1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name: BITUAL
Product description: Bituminous aluminum paint with organic solvents.
REACH registration number: Mixture (registration is not required according to REACH regulation, 1907/2006/EC)

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

Intended use: Protection of old and new waterproofing bituminous layers from solar radiation. It must be used only for professional use.

1.3 Details of the supplier of the safety data sheet

BITUMIX S.A.
PRODUCTION OF BITUMINOUS MIXTURES
K. KARAMANLI 124, IONIA THESSALONIKIS
P.O.Box: 1715, 57008 IONIA THESSALONIKIS
TEL: (0030)2310 710017
FAX: (0030)2310 710016
e-mail: info@bitumix.gr

1.4 Emergency telephone number

National Chemical Emergency Centre (24h): +44 (0) 1235 239 670

2. Hazards identification

2.1 Classification of the substance or mixture

The product is classified as hazardous according to Regulation 1272/2008/EC (CLP) and its subsequent amendments. For that reason it is required a safety data sheet for the product that complies with the provisions of Regulation 1907/2006/EC and its subsequent amendments.

Classification according to Regulation 1272/2008 (CLP) and following amendments and adjustments

Hazard classification and indication:
- Flam. Liq. 3 H226
- Repr. 2 H361f
- STOT RE 2 H373
- Skin Irrit. 2 H315
- STOT SE 3 H336i
- Aquatic Chronic 2 H411

2.2 Label elements

Hazard labeling according to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.
Hazard pictograms:
- Flammable liquid
- Toxic substance
- Inflammable solid

Signal words: Warning

Hazard statements:
H226: Flammable liquid and vapor.
H315: Causes skin irritation.
H336i: May cause drowsiness or dizziness in case of inhalation.
H361fdi: Suspected of damaging fertility of the unborn child in case of inhalation.
H373i: May cause damage to organs through prolonged or repeated exposure in case of inhalation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary statements:
P210: Keep away from heat / sparks / open flames / hot surfaces. No smoking.
P261: Avoid breathing vapors.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves / protective clothing / eye protection / face protection.
P304+P352: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P370+P378: In case of fire: use CO2, foam or dry powder for extinction.

Contains: Toluene

2.3 Other hazards
Information not available

3. Composition/information on ingredients

3.1 Substances
The product is mixture

3.2 Mixtures
It contains the following hazardous substances:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Percent %</th>
<th>REACH registration number</th>
<th>CAS number</th>
<th>EC number</th>
<th>Classification 1272/2008 (CLP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Spirit</td>
<td>25-30</td>
<td>01-2119458049-33-0007</td>
<td>64742-82-1</td>
<td>919-446-0</td>
<td>Flam. Liq. 3 H226, Asp. Tox. 1 H304, STOT SE 3 H336, Aquatic Chronic 2 H411</td>
</tr>
</tbody>
</table>

4. First aid measures

4.1 General information
After inhalation: Remove patient to fresh air and seek medical attention. In case of unconsciousness, place patient stably in side position for transportation.
After skin contact: Remove contaminated clothing. Wash skin with soap and water.
After eye contact: Wash immediately eyes with plenty of water for a long time keeping the eyelids open and seek medical attention.
After swallowing: Rinse mouth immediately and then drink plenty of water. Consult doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed
No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.
5. Firefighting measures

5.1 Extinguishing media
Suitable: CO₂, dry chemical powder, sand, foam
Unsuitable for safety reasons: Water with full jet, water spray

5.2 Special hazards arising from the substance or mixture
The product is lighter than water and insoluble. It can be transferred and ignited in distance from initial source. In case of incomplete burning may be formed CO, H₂S, SOₓ and other harmful compounds.

5.3 Advice for fire-fighters
Special protective equipment:
Fireproof suit with helmet (EN 469, 533, 1486) and self breathing apparatus (EN 137)

Additional information:
Remove the product packaging and other flammable materials away from the fire and if it is required, cool the packaging’s outside with water. Contaminated water and residues from the fire are collected separately and disposed of in accordance with local regulation. It must not enter the sewage system.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid contact with spilled material. Remove all the contaminated clothes. Use the appropriate means of body protection (see section 8). Don’t breathe vapours of product.

6.2 Environmental precautions
Avoid water and ground contamination. Do not allow to enter sewers and water surfaces.

6.3 Methods and material for containment and cleaning up
Limit the spread of the material forming protective barriers with sand or sawdust. Collect as much product as you can in a clean container for reuse (by preference) or dispose of as hazardous waste. Cover the rest product with some inert material or powder for disposal. In case of water contamination inform immediately the local authorities for the restriction of the damage. Dispose contaminated materials as hazardous waste according to item 13.

