SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
System-Wirkstoff LPG (Gas) MP16400100A

1.2. Relevant identified uses of the substance or mixture and uses advised against
- Use of the substance/mixture: Additive

1.3. Details of the supplier of the safety data sheet
Manufacturer:
- Company name: TUNAP Deutschland Vertriebs GmbH & Co. Betriebs KG
- Street: Bürgermeister-Seidl-Str. 2
- Place: D-82515 Wolfratshausen
- Telephone: + 49 (0) 8171/1600 - 0
- e-mail: sdb@tunap.com
- Internet: www.tunap.com

Supplier:
- Company name: TUNAP UK Limited
- Street: Unit L4 Deacon Trading Estate, Morley Road
- Place: GB Tonbridge, Kent. TN9 1RA
- Telephone: +44 (0)1732 365163
- e-mail: sdb@tunap.com
- Internet: www.tunap.co.uk

1.4. Emergency telephone number:
111 NHS (National Health Service)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Regulation (EC) No. 1272/2008
- Hazard categories:
  - Aerosol: Aerosol 1
  - Specific target organ toxicity - single exposure: STOT SE 3
  - Specific target organ toxicity - repeated exposure: STOT RE 1
  - Hazardous to the aquatic environment: Aquatic Chronic 2
- Hazard Statements:
  - Extremely flammable aerosol.
  - Pressurised container: May burst if heated.
  - May cause drowsiness or dizziness.
  - Causes damage to organs through prolonged or repeated exposure.
  - Toxic to aquatic life with long lasting effects.

2.2. Label elements
Regulation (EC) No. 1272/2008
- Hazard components for labelling:
  - Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)
- Signal word: Danger
- Pictograms:
Hazard statements

H222 Extremely flammable aerosol.
H229 Pressurised container: May burst if heated.
H336 May cause drowsiness or dizziness.
H372 Causes damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211 Do not spray on an open flame or other ignition source.
P260 Do not breathe Aerosol.
P280 Wear Wear eye/face protection.
P302+P352 IF ON SKIN: Wash with plenty of Water and soap.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P273 Avoid release to the environment.
P411 Toxic to aquatic life with long lasting effects.
P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.
P251 Do not pierce or burn, even after use.

Special labelling of certain mixtures

EUH066 Repeated exposure may cause skin dryness or cracking.

2.3. Other hazards

In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>EC No</th>
<th>Index No</th>
<th>REACH No</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>64742-82-1</td>
<td>Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)</td>
<td>919-446-0</td>
<td>01-2119458049-33</td>
<td>50 - &lt;= 100 %</td>
<td></td>
</tr>
<tr>
<td>Flam. Liq. 3, STOT SE 3, STOT RE 1, Asp. Tox. 1, Aquatic Chronic 2; H226 H336 H372 H304 H411 EUH066</td>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
<td>907-745-9</td>
<td>01-2119538013-5</td>
<td>0.1 - &lt; 1 %</td>
<td></td>
</tr>
<tr>
<td>Eye Dam. 1, Aquatic Acute 1, Aquatic Chronic 1; H318 H400 H410</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full text of H and EUH statements: see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

First aider: Pay attention to self-protection! Remove persons to safety. Never give anything by mouth to an unconscious person or a person with cramps.

After inhalation

Remove person to fresh air and keep comfortable for breathing. In all cases of doubt, or when symptoms persist, seek medical advice.

After contact with skin

Wash with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse.
In all cases of doubt, or when symptoms persist, seek medical advice.

**After contact with eyes**
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of troubles or persistent symptoms, consult an ophthalmologist.

**After ingestion**
Do NOT induce vomiting. Observe risk of aspiration if vomiting occurs. Call a physician in any case!

### 4.2. Most important symptoms and effects, both acute and delayed
Headache, nausea, dizziness, fatigue, skin irritation

### 4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically. Call a POISON CENTER. Symptoms can occur only after several hours.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media
- **Suitable extinguishing media**
  - Water fog, Foam, Carbon dioxide (CO2), Extinguishing powder.
- **Unsuitable extinguishing media**
  - Full water jet

#### 5.2. Special hazards arising from the substance or mixture
Incomplete combustion and thermolysis gases of different toxicity can occur. In the case of hydrocarbonaceous products such as CO, CO2, aldehydes and soot. These can be very dangerous if they are inhaled in high concentrations or in enclosed spaces.

