |
| Peru | Shiviyacu-23 | 20.8 | NA |
| Peru | Mayna | 25.7 | NA |
| Philippines | Nido | 26.5 | NA |
| Philippines | Philippines Miscellaneous | NA | NA |
| Qatar | Dukhan | 41.7 | 1.3 |
| Qatar | Qatar Marine | 35.3 | 1.6 |
| Qatar | Qatar Land | 41.4 | NA |
| Ras Al Khaimah | Rak Condensate | 54.1 | NA |
| Ras Al Khaimah | Ras Al Khaimah Miscellaneous | NA | NA |
| Russia | Urals | 31 | 2 |
| Russia | Russian Export Blend | 32.5 | 1.4 |
| Russia | M100 | 17.6 | 2.02 |
| Russia | M100 Heavy | 16.67 | 2.09 |
| Russia | Siberian Light | 37.8 | 0.4 |
| Russia | E4 (Gravenshon) | 19.84 | 1.95 |
| Russia | E4 Heavy | 18 | 2.35 |
| Russia | Purovsky Condensate | 64.1 | 0.01 |
| Russia | Sokol | 39.7 | 0.18 |
| Saudi Arabia | Light (Pers. Gulf) | 33.4 | 1.8 |
| Saudi Arabia | Heavy (Pers. Gulf) (Safaniya) | 27.9 | 2.8 |
| Saudi Arabia | Medium (Pers. Gulf) (Khursaniyah) | 30.8 | 2.4 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|--------------|----------------------------------|------|----------------|
| Saudi Arabia | Extra Light (Pers. Gulf) (Berri) | 37.8 | 1.1 |
| Saudi Arabia | Light (Yanbu) | 33.4 | 1.2 |
| Saudi Arabia | Heavy (Yanbu) | 27.9 | 2.8 |
| Saudi Arabia | Medium (Yanbu) | 30.8 | 2.4 |
| Saudi Arabia | Berri (Yanbu) | 37.8 | 1.1 |
| Saudi Arabia | Medium (Zuluf/Marjan) | 31.1 | 2.5 |
| Sharjah | Mubarek. Sharjah | 37 | 0.6 |
| Sharjah | Sharjah Condensate | 49.7 | 0.1 |
| Singapore | Rantau | 50.5 | 0.1 |
| Spain | Amposta Marina North | 37 | NA |
| Spain | Casablanca | 34 | NA |
| Spain | El Dorado | 26.6 | NA |
| Syria | Syrian Straight | 15 | NA |
| Syria | Thayyem | 35 | NA |
| Syria | Omar Blend | 38 | NA |
| Syria | Omar | 36.5 | 0.1 |
| Syria | Syrian Light | 36 | 0.6 |
| Syria | Souedie | 24.9 | 3.8 |
| Thailand | Erawan Condensate | 54.1 | NA |
| Thailand | Sirikit | 41 | NA |
| Thailand | Nang Nuan | 30 | NA |
| Thailand | Bualuang | 27 | NA |
| Thailand | Benchamas | 42.4 | 0.12 |
| Trinidad and | Galeota Mix | 32.8 | 0.3 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|---------------------|-----------------------|-------|----------------|
| Tobago | | | |
| Trinidad and Tobago | Trintopec | 24.8 | NA |
| Trinidad and Tobago | Land/Trinmar | 23.4 | 1.2 |
| Trinidad and Tobago | Calypso Miscellaneous | 30.84 | 0.59 |
| Tunisia | Zarzaitine | 41.9 | 0.1 |
| Tunisia | Ashtart | 29 | 1 |
| Tunisia | El Borma | 43.3 | 0.1 |
| Tunisia | Ezzaouia-2 | 41.5 | NA |
| Turkey | Turkish Miscellaneous | NA | NA |
| Ukraine | Ukraine Miscellaneous | NA | NA |
| United Kingdom | Auk | 37.2 | 0.5 |
| United Kingdom | Beatrice | 38.7 | 0.05 |
| United Kingdom | Brae | 33.6 | 0.7 |
| United Kingdom | Buchan | 33.7 | 0.8 |
| United Kingdom | Claymore | 30.5 | 1.6 |
| United Kingdom | S.V. (Brent) | 36.7 | 0.3 |
| United Kingdom | Tartan | 41.7 | 0.6 |
| United Kingdom | Tern | 35 | 0.7 |
