SECTION 1. IDENTIFICATION OF ~~THE SUBSTANCE~~/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade name: **PETRYGO PLUS Radiator Coolant**

Mixture ingredients affecting the classification: ethylene glycol, sodium 2-ethylhexanoate

1.2. Relevant identified uses of the substance or mixture and uses advised against

Radiator cooling fluid.

1.3. Details of the supplier of the safety data sheet

Manufacturer: **ORLEN OIL SP. Z O.O.**
Address: 31-323 Kraków, ul. Opolska 100
Phone/Fax No.: +48 12 66 555 00 / +48 12 66 555 01
E-mail: msds@orlenoil.pl

1.4. Emergency telephone number:

+ 48 13 43 84 415 (in working days from 7.00 a.m to 3.00 p.m.)

In case of emergency call 112 (Emergency number), 998 (Fire Brigade), 999 (Ambulance Service)

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification / Risks	According to Council Directive No.67/548/EEC:	According to EC Directive No.1272/2008 (CLP):
resulting from physicochemical properties:	Not classified as hazardous	Not classified as hazardous
for humans:	Xn, R22	Acute Tox. 4; H302 STOT RE. 2; H373 Repr. 2, H361d
For the environment:	Not classified as hazardous	Not classified as hazardous

2.2. Label elements

Pictogram:

Signal word: **Warning**

Hazard statements:

H302 - Harmful if swallowed.
H361d - Suspected of damaging the unborn child
H373 - May cause damage to kidneys through prolonged or repeated exposure after ingestion.

Precautionary statements:

P102 Keep out of reach of children.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling

P270 Do not eat, drink or smoke when using this product

P301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P501 - Dispose of contents/container to a licensed waste disposal company.

It contains: ethylene glycol, sodium 2-ethylhexanoate

2.3. Other hazards

According to Annex XIII, the product does not meet PBT or vPvB criteria.

Prolonged exposure or high concentrations of vapor or mist may cause mild irritation of the respiratory respiratory and headache, dizziness, nausea, vomiting, drowsiness, disturbances of the central nervous system, involuntary eye movement and coma. Contact with skin causes mild irritation of the skin. Eye contact under prolonged exposure causes moderate eye irritation.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances – not applicable

3.2. Mixtures

Substance name	CAS No / EC No	% wt.	Index number	Classification according to 67/548/EC	Classification according to 1272/2008 (CLP)
Ethylene glycol 01-2119456816-28-XXXX	107-21-1 203-473-3	<67	603-027-00-1	Xn, R22	Acute Tox. 4; H302 STOT RE. 2; H373
Sodium 2-ethylhexanoate	19766-89-3 243-283-8	≤ 4	--	Repro. Cat. 3 Xn, R63	Repr. 2, H361d

Description of R, H phrases and full text of classification given in Section 16.

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation:

Remove the victim (move/carry) from the exposure area to fresh air and keep warm and quiet. Place an unconscious person in he recovery position, loosen tight parts of clothes; control and maintain patency of the airways. Give oxygen in the case of breathing disorders; if not breathing, use artificial ventilation. In the case of loss of consciousness, respiratory disorders or persisting symptoms obtain medical aid immediately.

Skin contact:

Immediately remove contaminated/soaked clothes and shoes. Thoroughly wash contaminated skin with water. Consult a doctor if irritation symptoms appear and persist.

Eye contact:

Flush the contaminated eyes with running water, remove contact lenses (if worn) and continue flushing for approx. 15 minutes. When flushing, keep the eyelids wide open and move the eyeball. Consult a doctor if symptoms appear and persist.

Swallowing:

Carry the exposed person to fresh air. Give to drink a lot of water. In the case when spontaneous vomiting occurs, keep the victim leaning forward, with her/his face directed to the ground. Obtain medical aid immediately.

4.2. Most important symptoms and effects, both acute and delayed

In the first period of poisoning after ingestion, symptoms similar to alcohol intoxication may occur: agitation, slurred speech, impaired balance and coordination, headaches, dizziness, drowsiness etc., followed by nausea and vomiting, diarrhea, respiratory distress can enjoy, in the case of severe poisoning circulatory problems, fast heart rate, low blood pressure, coma, loss of consciousness with convulsions, collapse, possible death due to breathing stop.

