

Category K 'Other Petroleum Gases' - Chemical Category Justification

(NB : all compositions are v/v)

Category definition and its members	
1.1.	Category Definition
1.1.a.	Category Hypothesis
<p>The 'Other Petroleum gases' category covers hydrocarbon streams containing petroleum gases (alkanes/alkenes) predominantly in the C1-C5 range (with some carbon numbers present at lower levels up to C10) and includes some LPGs. The majority of the members of this category contain <0.1% 1,3-butadiene. Members of this category are products of refining for example distillation of crude oil, catalytic cracking and catalytic reforming, sometimes in association with steam-crackers, or they are produced in association with natural gas processing. Companies importing streams will need to confirm that such streams meet the chemical description and are in domain.</p> <p>By definition, from the category, these streams have overlapping hydrocarbon compositions, within a defined range, and hence, will have similar properties. It is therefore reasonable to assume that the components of petroleum gases will behave in a reasonably predictable manner, and with respect to phys-chem and environmental fate and effect properties read-across is valid.</p> <p>With regard to mammalian endpoints, category members may be very volatile liquefied gases or gases with inhalation representing the primary route of exposure. Longer term health effects are not anticipated from the various constituents. However, in some instances 1,3-butadiene or benzene may be present at > 0.1%, in which case the stream will be considered to present a possible carcinogenic hazard.</p>	
1.1.b.	Applicability domain (AD) of the category
<p>The category applies to streams with the following Hydrocarbon classes: predominantly alkanes/alkenes in the C1 to C5 range.</p> <p><i>Boiling Point – the streams in this category will boil predominantly in the range of – 259 to 0°C</i></p> <p>Specific components (The range entered below is currently based on received analytical data, it is not intended to be prescriptive. See section 1.3).</p> <p><i>Streams may contain : Hydrogen, carbon monoxide, methane, ethane, propane, propene and/or (iso)butane, nitrogen, hydrogen sulphide</i></p> <p><i>Propylene: up to 100%</i></p> <p><i>1,3 Butadiene: some streams >0.1% and up to 5%</i></p> <p><i>Benzene: some streams >0.1% but <0.3%</i></p> <p><i>Carbon monoxide: up to 1%</i></p> <p>Hydrocarbon classes :</p> <p>(Iso)Paraffins – up to 100%: C# C1-C6</p> <p>Olefins – up to 99%: C# C2-C6</p> <p>Naphthenics – up to 10%: C# C4-C6</p> <p>Aromatics - up to 3%: C# C6-10</p>	

1.2.	Category Members
Annex 1 contains the CAS number and name of all of the category members that will be included as part of this category.	
1.3.	Purity / Impurities
<p>The substances in this category are UVCBs and as such are considered to be 100% pure. The term impurity is not relevant for UVCBs, however, substances will be described using the following:</p> <ul style="list-style-type: none"> ○ <u>Known</u> constituents present at 10% or greater (if any), identified by IUPAC name and EC number/CAS number, indicating typical concentrations and/or concentration ranges; ○ Constituents relevant for hazard classification (if any); ○ Constituents relevant for PBT assessment (if any) 	
2.	Category justification
<p>The 'Other Petroleum gases' category covers hydrocarbon streams containing petroleum gases (alkanes/alkenes) predominantly in the C1-C5 range (with some carbon numbers present at lower levels up to C10) and include some LPGs. The majority of the members of this category contain <0.1% 1,3-butadiene. Members of this category are products of hydrocarbon refining operations, sometimes in association with steam-crackers or are produced in association with natural gas processing such as catalytic cracking and catalytic reforming or distillation of crude oil. The physico-chemical properties associated with these types of UVCBs indicated that they comprise a category based on the range of boiling points (from -260°C to 0°C) and will have similar behaviour in the environment. The log Kow ranges from 1.09 to 2.8 and the streams in this category are considered to be readily biodegradable. The mammalian toxicity information and environmental assessment also indicated that the streams in this category exert similar effects.</p>	
3.	Data matrix
<p>'Other Petroleum gases' is a UVCB category and therefore identification of trends between category members is not appropriate and therefore, according to the ECHA Guidance on information requirements and chemical assessment Chapter R.6, it is not feasible to establish a full data matrix for this category. Consequently, a relevant data set has been developed that is applicable to all members of this category</p>	
4.	Conclusions per endpoint for C&L, PBT/vPvB and dose descriptor
<p><u>CLASSIFICATION AND LABELLING</u></p> <p>Physico-chemical Hazard Assessment</p> <ul style="list-style-type: none"> ● Boiling point - The measured boiling point of streams in this category ranged from 161.48°C to -0.5°C (agreed category boiling point range of -260°C to 0°C). ● Partition coefficient - The streams in this category have partition coefficients ranges from log Kow 1.09 to 2.8. ● Flash point - The flash point of streams in this category is -104 to -60.0°C. Some streams will have the following classification. <p><u>Flashpoint of <23 °C and initial boiling point ≤ 35 °C.</u></p> <p>Flam. Gas 1 (Hazard statement: H220: Extremely Flammable Gas.)</p> <p>Human Health Hazard Assessment</p> <ul style="list-style-type: none"> ● Toxicokinetics – The marker substances, in their pure form, have well-defined toxicokinetic parameters that have been taken into account during the derivation of their respective DNEL's. The overall DNEL of this category is driven by the DN(M)EL for benzene and 1,3 butadiene. 	