#### 5.3. Advice for firefighters
In case of fire and/or explosion do not breathe fumes. Move undamaged containers from immediate hazard area if it can be done safely. In case of fire: Wear self-contained breathing apparatus.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures
Wear breathing apparatus if exposed to vapours/dusts/aerosols. Remove all sources of ignition. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

#### 6.2. Environmental precautions
Do not allow to enter into surface water or drains. Prevent spread over a wide area (e.g. by containment or oil barriers). Ensure all waste water is collected and treated via a waste water treatment plant.

#### 6.3. Methods and material for containment and cleaning up
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Clean contaminated articles and floor according to the environmental legislation.

#### 6.4. Reference to other sections
- Safe handling: see section 7
- Personal protection equipment: see section 8
- Disposal: see section 13

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling
- **Advice on safe handling**
  - Observe instructions for use.
  - Dust must be exhausted directly at the point of origin. Vapours/aerosols must be exhausted directly at the point
of origin. If local exhaust ventilation is not possible or not sufficient, the entire working area should be ventilated by technical means.
When using do not eat, drink, smoke, sniff.
Wear personal protection equipment (refer to section 8).
In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking. Heating causes rise in pressure with risk of bursting.

Further information on handling
Avoid contact with skin and eyes.

7.2. Conditions for safe storage, including any incompatibilities
Requirements for storage rooms and vessels
Keep container tightly closed. Observe legal regulations and provisions.

Advice on storage compatibility
Do not store together with: Oxidizing agents. Pyrophoric or self-heating substances. Food and feedingstuffs.

Further information on storage conditions
Protect from frost. Protect against direct sunlight. Store in a cool dry place. Observe legal regulations and provisions.

7.3. Specific end use(s)
No information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>DNEL/DMEL values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS No</td>
</tr>
<tr>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
</tr>
<tr>
<td>Worker DNEL, long-term</td>
</tr>
<tr>
<td>Worker DNEL, long-term</td>
</tr>
<tr>
<td>Worker DNEL, long-term</td>
</tr>
<tr>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental compartment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS No</td>
</tr>
<tr>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
</tr>
<tr>
<td>Freshwater</td>
</tr>
<tr>
<td>0,0003 mg/l</td>
</tr>
</tbody>
</table>

Additional advice on limit values
a no restriction
b End of exposure or end of shift
c at long term exposure: after several previous shifts
d before next shift
8.2. Exposure controls

**Appropriate engineering controls**
If handled uncovered, arrangements with local exhaust ventilation have to be used.

**Protective and hygiene measures**
Avoid exposure. Wear suitable protective clothing. Draw up and observe skin protection programme.

**Eye/face protection**
Suitable eye protection: Tightly sealed safety glasses.
DIN EN 166

**Hand protection**
Protect skin by using skin protective cream. When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Suitable material: NBR (Nitrile rubber) Breakthrough time (maximum wearing time) 480min
Thickness of the glove material 0,45 mm
DIN EN 374

**Skin protection**
Wear suitable protective clothing. Take off immediately all contaminated clothing and wash it before reuse.

