

 INDUSTRIJA NAFTE, d.d.	<b>SAFETY DATA SHEET</b>	Edition: 3/10/08
	Product: <b>AVIATION PETROL 100 LL</b>	Page: 1 / 8

## 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

<b>Product name and code:</b>	<b>AVIATION PETROL 100 LL</b> <span style="float: right;"><b>1000047</b></span>
<b>Product use:</b>	As fuel for aircraft piston engines.
<b>Producer/supplier:</b>	INA-INDUSTRIJA NAFTE d.d.
<b>Address:</b>	Av. Većeslava Holjevca 10, P.O.B. 555, 10002 Zagreb, CROATIA Phone 00-385 1 64 50 842 / 385 1 64 51 075 (0 – 24 h) Fax 00-385 1 64 52 050
<b>Emergency Service Telephone Number:</b>	112

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<b>Substance:</b>		<b>Preparation:</b>	X		
<b>Chemical name of substance:</b>	Mixture of aliphatic and aromatic hydrocarbons.				
<b>CAS No.:</b>	64741-66-8				
<b>Chemical composition of preparation (concentration / range)</b>	Mixture of hydrocarbons produced by separation and conversion processes of petroleum refining with multi-purpose additives.				
<b>EINECS number:</b>					
<b>EEC Index:</b>	649-276-00-X				
<b>Components contributing to product hazardousness:</b>					
<b>Component</b>	<b>% v/v (concentration)</b>	<b>EINECS/CAS</b>	<b>Hazard symbol</b>	<b>Risk phrases</b>	<b>Safety phrases</b>
Toluene	<30	203-625-9/108-88-3	F, Xn	R: 11-38-48/20-63-65-67	S: (2) -36/37-46-29-62
Petrol (petroleum), isomerisation; low-boiling point modified petrol	<30	265-073-5-/64741-70-4	F+, Xn, N	R: 12-38-51/53-63-65-67	S: (2) -23-24-29-43-61-62
Petrol (petroleum), alkylate; low-boiling point modified petrol	>30	265-068-8/64741-66-8	F+, Xn, N	R: 12-38-51/53-63-65-67	S: (2) -23-24-29-43-61-62
Tetraethyl lead	<0.1	201-075-4/78-00-2	T+, N	R: 61-26/27/28-33-50/53-62	S: 53-45-60-61

## 3. HAZARDS IDENTIFICATION

<b>The most important hazards and effects:</b>	
Human health hazards:	Serious health hazards during long-term exposure. If ingested, may cause damage to lungs. Frequent exposure may cause skin dryness or cracking, while vapours may cause sleepiness or dizziness.
Environmental hazards:	Aviation petrol contains components toxic for organisms, particularly aquatic ones. It evaporates relatively easily. It is biologically degradable.
Physical and chemical hazards:	Extremely flammable liquid! Vapours of some components create explosive mixtures with air. Vapours are heavier than air and accumulate in open areas and lower parts of rooms.
<b>Special hazards:</b>	See item 10.
<b>Main symptoms of effects:</b>	
Inhalation:	Sleepiness, dizziness, fainting
Skin:	Redness, burning sensation, dryness of skin
Eyes:	In sensitive persons, redness and burning sensation
Ingestion:	Burning sensation or pain, sickness and vomiting. In case of vomiting and aspiration into lungs, cough, heavy breathing, and suffocation, as well as possible occurrence of lungs edema.
<b>Overview of special conditions:</b>	