| United Kingdom | Magnus | 39.3 | 0.3 |
| United Kingdom | Dunlin | 34.9 | 0.4 |
| United Kingdom | Fulmar | 40 | 0.3 |
| United Kingdom | Hutton | 30.5 | 0.7 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|----------------|----------------------------------|------|----------------|
| United Kingdom | N.W. Hutton | 36.2 | 0.3 |
| United Kingdom | Maureen | 35.5 | 0.6 |
| United Kingdom | Murchison | 38.8 | 0.3 |
| United Kingdom | Ninian Blend | 35.6 | 0.4 |
| United Kingdom | Montrose | 40.1 | 0.2 |
| United Kingdom | Beryl | 36.5 | 0.4 |
| United Kingdom | Piper | 35.6 | 0.9 |
| United Kingdom | Forties | 36.6 | 0.3 |
| United Kingdom | Brent Blend | 38 | 0.4 |
| United Kingdom | Flotta | 35.7 | 1.1 |
| United Kingdom | Thistle | 37 | 0.3 |
| United Kingdom | S.V. (Ninian) | 38 | 0.3 |
| United Kingdom | Argyle | 38.6 | 0.2 |
| United Kingdom | Heather | 33.8 | 0.7 |
| United Kingdom | South Birch | 38.6 | NA |
| United Kingdom | Wytch Farm | 41.5 | NA |
| United Kingdom | Cormorant. North | 34.9 | 0.7 |
| United Kingdom | Cormorant. South (Cormorant "A") | 35.7 | 0.6 |
| United Kingdom | Alba | 19.2 | NA |
| United Kingdom | Foinhaven | 26.3 | 0.38 |
| United Kingdom | Schiehallion | 25.8 | NA |
| United Kingdom | Captain | 19.1 | 0.7 |
| United Kingdom | Harding | 20.7 | 0.59 |
| US Alaska | ANS | NA | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------------|--------------------------|------|----------------|
| US Colorado | Niobrara | NA | NA |
| US New Mexico | Four Corners | NA | NA |
| US North Dakota | Bakken | NA | NA |
| US North Dakota | North Dakota Sweet | NA | NA |
| US Texas | WTI | NA | NA |
| US Texas | Eagle Ford | NA | NA |
| US Utah | Covenant | NA | NA |
| US Federal OCS | Beta | NA | NA |
| US Federal OCS | Carpinteria | NA | NA |
| US Federal OCS | Dos Cuadras | NA | NA |
| US Federal OCS | Hondo | NA | NA |
| US Federal OCS | Hueneme | NA | NA |
| US Federal OCS | Pescado | NA | NA |
| US Federal OCS | Point Arguello | NA | NA |
| US Federal OCS | Point Pedernales | NA | NA |
| US Federal OCS | Sacate | NA | NA |
| US Federal OCS | Santa Clara | NA | NA |
| US Federal OCS | Sockeye | NA | NA |
| Uzbekistan | Uzbekistan Miscellaneous | NA | NA |
| Venezuela | Jobo (Monagas) | 12.6 | 2 |
| Venezuela | Lama Lamar | 36.7 | 1 |
| Venezuela | Mariago | 27 | 1.5 |
| Venezuela | Ruiz | 32.4 | 1.3 |
| Venezuela | Tucipido | 36 | 0.3 |
| Venezuela | Venez Lot 17 | 36.3 | 0.9 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|----------------------|------|----------------|
| Venezuela | Mara 16/18 | 16.5 | 3.5 |
| Venezuela | Tia Juana Light | 32.1 | 1.1 |
| Venezuela | Tia Juana Med 26 | 24.8 | 1.6 |
| Venezuela | Officina | 35.1 | 0.7 |
| Venezuela | Bachaquero | 16.8 | 2.4 |
| Venezuela | Cento Lago | 36.9 | 1.1 |
| Venezuela | Lagunillas | 17.8 | 2.2 |