**Respiratory protection**
In case of inadequate ventilation wear respiratory protection.
Wear breathing apparatus if exposed to vapours/dusts/aerosols.
Suitable respiratory protective equipment: Combination filter device (DIN EN 141).
Filtering device with filter or ventilator filtering device of type: A

**Environmental exposure controls**
Observe legal regulations and provisions.

### SECTION 9: Physical and chemical properties

**9.1. Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Aerosol</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>solvent like</td>
</tr>
</tbody>
</table>

**Test method**
No information available.

**Changes in the physical state**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point</td>
<td>135 °C</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>30 °C</td>
</tr>
<tr>
<td>Lower explosion limits</td>
<td>1,8 vol. %</td>
</tr>
<tr>
<td>Upper explosion limits</td>
<td>11,2 vol. %</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No information available.</td>
</tr>
<tr>
<td>Density (at 20 °C)</td>
<td>0,785 g/cm³ DIN 51757</td>
</tr>
<tr>
<td>Bulk density</td>
<td>not applicable</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>No information available.</td>
</tr>
<tr>
<td>Viscosity / dynamic</td>
<td>No information available.</td>
</tr>
</tbody>
</table>
SECTION 10: Stability and reactivity

10.1. Reactivity
Extremely flammable aerosol.

10.2. Chemical stability
The product is stable under normal conditions.

10.3. Possibility of hazardous reactions
Do not expose to temperatures above 50 °C. Heating causes rise in pressure with risk of bursting.

10.4. Conditions to avoid
Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Vapours can form explosive mixtures with air. Take precautionary measures against static discharges.

10.5. Incompatible materials
Oxidizing agents. Pyrophoric or self-heating substances.

10.6. Hazardous decomposition products
Incomplete combustion and thermolysis gases of different toxicity can occur. In the case of hydrocarbonaceous products such as CO, CO₂, aldehydes and soot. These can be very dangerous if they are inhaled in high concentrations or in enclosed spaces.

Further information
Do not mix with other chemicals.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Toxicokinetics, metabolism and distribution
There are no data available on the mixture itself.

Acute toxicity
Based on available data, the classification criteria are not met.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Exposure route</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>64742-82-1</td>
<td>Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)</td>
<td>oral</td>
<td>LD50 mg/kg</td>
<td>&gt; 15000</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50 mg/kg</td>
<td>3400</td>
<td>Rabbit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation (4 h) vapour</td>
<td>LC50 mg/l</td>
<td>13100</td>
<td>Rat</td>
</tr>
</tbody>
</table>

Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol
oral | LD50 mg/kg | 2976 | Rat | Study report (1991) |
| dermal | LD50 mg/kg | > 2000 | Rat | Study report (1991) |

Irritation and corrosivity
Based on available data, the classification criteria are not met.
Vapours may cause drowsiness and dizziness.
Sensitising effects
Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.
No indication of human carcinogenicity.
No indications of human germ cell mutagenicity exist.
No indications of human reproductive toxicity exist.

STOT-single exposure
May cause drowsiness or dizziness. (Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %))

STOT-repeated exposure
Repeated exposure may cause skin dryness or cracking. Causes damage to organs through prolonged or repeated exposure. (Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %))
Has degreasing effect on the skin. Frequently or prolonged contact with skin may cause dermal irritation.

Aspiration hazard
Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal
No information available.

SECTION 12: Ecological information

12.1. Toxicity
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Aquatic toxicity</th>
<th>Dose</th>
<th>[h]</th>
<th>[d]</th>
<th>Species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>64742-82-1</td>
<td>Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)</td>
<td>Acute fish toxicity</td>
<td>LC50</td>
<td>10 - 30 mg/l</td>
<td>96 h</td>
<td>Leuciscus idus (golden orfe)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute algae toxicity</td>
<td>ErC50</td>
<td>4,6 - 10 mg/l</td>
<td>72 h</td>
<td>Pseudokirchneriella subcapitata</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute crustacea toxicity</td>
<td>EC50</td>
<td>10 - 22 mg/l</td>
<td>48 h</td>
<td>Daphnia magna</td>
<td>Study report (1993)</td>
</tr>
<tr>
<td></td>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
<td>Acute fish toxicity</td>
<td>LC50</td>
<td>0,3 mg/l</td>
<td>96 h</td>
<td>Oncorhynchus mykiss (Rainbow trout)</td>
<td>Study report (1993)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute algae toxicity</td>
<td>ErC50</td>
<td>4,9 mg/l</td>
<td>72 h</td>
<td>Pseudokirchneriella subcapitata</td>
<td>Study report (1993)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute crustacea toxicity</td>
<td>EC50</td>
<td>0,4 mg/l</td>
<td>48 h</td>
<td>Daphnia magna</td>
<td>Study report (1993)</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
There are no data available on the mixture itself. AOX (mg/l): 0

12.3. Bioaccumulative potential
There are no data available on the mixture itself.

Partition coefficient n-octanol/water

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reaction mass of 2,6-di-tert-butylphenol and 2,4,6-tri-tert-butylphenol</td>
<td>4.5 - 5.3</td>
</tr>
</tbody>
</table>
12.4. Mobility in soil

No information available.