Long-term exposure causes intensity of existing skin, eye, respiratory system disorders. May cause disturbances and damage to kidneys and liver; may damage the brain.

4.3. Indication of any immediate medical attention and special treatment needed

Do not induce vomiting and do not administer anything orally to an unconscious person. Show the material safety data sheet or the label/container to the medical staff. A person providing first aid in the area where vapour/fog concentration is unknown should be equipped with the appropriate respiratory protection.

Indications for a doctor: Diethylene glycol poisoning treatment, appropriate to the sick person's condition, should include: stomach wash within 2 hours from poisoning, fighting cardiopulmonary disorders, serving ethyl alcohol (intravenously via infusion - 5-15% ethyl alcohol solution in 5% glucose); in case of acute poisoning - hemodialysis, diuresis.

SECTION 5. PROCEEDING IN CASE OF FIRE

5.1. Extinguishing media

Suitable extinguishing media: carbon dioxide, dry powder, foam; water spray.
Unsuitable extinguishing media: not known.

5.2. Special hazards arising from the substance or mixture

Fire resistant product. In the fire environment smokes containing carbon oxides and other unidentified thermal decomposition products of higher hydrocarbons are formed. Avoid breathing products being released in the fire environment.

5.3. Advice for firefighters

Proceed in accordance with procedures applicable for extinguishing chemical fire. In the case of fire involving great amounts of the product, remove all bystanders not participating in action; call emergency brigades and the Fire Brigade.
Cool the containers exposed to fire or high temperature with water spray from a safe distance, if possible and remove them from the endangered area.
Prevent the wastewater after fire extinguishing from penetrating sewage and water tanks. Remove wastewater and residue after firefighting in accordance with valid regulations.
People participating in the fire-extinguishing action should be properly trained, equipped with a full protective clothing and a self-containing breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use individual protection measures – see section 8 of the Safety Data Sheet.
Limit the access of bystanders to the endangered area until proper cleaning operations are finished. In the case of great leakage isolate the endangered area. Ensure that breakdown and its results are eliminated by a properly trained staff only.
Avoid contact with the eyes, skin and clothes.

6.2. Environmental precautions

If it is possible and safe, stop or limit product release. Limit spreading of the great leakages by embanking the area. Prevent the product from penetrating drains, waters or soil. Notify respective authorities (occupational safety and hygiene, emergency brigades, environmental brigades and organs of administration).

6.3. Methods and material for containment and cleaning up

Collect with the available equipment and remove the residue having mixed it with soil, sand or other absorbent material, then place in a sealed, properly labelled container. Dispose in accordance to applicable regulations. If necessary, obtain help from specialist companies dealing with waste transport and utilisation in order to remove the product/absorbent material contaminated with the product.

6.4. Reference to other sections

See also sections 8 and 13 of the Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Provide effective ventilation. Avoid contact with the eyes, skin and clothes. Keep unused containers tightly closed. Essential hygiene rules should be observed: do not eat, drink or smoke during work, wash hands with soapy water after work/after break in work. Do not use contaminated clothing; Immediately remove contaminated clothing and wash before reuse. NOTE: Take off contaminated/soaked clothes and remove it to a safe place, far from heat and ignition sources. Use individual protection measures in accordance with the information contained in section 8 of the Safety Data Sheet.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed, properly labeled containers, in a cool, well-ventilated place with a non-absorbent surface. Keep away from heat sources, protect from direct sunlight. Recommended storage temperature below 40 ^{0}C.

7.3. Specific end use(s)

None.

SECTION 8. EXPOSURE CONTROL AND PERSONAL PROTECTION EQUIPMENT

8.1. Control parameters

Ethylene glycol: TLV-TWA: 15 mg/m^3, TLV-STEL: 50 mg/m^3, TLV-C: –

Directive of the Minister of Work and Social Policy dated June 6th, 2014 *on the maximum occupational levels of factors hazardous to health at the workplace (Dz.U. 2014, item 817)*

Recommended by EU: ethylene glycol TLV-TWA: 52 mg/m^3, TLV-STEL: 104 mg/m^3, TLV-C: – (skin)