| Venezuela | La Rosa Medium | 25.3 | 1.7 |
| Venezuela | San Joaquin | 42 | 0.2 |
| Venezuela | Lagotreco | 29.5 | 1.3 |
| Venezuela | Lagocinco | 36 | 1.1 |
| Venezuela | Boscan | 10.1 | 5.5 |
| Venezuela | Leona | 24.1 | 1.5 |
| Venezuela | Barinas | 26.2 | 1.8 |
| Venezuela | Sylvestre | 28.4 | 1 |
| Venezuela | Mesa | 29.2 | 1.2 |
| Venezuela | Ceuta | 31.8 | 1.2 |
| Venezuela | Lago Medio | 31.5 | 1.2 |
| Venezuela | Tigre | 24.5 | NA |
| Venezuela | Anaco Wax | 41.5 | 0.2 |
| Venezuela | Santa Rosa | 49 | 0.1 |
| Venezuela | Bombai | 19.6 | 1.6 |
| Venezuela | Aguasay | 41.1 | 0.3 |
| Venezuela | Anaco | 43.4 | 0.1 |
| Venezuela | BCF-Bach/Lag17 | 16.8 | 2.4 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|--------------------------|------|----------------|
| Venezuela | BCF-Bach/Lag21 | 20.4 | 2.1 |
| Venezuela | BCF-21.9 | 21.9 | NA |
| Venezuela | BCF-24 | 23.5 | 1.9 |
| Venezuela | BCF-31 | 31 | 1.2 |
| Venezuela | BCF Blend | 34 | 1 |
| Venezuela | Bolival Coast | 23.5 | 1.8 |
| Venezuela | Ceuta/Bach 18 | 18.5 | 2.3 |
| Venezuela | Corridor Block | 26.9 | 1.6 |
| Venezuela | Cretaceous | 42 | 0.4 |
| Venezuela | Guanipa | 30 | 0.7 |
| Venezuela | Lago Mix Med. | 23.4 | 1.9 |
| Venezuela | Larosa/Lagun | 23.8 | 1.8 |
| Venezuela | Menemoto | 19.3 | 2.2 |
| Venezuela | Cabimas | 20.8 | 1.8 |
| Venezuela | BCF-23 | 23 | 1.9 |
| Venezuela | Oficina/Mesa | 32.2 | 0.9 |
| Venezuela | Pilon | 13.8 | 2 |
| Venezuela | Recon (Venez) | 34 | NA |
| Venezuela | 102 Tj (25) | 25 | 1.6 |
| Venezuela | Tjl Cretaceous | 39 | 0.6 |
| Venezuela | Tia Juana Pesado (Heavy) | 12.1 | 2.7 |
| Venezuela | Mesa-Recon | 28.4 | 1.3 |
| Venezuela | Oritupano | 19 | 2 |
| Venezuela | Hombre Pintado | 29.7 | 0.3 |
| Venezuela | Merey | 17.4 | 2.2 |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|--------------------------|------|----------------|
| Venezuela | Lago Light | 41.2 | 0.4 |
| Venezuela | Laguna | 11.2 | 0.3 |
| Venezuela | Bach/Cueta Mix | 24 | 1.2 |
| Venezuela | Bachaquero 13 | 13 | 2.7 |
| Venezuela | Ceuta – 28 | 28 | 1.6 |
| Venezuela | Temblador | 23.1 | 0.8 |
| Venezuela | Lagomar | 32 | 1.2 |
| Venezuela | Taparito | 17 | NA |
| Venezuela | BCF-Heavy | 16.7 | NA |
| Venezuela | BCF-Medium | 22 | NA |
| Venezuela | Caripito Blend | 17.8 | NA |
| Venezuela | Laguna/Ceuta Mix | 18.1 | NA |
| Venezuela | Morichal | 10.6 | NA |
| Venezuela | Pedenales | 20.1 | NA |
| Venezuela | Quiriquire | 16.3 | NA |
| Venezuela | Tucupita | 17 | NA |
| Venezuela | Furrial-2 (E. Venezuela) | 27 | NA |
| Venezuela | Curazao Blend | 18 | NA |
| Venezuela | Santa Barbara | 36.5 | NA |
| Venezuela | Cerro Negro | 15 | NA |
| Venezuela | BCF22 | 21.1 | 2.11 |
| Venezuela | Hamaca | 26 | 1.55 |
| Venezuela | Zuata 10 | 15 | NA |
| Venezuela | Zuata 20 | 25 | NA |
| Venezuela | Zuata 30 | 35 | NA |