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#### 4. FIRST-AID MEASURES

<b>First-aid procedures:</b>	
Inhalation:	Take the person to fresh air. Check also whether rescuers have breathing apparatuses, in order to avoid their poisoning. Continuously control the afflicted person's breathing. Carefully push the patient's head back, so as to eliminate any breathing obstruction. Continue with monitoring the poisoned person's breathing by placing an ear directly on the patient's nose and mouth. <i>If he/she does not breathe, start administering artificial respiration, if the heart is not beating, start with cardiac massage.</i> Ensure medical assistance.
Skin contact:	Take off the contaminated clothes and footwear. Rinse the afflicted skin surface for at least 10 minutes with large quantities of water. If necessary, continue rinsing for the next 10 minutes. In case of redness, seek advice from dermatologist.
Eye contact:	Keep the eye-lids apart with clean hands and rinse with a mild flow of running water for 15-20 minutes. In case of pronounced redness, burning sensation, or tears, seek the oculist's assistance
Ingestion:	DO NOT invoke vomiting! <i>If the afflicted person is unconscious:</i> <ul style="list-style-type: none"> <li>– lay him/her on the side,</li> <li>– monitor whether he/she breathes independently,</li> <li>– if the breathing stops – start administering artificial respiration,</li> <li>– do not give the afflicted person anything orally,</li> <li>– do not give any alcohol, morphine, or any other stimuli.</li> </ul> Place the afflicted person in semi-lying position; keep him/her warm until arrival to a hospital.
<b>Note to first-aider/physician:</b>	In case of vomiting and aspiration into lungs, occurrence of pulmonary edema is possible after 48 hrs.

#### 5. FIRE-FIGHTING MEASURES

<b>Extinguishing media:</b>	
Suitable:	Carbon dioxide, dry powder with ABC extinguishing agent, dry powder with BC extinguishing agent, foam, liquid with additional water solution of extinguishing agent.
Not suitable:	Water jet/spray!
<b>Fire-fighting measures for special hazards:</b>	Remove all ignition sources and advise the firemen and police immediately. Pay a particular attention to existence of a permanent hazard involving creation of explosive mixture with air at room temperature.
<b>Special fire-fighting measures:</b>	Sprayed water to be used for cooling the tanks, equipment, and access to fire site.
<b>Fire-fighting special safety equipment:</b>	Thermally insulated suit and self-sustaining compressed-air breathing apparatus (HRN EN 137/AC:2006).
<b>Special exposure hazards:</b>	Vapours, being heavier than air, remain close to bottom and in recesses.

#### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions:</b>	Avoid any contact with spilled aviation petrol. Use personal safety equipment from item 8, remove the unprotected persons at once out from the contaminated area. Contaminated areas are to be vented thoroughly. The signs prohibiting entrance and working with open flame and sparking equipment shall be put up in visible places. Petrol vapour concentration shall be measured, as prescribed. Stand upwind in respect of the spilling/leaking point.
<b>Environmental precautions:</b>	Prevent leaking and spilling into water-courses, canals, draining systems, and soil by excavating protective trenches, fencing with bags filled with dry sand, earth, or clay. In case of major spilling/leaking, notify the communication unit by calling 112.

<b>Methods for cleaning-up and recovery:</b>	Remove ignition sources, prevent heating of tanks, dilute vapours with dispersed water spray, make efforts to isolate the contamination source, stop the leaking of liquid, seal the damaged tank, and place the replacement tank. Isolate the collected liquid surface, collect large quantities of leaked petrol by pumps, absorb minor quantities of leaked petrol by means of non-flammable absorbent.  Having removed the liquid, wash the spot of spilled petrol in the work area with soapy water.
<b>Additional warnings:</b>	In case of major aviation petrol leaking, isolate the contaminated area, evacuate the personnel. <i>First of all:</i> isolate the source of spilling/leaking. If necessary, call for the professional personnel.

## 7. HANDLING AND STORAGE

<b>Handling:</b>	
Safety precautions:	Remove all ignition sources and keep the product far from heat sources.  Re-loading shall be performed only at the locations intended for that purpose, ensuring the area venting. In work and storage areas, provide the impermeable solvent-resistant epoxy floor. Floors in the areas endangered by explosive atmosphere should have the transient resistance of <1 MΩ in the static electricity conductor system.  Use the equipment and devices in good working order. Do not use sparking equipment.  Ground the devices. Take protective measures against occurrence of static electricity.  Prevent unauthorised persons from entering the work or storage areas, particularly the children, pregnant women, sick and elderly people. Keep the product out for the children's reach.
Safe handling advice:	It is prohibited to smoke, eat, drink, and keep food in the area where this product is handled. Keep personal clothes separate from working clothes and workplace. Wearing of the prescribed working clothes, safety gloves, and goggles is obligatory.