Ethylene glycol:
Concentration limits of substances in biological material: not specified
DNEL for workers in conditions of prolonged exposure through the skin (action
Systemic): 106 mg / kg b.w.
DNEL for workers in conditions of prolonged exposure through inhalation (action
local): 35 mg / kg b.w.
DNEL for the general population, including consumers, in terms of long-term exposure of the skin
(systemic effect): 53 mg / kg b.w.
DNEL for the general population, including consumers, in terms of long-term exposure by inhalation
Breathing (topical): 7 mg / kg b.w.
The PNEC for freshwater environment: 10 mg / l
The PNEC for the marine environment: 1 mg / l
The PNEC for the environmental water mixed 10 mg / l
The PNEC for sediment environment (freshwater): 20.9 mg / kg
The PNEC for soil environment: 1.53 mg / kg
The PNEC for the environmental wastewater treatment plant: 199 mg / l

8.2. Exposure controls

Appropriate engineering controls:
General ventilation and/or local fume hood in order to maintain hazardous agent concentration in air below acceptable limits.
Eye or face protection:
Use tight safety eyeglasses (goggles).
Skin protection:
Protective gloves resistant to chemicals made of nitrile rubber or other approved by the manufacturer of gloves for contact with the product. Duration of the material is determined by the producer of gloves.

Respiratory protection:
Not required under normal conditions of use. In the case of exceeding the acceptable limits or inadequate ventilation use an approved respirator with an approved filter or filter – absorber.
Thermal hazards:
Not determined.
Environmental exposure controls:
Prevent large amounts of product to reach ground water, sewage, waste water or soil.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) Appearance	: Liquid, colour: pink
b) Odour	: characteristic
c) Odour threshold	: No data available
d) pH	: 7,5-11
e) Melting/solidification temperature	: ≤ - 37°C (crystallization temperature)
f) Initial boiling temperature and melting temperature range	: >107,5 °C
g) Ignition point	: while testing with standard methods – not applicable
h) Evaporation rate	: No data available
i) Flammability (solid, gas)	: Not applicable
j) Upper/lower flammability limit or upper/lower explosion limit	: 15,3 %/3,2 % vol. (for ethylene glycol)
k) Vapour pressure	: 0,123 hPa w 25 °C (for ethylene glycol)
l) Vapour density	: No data available
m) Relative density	: 1,06 – 1,16 g/cm^3 at 20°C
n) Solubility	: Soluble in water
o) Distribution coefficient n-octanol/ water	: log Pow -1,36 (for ethylene glycol)
p) Self-ignition point	: No data available
q) Decomposition temperature	: No data available
r) Viscosity	: 16,1 mPaS at 25 °C (for ethylene glycol)
s) Explosive properties	: Not explosive
t) Oxidizing properties	: Not oxidizing

9.2. Other information
None

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity
The product is not reactive under normal ambient conditions, as well as under the expected temperature and under the expected pressure.

10.2. Chemical stability
The product is stable under normal ambient conditions, as well as under the expected temperature and under the expected pressure.

10.3. Possibility of hazardous reactions
The risk of fire or explosion in contact with strong oxidizing agents.

10.4. Conditions to avoid:
None known.

10.5. Incompatible materials
Strong oxidisers, strong acids, strong alkalis.

10.6. Hazardous decomposition products
None known.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity: (data for base oils)

Ethylene glycol:
LD50: 7112 mg/kg (oral, rat)
LD50: >3500 mg/kg (skin, rabbit)
LC50: 2,5 mg/l/6 h (inhalation, rat)

Mixture toxicity

ATE mix (oral) > 300mg/kg
Harmful after ingestion.

Skin corrosion/irritation:
Classification criteria have not been met based on the available data.

Serious eye damage/irritation:
Classification criteria have not been met based on the available data.

Respiratory or skin sensitisation:
Classification criteria have not been met based on the available data.

Germ cell mutagenicity:
Classification criteria have not been met based on the available data.

Carcinogenicity:
Based on available data product is not classified as carcinogenic.

Reproductive toxicity:
Classification criteria have not been met based on the available data.

STOT – single exposure:
Causes organs damage. Accidental ingestion may cause gastric disturbances (nausea, vomiting, stomach pain). Disorders of balance and coordination.