| Country | Feedstock trade name | API | Sulphur (wt %) |
|-----------|--------------------------------|-------|----------------|
| Venezuela | Monogas | 15.9 | 3.3 |
| Venezuela | Corocoro | 24 | NA |
| Venezuela | Petrozuata | 19.5 | 2.69 |
| Venezuela | Morichal 16 | 16 | NA |
| Venezuela | Guafita | 28.6 | 0.73 |
| Vietnam | Bach Ho (White Tiger) | 38.6 | 0 |
| Vietnam | Dai Hung (Big Bear) | 36.9 | 0.1 |
| Vietnam | Rang Dong | 37.7 | 0.5 |
| Vietnam | Ruby | 35.6 | 0.08 |
| Vietnam | Su Tu Den (Black Lion) | 36.8 | 0.05 |
| Yemen | North Yemeni Blend | 40.5 | NA |
| Yemen | Alif | 40.4 | 0.1 |
| Yemen | Maarib Lt. | 49 | 0.2 |
| Yemen | Masila Blend | 30-31 | 0.6 |
| Yemen | Shabwa Blend | 34.6 | 0.6 |
| Any | Oil shale | NA | NA |
| Any | Shale oil | NA | NA |
| Any | Natural Gas: piped from source | NA | NA |
| Any | Natural Gas: from LNG | NA | NA |
| Any | Shale gas: piped from source | NA | NA |
| Any | Coal | NA | NA |