### Storage: technical measures and storage conditions:

Suitable:	Store in well closed/sealed tanks, properly manufactured and equipped, ensuring the area ventilation and appropriate temperature. Take measures against occurrence of static electricity.  Provide containment trays below the self-supporting tanks.
To be avoided:	Storage in the area intended for other chemicals or together with other chemicals, particularly those that may provoke fire.

### Packaging materials:

Recommended:	Prescribed for that purpose.
Not suitable:	Everything else.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Technical measures for reducing exposure:</b>	Provide good airing/ventilation in the work area.
<b>Control parameters:</b> Measurement of petrol vapour concentration in the air according to regulations.	

Hazardous substance	Maximum allowed concentration ppm	Biological limit values ppm
Natural petrol	100	No data
Toluene	100	20

### Personal protective equipment:

Respiratory tract protection:	In case of accident, if the vapour concentration exceeds MAC, use the safety mask (HRN EN 136) with filter A (HRN EN 14387), and if the oxygen concentration drops below 17%, use the self-sustaining breathing apparatus (HRN EN 137).
Hand protection:	Safety gloves made of durable and impermeable material. In full contact, wear gloves made of nitril rubber 0.40 mm thick, while in the contact with drops such gloves shall be 0.11 mm thick (HRN EN 374). In shorter contact (4 hrs), gloves made of PVA (polyvinyl alcohol) may be used.
Eye protection:	Safety goggles (HRN EN 166:2002).

Skin and body protection:	Protective/safety clothes made of natural materials and corresponding footwear, such as rubber boots (HRN ISO 10335:2002).
<b>Special hygienic and safety precautions:</b>	During handling this product, smoking is prohibited, as well as eating and drinking. After each interruption of work, washing hands is obligatory. Workplace has to be equipped with shower.
<b>Additional warnings:</b>	Personal protective equipment/accessories cannot be considered as replacements for good work conditions, proper handling of hazardous substances, and reasonable behaviour at workplace.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Physical properties

<b>State:</b>	Liquid	<b>Colour:</b>	Blue	<b>Odour:</b>	Characteristic for petrol
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### Chemical properties

Characteristics	Unit	Values	Method	Note
<b>pH value:</b>				not applicable
<b>Boiling point / Boiling range:</b>	°C	30 - 170	HRN EN ISO 3405	
<b>Flash point:</b>	°C	- 45	EN 57	from literature
<b>Flammability:</b>	°C			
<b>Auto-ignition temperature:</b>	°C	440	DIN 51794	from literature
<b>Explosive properties:</b>	% v/v	1.4 – 11.5		from literature
<b>Oxidising properties:</b>				not applicable
<b>Vapour pressure:</b>	kPa	38 - 49	HRN ISO 3007	
<b>Density (15 °C):</b>	kg/m <sup>3</sup>	700 - 780	HRN EN ISO 3675	
<b>Solubility in water:</b>	g/L	Insoluble in water		from literature
<b>Solubility in organic solvents or oils:</b>	g/L	Easily soluble in organic solvents		from literature
<b>Partition coefficient n-octanol / water:</b>	- log Low	2-7		from literature
<b>Viscosity (at 20 °C):</b>	mm <sup>2</sup> /s			not applicable
<b>Vapour density:</b>	kg/m <sup>3</sup>			not applicable
<b>Volatility:</b>	kPa			not applicable
<b>Miscibility with other substances:</b>				not applicable
<b>Conductivity:</b>	pS/m			not applicable
<b>Melting point / Melting range:</b>	°C			not applicable
<b>Gas group:</b>				not applicable

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable when meeting the prescribed storage and use requirements.
<b>Conditions to avoid:</b>	Heat sources, flame, sparking.
<b>Materials to avoid:</b>	Halogens, strong acids, lye, and strong oxidants.
<b>Hazardous decomposition products:</b>	None in regular conditions and in case of proper storage.