- **Acute toxicity** – The main constituent gases have low acute toxicity properties following exposure via inhalation (oral and dermal not applicable as a gas at room temperature). Carbon monoxide may be toxic or harmful following acute exposure, depending on the level in the steam due to its ability to react with haemoglobin to form carboxyhaemoglobin (COHb). Consequently streams that contain carbon monoxide up to a level of 1% should be classified. If present in streams, hydrogen sulphide is acutely toxic, adverse health effects in humans exposed by inhalation for short periods include respiratory and neurological effects. Consequently category streams that contain up to a level of 1% hydrogen sulphide should be classified.
- **Irritation** – There is no evidence that members of this category are irritating to skin or eyes. Any propene-induced rhinitis has been reported as mild in nature, occurring in rodents only after lifetime exposure to high concentrations of propene gas. These findings do not warrant classification for skin, eye, or respiratory tract irritancy.
- **Sensitisation** – Not skin or respiratory sensitisers.
- **Repeat dose toxicity** – The main constituent gases have low subchronic toxicity properties following exposure via inhalation (oral and dermal not applicable as a gas at room temperature). Carbon monoxide may be toxic or harmful following repeated inhalation exposures, depending on the level in the steam. Carbon monoxide is toxic to humans due to its ability to react with haemoglobin to form carboxyhaemoglobin (COHb). Consequently streams that contain carbon monoxide up to a level of 1% should be classified.
- **Genetic toxicity** – Other Petroleum Gases and their main components are not genotoxic. However, some streams of the category may contain 1,3 butadiene (>0.1% up to 5%), or benzene (>0.1% but <0.3%), these materials are mutagenic so classification will be driven by their content.
- **Carcinogenicity** – There are no carcinogenicity studies available for any of the C1-C4 alkanes in Other Petroleum gases. However, a consideration of their simple chemical structures, which have no reactive groups and carry no alerts for likely genotoxic carcinogenic activity from established Structure Activity Relationship analysis, together with the conclusion that C1-C4 alkanes are not genotoxic, provide a strong case for concluding that none will show any significant carcinogenic activity. This is supported by the data available for main component propene, which is also considered to be non-genotoxic both in vitro and in vivo, and has carcinogenicity data in animals that provides evidence of non-carcinogenicity. However, some streams of the category may contain 1,3 butadiene (>0.1% up to 5%), or benzene (>0.1% but <0.3%), these materials are considered carcinogenic so classification will be driven by their content.
- **Toxic to reproduction** – There is no evidence of sufficient concern for reproductive or developmental toxicity. However some streams of the category may contain carbon monoxide so for mammalian endpoints, the classification will be driven by the presence of this gas. Category streams which contain $\geq 0.2\%$ carbon monoxide should be classified.

Environmental Hazard Assessment

- **Biodegradation** - Based on QSAR estimates for representative substances, members of this category are considered to be readily biodegradable. Due to this, data is not required on the biodegradation of the streams in water, sediment or soil.
- **Bioaccumulation** - Experimental data is not available for any category members on bioaccumulation potential. In the absence of measured data the BCF of these streams has been

calculated based on the measured log Kow.

- **Ecotoxicity** – Measured ecotoxicity data are not available for the aquatic toxicity endpoints and PNECs have not been derived for freshwater, saltwater, sediment, and soil. In accordance with column 2 of REACH Annex VII and VIII, the acute toxicity tests do not need to be conducted if there are mitigating factors indicating that aquatic toxicity is unlikely to occur. This Category consists of substances which are gases at standard temperature and pressure and is expected to partition primarily to air; therefore aquatic toxicity tests may not be relevant. In addition, it is technically difficult to maintain aqueous concentrations of gases for toxicity testing.

Based on the available experimental data streams in this category would not be classified for environmental effects.

CONCLUSION FOR PBT

The screening assessment of the available data indicates that the properties of the members of this category do not meet the specific criteria detailed in Annex XIII or do not allow a direct comparison with all the criteria in Annex XIII but nevertheless indicate that the substance would not have these properties and therefore are not considered PBT/vPvB.

CONCLUSION FOR DOSE DESCRIPTOR

Environment: Members of this category are not classified for the environment, are not PBT or vPvB. Therefore derivation of PNECs is not required.

Human Health:

For the purposes of risk characterisation, it has been assumed that hazards associated with hydrogen and C1-C4 alkanes will be controlled by qualitative risk management measures designed to address flammability. Indicative inhalation DN(M)ELs have been developed for carbon monoxide and hydrogen sulphide based on a maximum concentration of 1%.

These hydrocarbon streams are used as intermediates and monomers, hence risk characterization will focus on workers only. (The presence of >0.1% butadiene and >0.1% benzene precludes their supply to the general population.)

Risk characterization will be based on the premise that a marker substance with a low DN(M)EL present at high concentration in a stream will possess a greater relative hazard potential than a marker substance with a higher DN(M)EL present at the same or lower concentration. It will also focus on the potential of the markers to cause serious long-term health effects rather than on short-term or irritation-related changes.

In the case of this stream, the hazardous marker substances present are ranked as follows:

Marker substance	Indicative concentration (%)	Inhalation		Dermal	
		DN(M)EL mg/m ³	Relative hazard potential (max % ÷ DN(M)EL)	DN(M)EL mg/kg bwt/d	Relative hazard potential (max % ÷ DN(M)EL)
1,3-Butadiene	>0.1% - 5%	2.21	2.26	na	na
Benzene	>0.1% - <0.3%	3.25	0.09	23.4	<0.01
Carbon monoxide	<1%	10	0.10	na	na
Hydrogen sulphide	<1%	7	0.14	na	na
na = substance is a gas, hence dermal DN(M)EL not quantifiable					

For workers: Based on this analysis, demonstration of “safe use” for inhalation hazards associated with the presence of <5% 1,3-butadiene will also provide adequate protection against inhalation hazards arising from benzene, carbon monoxide and hydrogen sulphide. Benzene is the only marker substance that contributes dermal hazard to the stream (remaining markers are gases).