Annex II

Calculation of the baseline greenhouse gas intensity of fossil fuels

Methodology

- (a) The baseline greenhouse gas intensity is calculated based on Union average fossil fuel consumption of petrol, diesel, gasoil, LPG and CNG, where:

Baseline greenhouse gas intensity calculation

=

$$\frac{\sum_x (GHGi_x \times MJ_x)}{\sum_x MJ_x}$$

Where:

x represents the different fuels and energy carriers falling within the scope of the Directive and as defined in the table below

GHGi_x is the unit greenhouse gas intensity of the annual supply sold on the market of fuel x or energy carrier falling within the scope of this Directive expressed in gCO₂eq/MJ. The values for fossil fuels presented in Annex I Part 2 point (5) are used.

MJ_x is the total energy supplied and converted from reported volumes of fuel x expressed in Mega Joules.

- (b) Consumption data

The consumption data used for calculation of the value is as follows:

| Fuel | Energy Consumption (MJ) | Source |
|-----------------|--------------------------------|--|
| diesel | 7 894 969 x 10 ⁶ | 2010 Member States reporting to UNFCCC |
| non-road gasoil | 240 763 x 10 ⁶ | |
| petrol | 3 844 356 x 10 ⁶ | |
| LPG | 217 563 x 10 ⁶ | |
| CNG | 51 037 x 10 ⁶ | |

Greenhouse gas intensity

The greenhouse gas intensity for 2010 shall be: 94.1 gCO₂eq/MJ

Annex III

Member State reporting to the Commission

1. Member States report by 30 June each year the data listed in point 3. Data must be reported for all fuel and energy placed on the market in the Member State. Where multiple biofuels are blended with fossil fuels, the data for each biofuel must be provided.
2. The data listed in point 3 is reported separately for fuel or energy placed on the market by suppliers within a Member State (including joint suppliers operating in a single Member State) and supply placed on the markets of two or multiple Member States by joint suppliers (inter-Member State joint suppliers). Inter-Member State joint supplier data must be further disaggregated to the level of the Member State of each joining supplier.
3. For each fuel, Member States report the following data to the Commission aggregated according to point 2 and as defined in Annex I:
 - (a) Fuel or energy type;
 - (b) Volume or quantity of electric energy;
 - (c) Greenhouse gas intensity;
 - (d) Upstream emission reductions;
 - (e) Origin;
 - (f) Place of purchase.

Annex IV

Template for reporting information for consistency of the reported data

FUEL - SINGLE SUPPLIERS

| Entry | Joint Reporting (YES/NO) | Country | Supplier ¹ | Fuel type ⁷ | Fuel CN code ⁷ | Quantity ² | | Average GHG intensity | Upstream Emission Reduction ⁵ | Reduction on 2010 average |
|-------|---------------------------------------|----------------------|----------------------------|-----------------------------------|---------------------------|----------------------------|----------------------|-----------------------|--|---------------------------|
| | | | | | | by litres | by energy | | | |
| 1 | | | | | | | | | | |
| | | CN code | GHG intensity ⁴ | Feedstock | CN code | GHG intensity ⁴ | sustainable (YES/NO) | | | |
| | Component F.1 (Fossil Fuel Component) | | | Component B.1 (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | Component F.n (Fossil Fuel Component) | | | Component B.m (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Entry | Joint Reporting (YES/NO) | Country | Supplier ¹ | Fuel type ⁷ | Fuel CN code ⁷ | Quantity ² | | Average GHG intensity | Upstream Emission Reduction ⁵ | Reduction on 2010 average |
| k | | | | | | | | | | |
| | k | CN code ² | GHG intensity ⁴ | Feedstock | CN code ² | GHG intensity ⁴ | sustainable (YES/NO) | | | |
| | Component F.1 (Fossil Fuel Component) | | | Component B.1 (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | Component F.n (Fossil Fuel Component) | | | Component B.m (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

FUEL - JOINT SUPPLIERS

| Entry | Joint Reporting (YES/NO) | Country | Supplier ¹ | Fuel type ⁷ | Fuel CN code ⁷ | Quantity ² | | Average GHG intensity | Upstream Emission Reduction ⁵ | Reduction on 2010 average |
|-------|---------------------------------------|----------------------|----------------------------|-----------------------------------|---------------------------|----------------------------|----------------------|-----------------------|--|---------------------------|
| | | | | | | by litres | by energy | | | |
| I | YES | | | | | | | | | |
| | YES | | | | | | | | | |
| | YES | | | | | | | | | |
| | | Subtotal | | | | | | | | |
| | | CN code | GHG intensity ⁴ | Feedstock | CN code | GHG intensity ⁴ | sustainable (YES/NO) | | | |
| | Component F.1 (Fossil Fuel Component) | | | Component B.1 (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | Component F.n (Fossil Fuel Component) | | | Component B.m (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Entry | Joint Reporting (YES/NO) | Country | Supplier ¹ | Fuel type ⁷ | Fuel CN code ⁷ | Quantity ² | | Average GHG intensity | Upstream Emission Reduction ⁵ | Reduction on 2010 average |
| | | | | | | by litres | by energy | | | |
| X | YES | | | | | | | | | |
| | YES | | | | | | | | | |
| | YES | | | | | | | | | |
| | | Subtotal | | | | | | | | |
| | | CN code ² | GHG intensity ⁴ | Feedstock | CN code ² | GHG intensity ⁴ | sustainable (YES/NO) | | | |
| | Component F.1 (Fossil Fuel Component) | | | Component B.1 (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | Component F.n (Fossil Fuel Component) | | | Component B.m (Biofuel Component) | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