## 11. TOXICOLOGICAL INFORMATION

<b>Acute toxicity:</b>	
Oral (LD <sub>50</sub> ):	-
Inhalation (LD <sub>50</sub> ):	-
Dermal (LD <sub>50</sub> ):	-
<b>Local effects:</b>	
Skin irritation:	There may appear redness and irritation. Skin dryness occurs.
Eye irritation:	There may appear redness and irritation. Appearance of tears.
Dermal sensitivity:	In sensitive persons, there may appear redness and stinging sensation.
<b>Chronic poisoning or long exposure:</b>	Longer exposure regarding inhaling, skin contact, and ingestion may cause damage to health.
<b>Exposure effects:</b>	
Single-term:	Depression of central nervous system (dizziness, sleepiness, headache, nausea, vomiting)
Recurrent:	Depression of central nervous system.
Long-term:	Serious damages to central nervous system.
<b>Momentary effects:</b>	-
<b>Delayed:</b>	No data available.
<b>Special:</b>	Possible risk of harmful effect on foetus.

## 12. ECOLOGICAL INFORMATION

<b>Mobility:</b>	
Known or predicted distribution to environmental compartments:	Insoluble in water, floating on water.
Surface tension:	No data available.
Soil absorption/desorption:	
Other physical and chemical properties:	See item 9.
<b>Persistence/degradability:</b>	
Biotic or abiotic degradation:	Majority of the product components is potentially bio-degradable.
Aerobic or anaerobic degradation:	
Persistence:	No data available.
<b>Bio-accumulation:</b>	
Bio-accumulative potential:	No data available.
Bio-enhancement:	No data available.
<b>Possible environmental impact:</b>	
Water:	Contaminates water-courses and may have long-term harmful effect in water.
Air:	No data.
Soil:	May endanger flora and fauna. When major quantities penetrate the ground, there is a risk of ground-water contamination.
<b>Eco-toxicity:</b>	
For aquatic organisms (EC 50):	Fish – <i>Salmo gairdneri irideus</i> i <i>Alburnus bipunctatus</i> 40 mg/l Plankton – <i>Gammarus pulex</i> 70 mg/l <i>Epeorus assimilis</i> 80 mg/l <i>Tubifex tubifex</i> 120 mg/l <i>Vorticella campanula</i> 55 mg/l <i>Paramecium caudatum</i> 60mg/l Concentration lethal for fish – <i>Salmo gairdneri irideus</i> 100mg/l Concentration changing the fish flavour – 0.0005 mg/l
For algae (EC 50):	11 mg/L (72 h) (Selenastrum caprocormutum) similar substance
For ground organisms:	No data available.
For plants and land animals:	No data available.
<b>Other harmful effects:</b>	-

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### 13. DISPOSAL CONSIDERATIONS

<b>Preferred disposal considerations:</b>	
Waste from residues:	The product has no classic waste except in case of accidental release. In that case see item 6. Thermal treatment of contaminated residues foreseen.
Contaminated packaging:	Contaminated tank trucks shall be washed and decontaminated, while the washing residue shall be taken care of in an authorised institution.
<b>Local disposal considerations based on:</b>	Environmental Protection Law (OG 110/07), Waste Act (OG 178/04, OG 111/06, OG 60/08); Regulations on Waste Types (OG 27/96); Regulations on Packaging and Waste Packing Material (OG 97/05, OG 115/05, OG 81/08); Regulations on Conditions for Waste Management (NN 123/97, NN 112/01); Decree on Conditions for Hazardous Waste Management (OG 32/98); Decree on Waste Categories, Types and Classification with a Waste Catalogue and a List of Hazardous Waste (OG 50/05).