The long-term inhalation DN(M)EL for 1,3 butadiene and the long-term dermal DN(M)EL for benzene will therefore be used for worker risk characterization.

Annex 1: Complete List of CAS numbers included in Category K 'Other Petroleum Gases'

Cas No.	Petroleum Gases - EINECS name	Description
68131-75-9	Gases (petroleum), C3-4	
68307-98-2	Tail gas (petroleum), catalytic cracked distillate and catalytic cracked naphtha fractionation absorber.	The complex combination of hydrocarbons from the distillation of the products from catalytic cracked distillates and catalytic cracked naphtha. It consists predominantly of hydrocarbons having carbon numbers in the range of C1 through C4.
68307-99-3	Tail gas (petroleum), catalytic polymn. naphtha fractionation stabilizer.	A complex combination of hydrocarbons from the fractionation stabilization products from polymerization of naphtha. It consists predominantly of hydrocarbons having carbon numbers in the range of C1 through C4.
68308-00-9	Tail gas (petroleum), catalytic reformed naphtha fractionation stabilizer, hydrogen sulfide-free.	A complex combination of hydrocarbons obtained from fractionation stabilization of catalytic reformed naphtha and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68308-01-0	Tail gas (petroleum), cracked distillate hydrotreater stripper.	A complex combination of hydrocarbons obtained by treating thermal cracked distillates with hydrogen in the presence of a catalyst. It consists predominantly of saturated hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68308-03-2	Tail gas (petroleum), gas oil catalytic cracking absorber.	A complex combination of hydrocarbons obtained from the distillation of products from the catalytic cracking of gas oil. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68308-04-3	Tail gas (petroleum), gas recovery plant.	A complex combination of hydrocarbons from the distillation of products from miscellaneous hydrocarbon streams. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68308-05-4	Tail gas (petroleum), gas recovery plant deethanizer.	A complex combination of hydrocarbons from the distillation of products from miscellaneous hydrocarbon streams. It consists of hydrocarbon having carbon numbers predominantly in the range of C1 through C4.

Cas No.	Petroleum Gases - EINECS name	Description
68308-06-5	Tail gas (petroleum), hydrodesulfurized distillate and hydrodesulfurized naphtha fractionator, acid-free.	A complex combination of hydrocarbons obtained from fractionation of hydrodesulfurized naphtha and distillate hydrocarbon streams and treated to remove acidic impurities. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68308-07-6	Tail gas (petroleum), hydrodesulfurized vacuum gas oil stripper, hydrogen sulfide-free.	A complex combination of hydrocarbons obtained from stripping stabilization of catalytic hydrodesulfurized vacuum gas oil and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68308-08-7	Tail gas (petroleum), isomerized naphtha fractionation stabilizer.	A complex combination of hydrocarbons obtained from the fractionation stabilization products from isomerized naphtha. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68308-09-8	Tail gas (petroleum), light straight-run naphtha stabilizer, hydrogen sulfide-free.	A complex combination of hydrocarbons obtained from fractionation stabilization of light straight run naphtha and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68308-10-1	Tail gas (petroleum), straight-run distillate hydrodesulfurizer, hydrogen sulfide-free.	A complex combination of hydrocarbons obtained from catalytic hydrodesulfurization of straight run distillates and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68308-11-2	Tail gas (petroleum), propane-propylene alkylation feed prep deethanizer.	A complex combination of hydrocarbons obtained from the distillation of the reaction products of propane with propylene. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68308-12-3	Tail gas (petroleum), vacuum gas oil hydrodesulfurizer, hydrogen sulfide-free.	A complex combination of hydrocarbons obtained from catalytic hydrodesulfurization of vacuum gas oil and from which hydrogen sulfide has been removed by amine treatment. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.

Cas No.	Petroleum Gases - EINECS name	Description
68308-27-0	Fuel gases, refinery	
68409-99-4	Gases (petroleum), catalytic cracked overheads.	A complex combination of hydrocarbons produced by the distillation of products from the catalytic cracking process. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C5 and boiling in the range of approximately -48 °C to 32 °C (-54 °F to 90 °F).
68475-57-0	Alkanes, C1-2	
68475-58-1	Alkanes, C2-3	
68475-59-2	Alkanes, C3-4	
68475-60-5	Alkanes, C4-5	
68476-26-6	Fuel gases	A combination of light gases. It consists predominantly of hydrogen and/or low molecular weight hydrocarbons.
68476-29-9	Fuel gases, crude oil distillates.	A complex combination of light gases produced by distillation of crude oil and by catalytic reforming of naphtha. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C4 and boiling in the range of approximately -217 °C to -12 °C (-423 °F to 10 °F).
68476-40-4	Hydrocarbons, C3-4	
68476-42-6	Hydrocarbons, C4-5	
68476-49-3	Hydrocarbons, C2-4, C3-rich	
68476-85-7	Petroleum gases, liquefied.	A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C7 and boiling in the range of approximately -40 °C to 80 °C (-40 °F to 176 °F).
68476-86-8	Petroleum gases, liquefied, sweetened	A complex combination of hydrocarbons obtained by subjecting liquefied petroleum gas mix to a sweetening process to convert mercaptans or to remove acidic impurities. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C7 and boiling in the range of approximately -40°C to 80°C (-40°F to 176°F).