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

12.6. Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Advice on disposal

Do not allow to enter into surface water or drains. Dispose of waste according to applicable legislation.

Waste disposal number of waste from residues/unused products

160504 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; gases in pressure containers (including halons) containing hazardous substances; hazardous waste

Waste disposal number of used product

160504 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; gases in pressure containers (including halons) containing hazardous substances; hazardous waste

Waste disposal number of contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by hazardous substances; hazardous waste

Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number: UN 1950
14.2. UN proper shipping name: AEROSOLS
14.3. Transport hazard class(es): 2
14.4. Packing group: -
Classification code: 5F
Special Provisions: 190 327 344 625
Limited quantity: 1 L
Excepted quantity: E0
Transport category: 2
Tunnel restriction code: D
Inland waterways transport (ADN)

14.1. UN number: UN 1950
14.2. UN proper shipping name: AEROSOLS
14.3. Transport hazard class(es): 2
14.4. Packing group: -
   Hazard label: 2.1
   Classification code: 5F
   Special Provisions: 190 327 344 625
   Limited quantity: 1 L
   Excepted quantity: E0

Marine transport (IMDG)

14.1. UN number: UN 1950
14.2. UN proper shipping name: AEROSOLS (Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %))
14.3. Transport hazard class(es): 2.1
14.4. Packing group: -
   Hazard label: 2.1
   Marine pollutant: Yes
   Special Provisions: 63, 190, 277, 327, 344, 381, 959
   Limited quantity: 1000 mL
   Excepted quantity: E0
   EmS: F-D, S-U

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number: UN 1950
14.2. UN proper shipping name: AEROSOLS, flammable
14.3. Transport hazard class(es): 2.1
14.4. Packing group: -
   Hazard label: 2.1
   Special Provisions: A145 A167 A802
   Limited quantity Passenger: 30 kg G
   Passenger LQ: Y203
   Excepted quantity: E0
   IATA-packing instructions - Passenger: 203
   IATA-max. quantity - Passenger: 75 kg
   IATA-packing instructions - Cargo: 203
   IATA-max. quantity - Cargo: 150 kg

14.5. Environmental hazards
   ENVIRONMENTALLY HAZARDOUS: yes
   Danger releasing substance: Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)

14.6. Special precautions for user
   Warning: Flammable gases

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
   No information available.

SECTION 15: Regulatory information

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

EU regulatory information
Restrictions on use (REACH, annex XVII):
Entry 28: Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25 %)
2010/75/EU (VOC): No information available.
2004/42/EC (VOC): No information available.

Additional information
Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)
Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]:
Calculation method.
Aerosol directive (75/324/EEC)

National regulatory information
Water contaminating class (D): 1 - slightly water contaminating

SECTION 16: Other information
Changes
This data sheet contains changes from the previous version in section(s): 2,3,4,5,6,7,8,10,14,15.

Abbreviations and acronyms
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA: International Air Transport Association
IMDG: International Maritime Code for Dangerous Goods
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL/DMEL: Derived No Effect Level / Derived Minimal Effect Level
WEL (UK): Workplace Exposure Limits
TWA (EC): Time-Weighted Average
ATE: Acute Toxicity Estimate
STEL (EC) Short Term Exposure Limit
LC50: Lethal Concentration
EC50: half maximal Effective Concentration
ErC50: means EC50 in terms of reduction of growth rate

Relevant H and EUH statements (number and full text)

Further information
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product
named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)