ELECTRICITY

| Joint Reporting (YES/NO) | Country | Supplier ¹ | Energy type ⁷ | Quantity ⁶ | GHG intensity | Reduction on 2010 average |
|--------------------------|---------|-----------------------|--------------------------|-----------------------|---------------|---------------------------|
| | | | | by energy | | |
| NO | | | | | | |

| Joint Supplier Information | | | | | | |
|----------------------------|----------|-----------------------|--------------------------|-----------------------|---------------|-------------------|
| | Country | Supplier ¹ | Energy type ⁷ | Quantity ⁶ | GHG intensity | Reduction on 2010 |
| | | | | by energy | | |
| YES | | | | | | |
| YES | | | | | | |
| | Subtotal | | | | | |

ORIGIN – SINGLE SUPPLIERS⁸

[illegible]

ORIGIN – JOINT SUPPLIERS⁸

[illegible]

PLACE OF PURCHASE⁹

| Entry | Component | Refinery/ Processing Facility Names | Country | Refinery/ Processing Facility Names | Country | Refinery/ Processing Facility Names | Country | Refinery/ Processing Facility Names | Country | Refinery/ Processing Facility Names | Country | Refinery/ Processing Facility Names | Country |
|-------|-----------|--|---------|--|---------|--|---------|--|---------|--|---------|--|---------|
| 1 | F.1 | | | | | | | | | | | | |
| 1 | F.n | | | | | | | | | | | | |
| 1 | B.1 | | | | | | | | | | | | |
| 1 | B.m | | | | | | | | | | | | |
| k | F.1 | | | | | | | | | | | | |
| k | F.n | | | | | | | | | | | | |
| k | B.1 | | | | | | | | | | | | |
| k | B.m | | | | | | | | | | | | |
| l | F.1 | | | | | | | | | | | | |
| l | F.n | | | | | | | | | | | | |
| l | B.1 | | | | | | | | | | | | |
| l | B.m | | | | | | | | | | | | |
| X | F.1 | | | | | | | | | | | | |
| X | F.n | | | | | | | | | | | | |
| X | B.1 | | | | | | | | | | | | |
| X | B.m | | | | | | | | | | | | |

TOTAL ENERGY REPORTED AND REDUCTION ACHIEVED PER MEMBER STATE

| Volume (by energy) ¹⁰ | GHG intensity | Reduction on 2010 |
|----------------------------------|---------------|-------------------|
| | | |

FORMAT NOTES

Template for supplier reporting is identical to the template for Member State reporting.

Shaded cells do not have to be filled in.

- Supplier identification is defined in Annex I Part 1 point 4(a);
- Quantity of fuel is defined in Annex I Part 1 point 4(c);
- API density is defined pursuant to testing method ASTM D287;
- Greenhouse gas intensity is defined in Annex I Part 1 point 4(e);
- Upstream emission reduction is defined in Annex I Part 1 point 4(d); reporting specifications are defined in Annex I Part 2 point (1)
- Quantity of electricity is defined in Annex I Part 2 point (6);
- Fuel types and corresponding CN codes are defined in Annex I Part 1 point 4(b);
- Origin is defined in Annex I Part 2 point (2) and Annex I Part 2 point (4);
- Place of Purchase is defined in Annex I Part 2 point (3) and Annex I Part 2 point (4);
- Total volume may exceed the total volume of actual fuel and electric energy consumed as this sum could include volumes from suppliers reporting jointly with suppliers from other Member States.