Cas No.	Petroleum Gases - EINECS name	Description
68477-33-8	Gases (petroleum), C3-4, isobutane-rich.	A complex combination of hydrocarbons from the distillation of saturated and unsaturated hydrocarbons usually ranging in carbon numbers from C3 through C6, predominantly butane and isobutane. It consists of saturated and unsaturated hydrocarbons having carbon numbers in the range of C3 through C4, predominantly isobutane.
68477-35-0	Distillates (petroleum), C3-6, piperylene-rich.	A complex combination of hydrocarbons from the distillation of saturated and unsaturated aliphatic hydrocarbons usually ranging in the carbon numbers C3 through C6. It consists of saturated and unsaturated hydrocarbons having carbon numbers in the range of C3 through C6, predominantly piperlenes.
68477-69-0	Gases (petroleum), butane splitter overheads	
68477-70-3	Gases (petroleum), C2-3.	A complex combination of hydrocarbons produced by the distillation of products from a catalytic fractionation process. It contains predominantly ethane, ethylene, propane, and propylene.
68477-71-4	Gases (petroleum), catalytic-cracked gas oil depropanizer bottoms, C4-rich acid-free.	A complex combination of hydrocarbons obtained from fractionation of catalytic cracked gas oil hydrocarbon stream and treated to remove hydrogen sulfide and other acidic components. It consists of hydrocarbons having carbon numbers in the range of C3 through C5, predominantly C4.
68477-72-5	Gases (petroleum), catalytic-cracked naphtha debutanizer bottoms, C3-5-rich.	A complex combination of hydrocarbons obtained from the stabilization of catalytic cracked naphtha. It consists of aliphatic hydrocarbons having carbon numbers predominantly in the range of C3 through C5.
68477-73-6	Gases (petroleum), catalytic cracked naphtha depropanizer overhead, C3-rich acid-free.	A complex combination of hydrocarbons obtained from fractionation of catalytic cracked hydrocarbons and treated to remove acidic impurities. It consists of hydrocarbons having carbon numbers in the range of C2 through C4, predominantly C3.
68477-74-7	Gases (petroleum), catalytic cracker.	A complex combination of hydrocarbons produced by the distillation of the products from a catalytic cracking process. It consists predominantly of aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C6.

Cas No.	Petroleum Gases - EINECS name	Description
68477-75-8	Gases (petroleum), catalytic cracker, C1-5-rich.	A complex combination of hydrocarbons produced by the distillation of products from a catalytic cracking process. It consists of aliphatic hydrocarbons having carbon numbers in the range of C1 through C6, predominantly C1 through C5.
68477-76-9	Gases (petroleum), catalytic polymd. naphtha stabilizer overhead, C2-4-rich.	A complex combination of hydrocarbons obtained from the fractionation stabilization of catalytic polymerized naphtha. It consists of aliphatic hydrocarbons having carbon numbers in the range of C2 through C6, predominantly C2 through C4.
68477-79-2	Gases (petroleum), catalytic reformer, C1-4-rich.	A complex combination of hydrocarbons produced by distillation of products from a catalytic reforming process. It consists of hydrocarbons having carbon numbers in the range of C1 through C6, predominantly C1 through C4.
68477-83-8	Gases (petroleum), C3-5 olefinic-paraffinic alkylation feed.	A complex combination of olefinic and paraffinic hydrocarbons having carbon numbers in the range of C3 through C5 which are used as alkylation feed. Ambient temperatures normally exceed the critical temperature of these combinations.
68477-85-0	Gases (petroleum), C4-rich.	A complex combination of hydrocarbons produced by distillation of products from a catalytic fractionation process. It consists of aliphatic hydrocarbons having carbon numbers in the range of C3 through C5, predominantly C4.
68477-86-1	Gases (petroleum), deethanizer overheads.	A complex combination of hydrocarbons produced from distillation of the gas and gasoline fractions from the catalytic cracking process. It contains predominantly ethane and ethylene.
68477-87-2	Gases (petroleum), deisobutanizer tower overheads.	It consists of aliphatic hydrocarbons having carbon numbers predominantly in the range of C3 through C4.
68477-90-7	A complex combination of hydrocarbons produced by the atmospheric distillation of a butane-butylene stream.	Gases (petroleum), depropanizer dry, propene-rich A complex combination of hydrocarbons produced by the distillation of products from the gas and gasoline fractions of a catalytic cracking process. It consists predominantly of propylene with some ethane and propane.

Cas No.	Petroleum Gases - EINECS name	Description
68477-91-8	Gases (petroleum), depropanizer overheads.	A complex combination of hydrocarbons produced by distillation of products from the gas and gasoline fractions of a catalytic cracking process. It consists of aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C4.
68477-94-1	Gases (petroleum), gas recovery plant depropanizer overheads.	A complex combination of hydrocarbons obtained by fractionation of miscellaneous hydrocarbon streams. It consists predominantly of hydrocarbons having carbon numbers in the range of C1 through C4, predominantly propane.
68477-95-2	Gases (petroleum), Girbatol unit feed.	A complex combination of hydrocarbons that is used as the feed into the Girbatol unit to remove hydrogen sulfide. It consists of aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C4.
68477-99-6	Gases (petroleum), isomerized naphtha fractionator, C4-rich, hydrogen sulfide-free.	
68478-21-7	Tail gas (petroleum), catalytic cracked clarified oil and thermal cracked vacuum residue fractionation reflux drum.	A complex combination of hydrocarbons obtained from fractionation of catalytic cracked clarified oil and thermal cracked vacuum residue. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68478-22-8	Tail gas (petroleum), catalytic cracked naphtha stabilization absorber.	A complex combination of hydrocarbons obtained from the stabilization of catalytic cracked naphtha. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68478-24-0	Tail gas (petroleum), catalytic cracker, catalytic reformer and hydrodesulfurizer combined fractionator.	A complex combination of hydrocarbons obtained from the fractionation of products from catalytic cracking, catalytic reforming and hydrodesulfurizing processes treated to remove acidic impurities. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68478-26-2	Tail gas (petroleum), catalytic reformed naphtha fractionation stabilizer.	A complex combination of hydrocarbons obtained from the fractionation stabilization of catalytic reformed naphtha. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.