### 14. TRANSPORT INFORMATION

<b>Transport classification signs:</b>	
Road (ADR):	class: 3, classification code: F1, packing group II
Rail (RID):	class: 3, classification code: F1, packing group II
Water (ADNR):	class: 3, classification code: F1, packing group II
Sea (IMDG):	class: 3, S.3141
Air (IATA –ICAO):	class: 3
<b>UN classification number:</b>	1203
<b>Additional regulations:</b>	Diamond chart 3; Hazardous Substances Transportation Act (OG 79/03); Regulations on the Manner of Transportation of Hazardous Substances in Road Traffic (OG 53/06); Regulations on Amendments to Regulations on the Manner of Hazardous Substances Transport in Sea Traffic (OG 2/02, OG 9/02, OG 76/02).
<b>Special precautions and conditions:</b>	Fire risk 3.

## 15. REGULATORY INFORMATION

Applicable regulations:	Act on Chemicals (OG 150/05, OG 53/08); Decree on Quality of Liquefied Petroleum Fuels (OG 53/06); Regulations on MAC of Harmful Substances in the Atmosphere of Work Premises (OG 92/93); Decree on Limit Values of Pollutant Emissions into the Air from Stationary Sources (OG 140/97, OG 105/02, OG 108/03, OG 100/04, OG 21/07); Decree on Technical Standards of Environmental Protection from Volatile Organic Compounds Emissions during Petrol Storing and Distribution (OG 135/06); HRN EN 228, INA N 02-019.
Information on hazards and safety measures:	
Hazard symbol:	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>Xn</b></p>  <p>HARMFUL SUBSTANCE</p> </div> <div style="text-align: center;"> <p><b>F+</b></p>  <p>EXTREMELY FLAMMABLE SUBSTANCE</p> </div> <div style="text-align: center;"> <p><b>N</b></p>  <p>ENVIRONMENTALLY DANGEROUS SUBSTANCE</p> </div> </div>
Risk phrases: (for final product)	<p>R11 Highly flammable.</p> <p>R 38 Irritating to skin.</p> <p>R 48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.</p> <p>R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p>R 63 Possible risk of harm to the unborn child.</p> <p>R 65 Harmful: may cause lung damage if swallowed.</p> <p>R 66 Repeated exposure may cause skin dryness or cracking.</p> <p>R 67 Vapours may cause drowsiness and dizziness.</p>
Safety phrases: (for final product)	<p>S 2 Keep out of the reach of children.</p> <p>S 9 Keep container in a well-ventilated place.</p> <p>S 16 Keep away from sources of ignition - No smoking.</p> <p>S 23 Do not breathe gas.</p> <p>S 24 Avoid contact with the skin.</p> <p>S 36/37 Wear suitable protective clothing and gloves.</p> <p>S 46 If swallowed, seek medical advice immediately and show container or label.</p> <p>S 60 This material and its container must be disposed of as hazardous waste.</p> <p>S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.</p> <p>S 62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.</p>

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## 16. OTHER INFORMATION

<b>Risk phrases:</b> (for ingredients)	-
<b>Safety phrases:</b> (for ingredients)	-
<b>Literature:</b>	<ol style="list-style-type: none"> <li>1. SDS for Aviation Petrol by the producer: Research &amp; Development Center for the Refining Industry 09-411 Plock, Chemikow 5 Str, Poland</li> <li>2. <a href="http://www.answers.com/topic/tetra-ethyl-lead">http://www.answers.com/topic/tetra-ethyl-lead</a></li> <li>3. <a href="http://ecb.jrc.it/esis">http://ecb.jrc.it/esis</a></li> <li>4. <a href="http://www.shell.com">www.shell.com</a></li> </ol>
<b>Revisions:</b>	Issue 3 of this Safety Data Sheet (SDS) has been completely revised compared to Issue 2 and conformed to the requirements of Regulations on the Manner of Filling Out the Safety Data Sheet, OG 111/2006, 39/08 and EU Directive 2001/58/EC.
<b>Note:</b>	Safety Data Sheet (SDS) is drawn up on the basis of present knowledge and legislation in force at the moment of launching the product onto the market. Product is described on the basis of its safety data. The use of product for purposes other than those indicated above, as well as its use with other materials during the treatment process, may cause hazards that are not described in this SDS.