STOT – repeated exposure:
Repeated or prolonged exposure may cause kidneys damage after ingestion.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity:

Ethylene glycol:
Acute toxicity for fish: LC_{50}/96h 72860 mg/l (Pimephales promelas)
Acute toxicity for daphnia: EC_{50}/48h 13900-57600 mg/l (Daphnia magna)
Acute toxicity for algae: EC_{50}/96h 13000 mg/l (Pseudokirchnerella subcapitata)
Chronic toxicity for fish: NOEC/7d 15380 mg/l (Pimephales promelas)
Chronic toxicity for daphnia: NOEC/7d 8590 mg/l (Daphnia magna)
Toxicity for microorganisms: TTC/16g 10000 mg/l (Pseudomonas putida)

12.2. Persistence and degradability
Easy biodegradable.

12.3. Bioaccumulative potential
Bioaccumulation not expected.

12.4. Mobility in soil
The mixture does not adsorb in the solid phase of the soil.

12.5. Results of PBT and vPvB assessment
Not applicable.

12.6. Other adverse effects
No data.

SECTION 13. HANDLING OF WASTES

13.1. Waste treatment methods

Waste code:

16 01 14* – antifreeze fluids containing dangerous substances

NOTE: Since waste code is assigned based on the source of origin, the end user should define the obtained wastes and assign a proper code, taking into consideration specific conditions of use, in accordance with applicable regulations.

Soaked clothes, papers or other organic materials should be collected and utilised in an controlled way.

Do not dispose to sewer. Avoid contamination of surface and ground waters. Consider reuse. Waste product should be recovered or utilised at professional, approved furnaces or waste recycling/neutralization facilities, in accordance with applicable regulations.

Recovery / recycling / utilisation of package wastes should be performed according to the applicable regulations. NOTE: Only completely emptied and cleaned packages may be returned for recycling. Use services of authorised companies.

The Act of 14 December 2012 on wastes (Dz.U. of year 2013, item 21)
The Act of 11 May 2001 on packages and package wastes (Dz.U. No. 63, item 638 with amendments)
Regulation of the Minister of Environment of 27 September 2001, on wastes catalogue (Dz. U. No.112, item 1206 with amendments)

SECTION 14. TRANSPORT INFORMATION

The product is not a subject to transport regulations on hazardous goods included in ADR (road transport), RID (rail transport), IMDG (marine transport) and ICAO/IATA (air transport).

14.1. UN number	Not applicable
14.2. UN Proper shipping name	Not applicable
14.3. Transport hazard class(es)	Not applicable
14.4. Packing group	Not applicable
14.5. Environmental hazards	Not applicable
14.6. Special precautions for users	Not applicable
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

SECTION 15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

The Act of 25 February 2011 on chemical substances and preparations (Dz.U. of 2011 No. 63, item 322)

Regulation (EC) No.1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency and amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (correction OJ L 136 of 29 May 2007 with amendments)

Regulation of the (UE) Commission no. 453/2010 of 20 May 2010 amending the Regulation (EC) No. 1907/2006 of the European Parliament and Council dated December 18, 2006 on registration, evaluation, granting of permissions and restrictions applied in scope of chemicals (REACH) (OJ L 133 of 31.05.2010)

Regulation (UE) of the European Parliament and Council no. 1272/2008 of 16 December 2008 on classification, labelling and packaging of

substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending the Regulation (EC) No. 1907/2006 (EU OJ L No.353 dated 31.12.2008 with amendments)

Regulation of the Minister of Health of 2 September 2003, on the criteria and classification chemical substances and preparations (Dz. U. of 2003 No.171, item 1666; of 2004 No.243, item 2440; of 2007 No.174, item 1222; of 2009 No.43, item 353)

Regulation of the Minister of Work and Social Policy of 20 April 2005 on testing and measurements of factors hazardous to health at the workplace (Dz.U. of 2005 No.73, item 645; of 2007 Dz.U. No.241, item 1772)

Regulation of the Minister of Economy of 21 December 2005, on the basic requirements for personal protection measures (Dz. U. of 2005 No.259, item 2173)

Regulation of the Council of Ministers of 24 August 2004 on the list of jobs prohibited for young workers and the circumstances in which they might be employed in some of these jobs (Dz.U. of 2004 No.200, item 2047; of 2005 No.136, item 1145; of 2006 No.107, item 724)