Cas No.	Petroleum Gases - EINECS name	Description
68478-32-0	Tail gas (petroleum), saturate gas plant mixed stream, C4-rich.	A complex combination of hydrocarbons obtained from the fractionation stabilization of straight-run naphtha, distillation tail gas and catalytic reformed naphtha stabilizer tail gas. It consists of hydrocarbons having carbon numbers in the range of C3 through C6, predominantly butane and isobutane.
68478-33-1	Tail gas (petroleum), saturate gas recovery plant, C1-2-rich.	A complex combination of hydrocarbons obtained from fractionation of distillate tail gas, straight-run naphtha, catalytic reformed naphtha stabilizer tail gas. It consists predominantly of hydrocarbons having carbon numbers in the range of C1 through C5, predominantly methane and ethane.
68478-34-2	Tail gas (petroleum), vacuum residues thermal cracker.	A complex combination of hydrocarbons obtained from the thermal cracking of vacuum residues. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68512-91-4	Hydrocarbons, C3-4-rich, petroleum distillate.	A complex combination of hydrocarbons produced by distillation and condensation of crude oil. It consists of hydrocarbons having carbon numbers in the range of C3 through C5, predominantly C3 through C4.
68513-15-5	Gases (petroleum), full-range straight-run naphtha dehexanizer off.	A complex combination of hydrocarbons obtained by the fractionation of the full-range straight-run naphtha. It consists of hydrocarbons having carbon numbers predominantly in the range of C2 through C6.
68513-16-6	Gases (petroleum), hydrocracking depropanizer off, hydrocarbon-rich.	A complex combination of hydrocarbon produced by the distillation of products from a hydrocracking process. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4. It may also contain small amounts of hydrogen and hydrogen sulfide.
68513-17-7	Gases (petroleum), light straight-run naphtha stabilizer off.	A complex combination of hydrocarbons obtained by the stabilization of light straight-run naphtha. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C6.

Cas No.	Petroleum Gases - EINECS name	Description
68513-66-6	Residues (petroleum), alkylation splitter, C4-rich.	A complex residuum from the distillation of streams from various refinery operations. It consists of hydrocarbons having carbon numbers in the range of C4 through C5, predominantly butane and boiling in the range of approximately -11.7 °C to 27.8 °C (11 °F to 82 °F).
68514-31-8	Hydrocarbons, C1-4 A complex combination of hydrocarbons produced by thermal cracking and absorber operations and by distillation of crude oil.	It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C4 and boiling in the range of approximately minus 164 °C to minus 0.5 °C (-263 °F to 31 °F).
68514-36-3	Hydrocarbons, C1-4, sweetened.	A complex combination of hydrocarbons obtained by subjecting hydrocarbon gases to a sweetening process to convert mercaptans or to remove acidic impurities. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C4 and boiling in the range of approximately -164 °C to -0.5 °C (-263 °F to 31 °F).
68527-16-2	Hydrocarbons, C1-3.	A complex combination of hydrocarbons having carbon numbers predominantly in the range of C1 through C3 and boiling in the range of approximately minus 164 °C to minus 42 °C (-263 °F to -44 °F).
68527-19-5	Hydrocarbons, C1-4, debutanizer fraction.	
68602-83-5	Gases (petroleum), C1-5, wet.	A complex combination of hydrocarbons produced by the distillation of crude oil and/or the cracking of tower gas oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68606-25-7	Hydrocarbons, C2-4.	
68606-26-8	Hydrocarbons, C-3	
68606-27-9	Gases (petroleum), alkylation feed.	A complex combination of hydrocarbons produced by the catalytic cracking of gas oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C4.
68606-34-8	Gases (petroleum), depropanizer bottoms fractionation off.	A complex combination of hydrocarbons obtained from the fractionation of depropanizer bottoms. It consists predominantly of butane, isobutane and butadiene.

Cas No.	Petroleum Gases - EINECS name	Description
68783-07-3	Gases (petroleum), refinery blend.	A complex combination obtained from various refinery processes. It consists of hydrogen, hydrogen sulfide and hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68783-64-2	Gases (petroleum), catalytic cracking.	A complex combination of hydrocarbons produced by the distillation of the products from a catalytic cracking process. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C3 through C5.
68783-65-3	Gases (petroleum), C2-4, sweetened.	A complex combination of hydrocarbons obtained by subjecting a petroleum distillate to a sweetening process to convert mercaptans or to remove acidic impurities. It consists predominantly of saturated and unsaturated hydrocarbons having carbon numbers predominantly in the range of C2 through C4 and boiling in the range of approximately -51 °C to -34 °C (-60 °F to -30 °F).
68918-99-0	Gases (petroleum), crude oil fractionation off	
68919-00-6	Gases (petroleum), dehexanizer off.	A complex combination of hydrocarbons obtained by the fractionation of combined naphtha streams. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68919-05-1	Gases (petroleum), light straight run gasoline fractionation stabilizer off.	A complex combination of hydrocarbons obtained by the fractionation of light straight-run gasoline. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68919-06-2	A complex combination of hydrocarbons produced by a naphtha unifier desulfurization process and stripped from the naphtha product.	It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68919-09-5	Gases (petroleum), straight-run naphtha catalytic reforming off.	A complex combination of hydrocarbons obtained by the catalytic reforming of straight-run naphtha and fractionation of the total effluent. It consists of methane, ethane, and propane.

Cas No.	Petroleum Gases - EINECS name	Description
68919-10-8	Gases (petroleum), straight-run stabilizer off.	A complex combination of hydrocarbons obtained from the fractionation of the liquid from the first tower used in the distillation of crude oil. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68919-20-0	Gases (petroleum), fluidized catalytic cracker splitter overheads.	A complex combination of hydrocarbons produced by the fractionation of the charge to the C3-C4 splitter. It consists predominantly of C3 hydrocarbons.
68952-76-1	Gases (petroleum), catalytic cracked naphtha debutanizer.	A complex combination of hydrocarbons obtained from fractionation of catalytic cracked naphtha. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68952-77-2	Tail gas (petroleum), catalytic cracked distillate and naphtha stabilizer.	A complex combination of hydrocarbons obtained by the fractionation of catalytic cracked naphtha and distillate. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68952-81-8	Tail gas (petroleum), thermal-cracked distillate, gas oil and naphtha absorber.	A complex combination of hydrocarbons obtained from the separation of thermal-cracked distillates, naphtha and gas oil. It consists predominantly of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68952-82-9	Tail gas (petroleum), thermal cracked hydrocarbon fractionation stabilizer, petroleum coking.	A complex combination of hydrocarbons obtained from the fractionation stabilization of thermal cracked hydrocarbons from petroleum coking process. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68955-28-2	Gases (petroleum), light steam-cracked, butadiene conc.	A complex combination of hydrocarbons produced by the distillation of products from a thermal cracking process. It consists of hydrocarbons having a carbon number predominantly of C4.
68955-34-0	Gases (petroleum), straight-run naphtha catalytic reformer stabilizer overhead.	A complex combination of hydrocarbons obtained by the catalytic reforming of straight-run naphtha and the fractionation of the total effluent. It consists of saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C4.

Cas No.	Petroleum Gases - EINECS name	Description
68477-65-6	Gases (petroleum), amine system feed.	The feed gas to the amine system for removal of hydrogen sulfide. It consists of hydrogen. Carbon monoxide, carbon dioxide, hydrogen sulfide and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5 may also be present.
68477-66-7	Gases (petroleum), benzene unit hydrodesulfurizer off.	Off gases produced by the benzene unit. It consists primarily of hydrogen. Carbon monoxide and hydrocarbons having carbon numbers predominantly in the range of C1 through C6, including benzene, may also be present.
68477-67-8	Gases (petroleum), benzene unit recycle, hydrogen-rich.	A complex combination of hydrocarbons obtained by recycling the gases of the benzene unit. It consists primarily of hydrogen with various small amounts of carbon monoxide and hydrocarbons having carbon numbers in the range of C1 through C6.
68477-68-9	Gases (petroleum), blend oil, hydrogen-nitrogen-rich.	A complex combination of hydrocarbons obtained by distillation of a blend oil. It consists primarily of hydrogen and nitrogen with various small amounts of carbon monoxide, carbon dioxide, and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68477-77-0	Gases (petroleum), catalytic reformed naphtha stripper overheads.	A complex combination of hydrocarbons obtained from the stabilization of catalytic reformed naphtha. It consists of hydrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68477-80-5	Gases (petroleum), C6-8 catalytic reformer recycle.	A complex combination of hydrocarbons produced by distillation of products from catalytic reforming of C6-C8 feed and recycled to conserve hydrogen. It consists primarily of hydrogen. It may also contain various small amounts of carbon monoxide, carbon dioxide, nitrogen, and hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68477-81-6	Gases (petroleum), C6-8 catalytic reformer.	A complex combination of hydrocarbons produced by distillation of products from catalytic reforming of C6-C8 feed. It consists of hydrocarbons having carbon numbers in the range of C1 through C5 and hydrogen.
68477-82-7	Gases (petroleum), C6-8 catalytic reformer recycle, hydrogen-rich	

Cas No.	Petroleum Gases - EINECS name	Description
68477-84-9	Gases (petroleum), C2-return stream.	A complex combination of hydrocarbons obtained by the extraction of hydrogen from a gas stream which consists primarily of hydrogen with small amounts of nitrogen, carbon monoxide, methane, ethane, and ethylene. It contains predominantly hydrocarbons such as methane, ethane, and ethylene with small amounts of hydrogen, nitrogen and carbon monoxide.
68477-92-9	Gases (petroleum), dry sour, gas-concn.-unit-off.	The complex combination of dry gases from a gas concentration unit. It consists of hydrogen, hydrogen sulfide and hydrocarbons having carbon numbers predominantly in the range of C1 through C3.
68477-93-0	Gases (petroleum), gas concn. reabsorber distn.	A complex combination of hydrocarbons produced by distillation of products from combined gas streams in a gas concentration reabsorber. It consists predominantly of hydrogen, carbon monoxide, carbon dioxide, nitrogen, hydrogen sulfide and hydrocarbons having carbon numbers in the range of C1 through C3.
68477-96-3	Gases (petroleum), hydrogen absorber off.	A complex combination obtained by absorbing hydrogen from a hydrogen rich stream. It consists of hydrogen, carbon monoxide, nitrogen, and methane with small amounts of C2 hydrocarbons.
68477-97-4	Gases (petroleum), hydrogen-rich.	A complex combination separated as a gas from hydrocarbon gases by chilling. It consists primarily of hydrogen with various small amounts of carbon monoxide, nitrogen, methane, and C2 hydrocarbons.
68477-98-5	Gases (petroleum), hydrotreater blend oil recycle, hydrogen-nitrogen-rich.	A complex combination obtained from recycled hydrotreated blend oil. It consists primarily of hydrogen and nitrogen with various small amounts of carbon monoxide, carbon dioxide and hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68478-00-2	Gases (petroleum), recycle, hydrogen-rich.	A complex combination obtained from recycled reactor gases. It consists primarily of hydrogen with various small amounts of carbon monoxide, carbon dioxide, nitrogen, hydrogen sulfide, and saturated aliphatic hydrocarbons having carbon numbers in the range of C1 through C5.