Regulation of the Council of Ministers of 10 September 1996 on the list of jobs that are prohibited for women (Dz.U. of 1996 No.114, item 545, of 2002 No.127, item 1092)

Regulation of the Minister of Health and Social Policy of 30 May 1996 on conducting the medical examinations of employees, range of medical prevention and medical decisions given on the purposes specified in the Labour Code (Dz. U. of 1996 No.69, item 332; of 1997 No. 60, item 375; of 1998 No.159, item 1057; of 2001 No.37, item 451; No.128, item 1405)

Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general regulations for hygiene and safety at work (consolidated text Dz.U. of 2003 No.169, item 1650; of 2007 No.49, item 330; of 2008 No.108, item 690)

Regulation of the Minister of Health of 30 December 2004 on safety and hygiene of work related to chemical factors present at the workplace (Dz.U. of 2005 No.11, item 86; of 2008 No.203, item 1275)

The Act of 24 August 1991 on fire protection (consolidated text – appendix to Dz.U. of 2002 No.147, item 1229; of 2003 No.52, item 452; of 2004 No.96, item 959; of 2005 No.100, item 835 and 836; of 2006 No.191, item 1410; of 2007 No.89, item 590; of 2008 No.163, item 1015; of 2009 No.11, item 59)

Act of 31 March 2004, on railway transport of hazardous substances (Dz. U. of 2004 No.97, item 962; of 2005 No.141, item 1184; of 2006 No.249, item 1834; of 2007 No.176, item 1238)

Regulations for the International Rail Transport of Hazardous Goods RID (of 2009 Dz.U. No.167, item 1318)

15.2. Chemical safety assessment

Chemical safety assessment is not required for the mixture.

SECTION 16. OTHER INFORMATION

Abbreviations and acronyms in the Safety Data Sheet

TLV-TWA	Threshold Limit Value
TLV-STEL	Threshold Limit Value, Short Term Exposure Limit
TLV-C	Ceiling exposure limit
vPvB	very Persistent, very Bioaccumulative (substance)
PBT	Persistent, bioaccumulative, and toxic (substance)
PNEC	Predicted No Effect Concentration
DN(M)EL	Derived No Effect Level
LD_{50}	Dose that will kill 50% of the test animals
LC_{50}	Concentration that will kill 50% of the test animals
EC_X	Concentration at which x% inhibition of growth or growth rate is observed
LOEC	Lowest Observed Effect Concentration
NOEL	No Observed Effect Concentration
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
ADR	Agreement on Dangerous Goods by Road
IMDG	International Maritime Transport of Dangerous Goods
IATA	International Air Transport Association
UVCB	Unknown substances, of Variable Composition, or of Biological Origin

References:

Legal regulations quoted in sections 2 – 15 of the Safety Data Sheet.
Chemical safety assessment report for the mixture ingredients.

The list of applicable R-phrases, hazard statements, S-phrases or precautionary statements not specified in whole in sections 2-15 of the Safety Data Sheet.

List of H phrases:
H302 - Harmful if swallowed

H373 - May cause damage to organs through prolonged or repeated exposure
H361d - Suspected of damaging the unborn child

CLP classification:
Acute Tox. 4 – Acute toxicity, No. 4
STOT RE 2 – Toxic to organs - repeated exposure
Repr. 2 – Harmful to reproduction – category 2

List of H phrases:
R22 - Harmful if swallowed.
R63: Possible risk of harm to the unborn child

DSD/ DPD classification:
Xn - harmful
Repro. Cat. 3 – Harmful to reproduction – category 3

Advice on training for employees:

Employees who use the product should be trained on risks for health, hygiene, use of individual protection, accident preventive actions, rescue actions, etc.,

This MSDS is not a quality certificate for the product. All data presented in this sheet are to be taken only as a help in safe handling in transport, distribution, use and storage. Persons handling the product should be informed about risks and precautionary measures. Information in the Safety Data Sheet relates to the above mentioned product and its specified uses only. They may be obsolete or insufficient for this product used in conjunction with other materials or in different applications than those specified in the Safety Data Sheet.
The user is obliged to follow all applicable standards and regulations and is also responsible for inappropriate use of information contained in this sheet or for an inappropriate use of the product. In the case of special applications evaluate exposure and develop the appropriate procedure and training programs in order to ensure safety at work.