Cas No.	Petroleum Gases - EINECS name	Description
68478-01-3	Gases (petroleum), reformer make-up, hydrogen-rich.	A complex combination obtained from the reformers. It consists primarily of hydrogen with various small amounts of carbon monoxide and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68478-02-4	Gases (petroleum), reforming hydrotreater.	A complex combination obtained from the reforming hydrotreating process. It consists primarily of hydrogen, methane, and ethane with various small amounts of hydrogen sulfide and aliphatic hydrocarbons having carbon numbers predominantly in the range of C3 through C5.
68478-03-5	Gases (petroleum), reforming hydrotreater, hydrogen-methane-rich.	A complex combination obtained from the reforming hydrotreating process. It consists primarily of hydrogen and methane with various small amounts of carbon monoxide, carbon dioxide, nitrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C5.
68478-04-6	Gases (petroleum), reforming hydrotreater make-up, hydrogen-rich.	A complex combination obtained from the reforming hydrotreating process. It consists primarily of hydrogen with various small amounts of carbon monoxide and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68478-05-7	Gases (petroleum), thermal cracking distn.	A complex combination produced by distillation of products from a thermal cracking process. It consists of hydrogen, hydrogen sulfide, carbon monoxide, carbon dioxide and hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68478-25-1	Tail gas (petroleum), catalytic cracker refractionation absorber.	A complex combination of hydrocarbons obtained from refractionation of products from a catalytic cracking process. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C3.
68478-27-3	Tail gas (petroleum), catalytic reformed naphtha separator.	A complex combination of hydrocarbons obtained from the catalytic reforming of straight run naphtha. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C6.

Cas No.	Petroleum Gases - EINECS name	Description
68478-28-4	Tail gas (petroleum), catalytic reformed naphtha stabilizer.	A complex combination of hydrocarbons obtained from the stabilization of catalytic reformed naphtha. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68478-29-5	Tail gas (petroleum), cracked distillate hydrotreater separator.	A complex combination of hydrocarbons obtained by treating cracked distillates with hydrogen in the presence of a catalyst. It consists of hydrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68478-30-8	Tail gas (petroleum), hydrodesulfurized straight-run naphtha separator.	A complex combination of hydrocarbons obtained from hydrodesulfurization of straight-run naphtha. It consists of hydrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
68513-14-4	Gases (petroleum), catalytic reformed straight-run naphtha stabilizer overheads.	A complex combination of hydrocarbons obtained from the catalytic reforming of straight-run naphtha followed by fractionation of the total effluent. It consists of hydrogen, methane, ethane and propane.
68513-18-8	Gases (petroleum), reformer effluent high-pressure flash drum off.	A complex combination produced by the high-pressure flashing of the effluent from the reforming reactor. It consists primarily of hydrogen with various small amounts of methane, ethane, and propane.
68513-19-9	Gases (petroleum), reformer effluent low-pressure flash drum off.	A complex combination produced by low-pressure flashing of the effluent from the reforming reactor. It consists primarily of hydrogen with various small amounts of methane, ethane, and propane.
68527-15-1	Gases (petroleum), oil refinery gas distn. off.	A complex combination separated by distillation of a gas stream containing hydrogen, carbon monoxide, carbon dioxide and hydrocarbons having carbon numbers in the range of C1 through C6 or obtained by cracking ethane and propane. It consists of hydrocarbons having carbon numbers predominantly in the range of C1 through C2, hydrogen, nitrogen, and carbon monoxide.

Cas No.	Petroleum Gases - EINECS name	Description
68602-82-4	Gases (petroleum), benzene unit hydrotreater depentanizer overheads.	A complex combination produced by treating the feed from the benzene unit with hydrogen in the presence of a catalyst followed by depentanizing. It consists primarily of hydrogen, ethane and propane with various small amounts of nitrogen, carbon monoxide, carbon dioxide and hydrocarbons having carbon numbers predominantly in the range of C1 through C6. It may contain trace amounts of benzene.
68602-84-6	Gases (petroleum), secondary absorber off, fluidized catalytic cracker overheads fractionators.	A complex combination produced by the fractionation of the overhead products from the catalytic cracking process in the fluidized catalytic cracker. It consists of hydrogen, nitrogen, and hydrocarbons having carbon numbers predominantly in the range of C1 through C3.
68607-11-4	Petroleum products, refinery gases.	A complex combination which consists primarily of hydrogen with various small amounts of methane, ethane, and propane.
68783-06-2	Gases (petroleum), hydrocracking low-pressure separator.	A complex combination obtained by the liquid-vapor separation of the hydrocracking process reactor effluent. It consists predominantly of hydrogen and saturated hydrocarbons having carbon numbers predominantly in the range of C1 through C3.
68814-67-5	Gases (petroleum), refinery.	A complex combination obtained from various petroleum refining operations. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C3.
68814-90-4	Gases (petroleum), platformer products separator off.	A complex combination obtained from the chemical reforming of naphthenes to aromatics. It consists of hydrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C2 through C4.
68911-58-0	Gases (petroleum), hydrotreated sour kerosine depentanizer stabilizer off.	The complex combination obtained from the depentanizer stabilization of hydrotreated kerosine. It consists primarily of hydrogen, methane, ethane, and propane with various small amounts of nitrogen, hydrogen sulfide, carbon monoxide and hydrocarbons having carbon numbers predominantly in the range of C4 through C5.

Cas No.	Petroleum Gases - EINECS name	Description
68911-59-1	Gases (petroleum), hydrotreated sour kerosine flash drum.	A complex combination obtained from the flash drum of the unit treating sour kerosine with hydrogen in the presence of a catalyst. It consists primarily of hydrogen and methane with various small amounts of nitrogen, carbon monoxide, and hydrocarbons having carbon numbers predominantly in the range of C2 through C5.
68919-01-7	Gases (petroleum), distillate unfiner desulfurization stripper off.	A complex combination stripped from the liquid product of the unfiner desulfurization process. It consists of hydrogen sulfide, methane, ethane, and propane.
68919-02-8	Gases (petroleum), fluidized catalytic cracker fractionation off.	A complex combination produced by the fractionation of the overhead product of the fluidized catalytic cracking process. It consists of hydrogen, hydrogen sulfide, nitrogen, and hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68919-03-9	Gases (petroleum), fluidized catalytic cracker scrubbing secondary absorber off.	A complex combination produced by scrubbing the overhead gas from the fluidized catalytic cracker. It consists of hydrogen, nitrogen, methane, ethane and propane.
68919-04-0	Gases (petroleum), heavy distillate hydrotreater desulfurization stripper off.	A complex combination stripped from the liquid product of the heavy distillate hydrotreater desulfurization process. It consists of hydrogen, hydrogen sulfide, and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68919-07-3	Gases (petroleum), platformer stabilizer off, light ends fractionation.	A complex combination obtained by the fractionation of the light ends of the platinum reactors of the platformer unit. It consists of hydrogen, methane, ethane, and propane.
68919-08-4	Gases (petroleum), preflash tower off, crude distn.	A complex combination produced from the first tower used in the distillation of crude oil. It consists of nitrogen and saturated aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68919-11-9	Gases (petroleum), tar stripper off.	A complex combination obtained by the fractionation of reduced crude oil. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C4.

Cas No.	Petroleum Gases - EINECS name	Description
68919-12-0	Gases (petroleum), unifier stripper off.	A combination of hydrogen and methane obtained by fractionation of the products from the unifier unit.
68952-79-4	Tail gas (petroleum), catalytic hydrodesulfurized naphtha separator.	A complex combination of hydrocarbons obtained from the hydrodesulfurization of naphtha. It consists of hydrogen, methane, ethane, and propane.
68952-80-7	Tail gas (petroleum), straight-run naphtha hydrodesulfurizer.	A complex combination obtained from the hydrodesulfurization of straight-run naphtha. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
68955-33-9	Gases (petroleum), sponge absorber off, fluidized catalytic cracker and gas oil desulfurizer overhead fractionation.	A complex combination obtained by the fractionation of products from the fluidized catalytic cracker and gas oil desulfurizer. It consists of hydrogen and hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
68989-88-8	Gases (petroleum), crude distn. and catalytic cracking.	A complex combination produced by crude distillation and catalytic cracking processes. It consists of hydrogen, hydrogen sulfide, nitrogen, carbon monoxide and paraffinic and olefinic hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
87741-01-3	Hydrocarbons, C4	
90622-55-2	Alkanes, C1-4, C3-rich	
92045-15-3	Gases (petroleum), gas oil diethanolamine scrubber off.	A complex combination produced by desulfurization of gas oils with diethanolamine. It consists predominantly of hydrogen sulfide, hydrogen and aliphatic hydrocarbons having carbon numbers in the range of C1 through C5.
92045-16-4		Gases (petroleum), gas oil hydridesulfurization effluent A complex combination obtained by separation of the liquid phase from the effluent from the hydrogenation reaction. It consists predominantly of hydrogen, hydrogen sulfide and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C3.

Cas No.	Petroleum Gases - EINECS name	Description
92045-17-5	Gases (petroleum), gas oil hydrodesulfurization purge.	A complex combination of gases obtained from the reformer and from the purges from the hydrogenation reactor. It consists predominantly of hydrogen and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C4.
92045-18-6	Gases (petroleum), hydrogenator effluent flash drum off.	A complex combination of gases obtained from flash of the effluents after the hydrogenation reaction. It consists predominantly of hydrogen and aliphatic hydrocarbons having carbon numbers predominantly in the range of C1 through C6.
92045-19-7	Gases (petroleum), naphtha steam cracking high-pressure residual.	A complex combination obtained as a mixture of the non-condensable portions from the product of a naphtha steam cracking process as well as residual gases obtained during the preparation of subsequent products. It consists predominantly of hydrogen and paraffinic and olefinic hydrocarbons having carbon numbers predominantly in the range of C1 through C5 with which natural gas may also be mixed.
92045-20-0	Gases (petroleum), residue vis breaking off.	A complex combination obtained from viscosity reduction of residues in a furnace. It consists predominantly of hydrogen sulfide and paraffinic and olefinic hydrocarbons having carbon numbers predominantly in the range of C1 through C5.
92045-22-2	Gases (petroleum), steam-cracker C3-rich.	A complex combination of hydrocarbons produced by the distillation of products from a steam cracking process. It consists predominantly of propylene with some propane and boils in the range of approximately minus 70 oC to 0 oC (minus 94 oF to 32 oF).
92045-23-3	Hydrocarbons, C4, steam-cracker distillate.	A complex combination of hydrocarbons produced by the distillation of the products of a steam cracking process. It consists predominantly of hydrocarbons having a carbon number of C4, predominantly 1-butene and 2-butene, containing also butane and isobutene and boiling in the range of approximately minus 12 oC to 5 oC (10.4 oF to 41 oF).
92045-80-2	Petroleum gases, liquefied, sweetened, C4 fraction.	A complex combination of hydrocarbons obtained by subjecting a liquified petroleum gas mix to a sweetening process to oxidize mercaptans or to remove acidic impurities. It consists predominantly of C4 saturated and unsaturated hydrocarbons.

Cas No.	Petroleum Gases - EINECS name	Description
95465-89-7	Hydrocarbons, C4, 1,3-butadiene- and isobutene-free	
97722-19-5	Raffinates (petroleum), steam-cracked C4 fraction cuprous ammonium acetate extn., C3-5 and C3-5 unsatd., butadiene-free	