6.4 Reference to other sections
See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7. Handling and storage

7.1 Precautions for safe handling
Apply in places with very good ventilation. Don’t eat, drink or smoke while handling the material. Use appropriate means of body protection (gloves, overalls, shoes, mask). Keep away from heat and ignition sources. Apply all rules of personal hygiene after each use. Take precautionary measure against electrostatic discharges. Avoid leakage of the product into the environment.

7.2 Conditions for safe storage, including any incompatibilities
Store in a well ventilated shady place away from sources of heat, ignition and direct contact with sunlight. Keep containers securely closed and their contents can’t come into contact with incompatible materials, see section 10.

7.3 Specific end use(s)
No further relevant information available.
8. Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>ACGIH-TLV(3/2012) TWA</th>
<th>NIOSH REL (1/2013) TWA</th>
<th>NIOSH REL (1/2013) STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>20ppm η 75mg/m3, 8h</td>
<td>100ppm η 375mg/m3, 10h</td>
<td>150ppm η 560mg/m3, 15m</td>
</tr>
<tr>
<td>White spirit</td>
<td>100ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bitumen fumes (&gt;120°C)</td>
<td>0,5mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed. Wash hands and face before breaks and at the end of work.

Respiratory protection:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure, use self-contained respiratory protective device (EN 140, 141).

Protection of hands:
Wear suitable gloves (EN 374). The glove material has to be impermeable and resistant to the product. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation (nitrile rubber, chloroprene rubber, PVC). The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. For this reason the suitability of gloves should be checked before use.

Eye protection:
Wear safety glasses (EN 166).

Body protection:
Wear category II professional long-sleeved overalls and safety footwear (EN 340, 365, 466, 467). In case of release wear PVC apron (EN 345).

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>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Silver</td>
</tr>
<tr>
<td>Odour</td>
<td>Like organic solvents</td>
</tr>
<tr>
<td>pH-value</td>
<td>Not determined</td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>Not determined</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Not determined</td>
</tr>
<tr>
<td>Flash point</td>
<td>22-26°C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Self-igniting</td>
<td>Not determined</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product is not explosive. However, formation of explosive air/vapour mixtures are possible.</td>
</tr>
<tr>
<td>Explosion limits: Lower</td>
<td>Not determined</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water</td>
</tr>
<tr>
<td>Density at 25°C</td>
<td>0.85 – 0.95 gr/cm³</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined</td>
</tr>
<tr>
<td>Segregation coefficient (n-octanol/water)</td>
<td>Not determined</td>
</tr>
<tr>
<td>Dynamic viscosity at 25°C</td>
<td>40-100cP</td>
</tr>
</tbody>
</table>
9.2 Other information
Content of V.O.C: Subcategory: Special coatings.
Limit value V.O.C: 500gr/lt. Max value V.O.C: 490gr/lt

10. Stability and reactivity

10.1 Reactivity
There are no particular risks of reaction with other substances in normal conditions of storage and use.

10.2 Chemical stability
The product is stable in normal conditions of use and storage. It does not decompose when it is stored and is handled properly and is not polymerised.

10.3 Possibility of hazardous reactions
Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid
Sources of ignition and heat. Electrostatic charges. Strong oxidizing substances, strong acids and bases.

10.5 Incompatible materials
Oxidising substances, acids and bases.

10.6 Hazardous decomposition products
In the event of thermal decomposition or fire, gases and vapours that are potentially dangerous to health may be released.

11. Toxicological information
This product may cause functional disorders or morphological mutations after repeated or prolonged exposure and is thus graded as dangerous.

Acute toxicity:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>636mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>8390mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation</td>
<td>Rat</td>
<td>12,5mg/l</td>
<td>4h</td>
</tr>
<tr>
<td>White spirit</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>&gt;15000mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>&gt;3400mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation</td>
<td>Rat</td>
<td>&gt;5,5mg/l</td>
<td>4 h</td>
</tr>
<tr>
<td>Bitumen</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>&gt;5000mg/kg</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>&gt;2000mg/kg</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation</td>
<td>Rat</td>
<td>&gt;94,4mg/m3</td>
<td>4,5h -14 days</td>
</tr>
</tbody>
</table>

Corrosion/Irritation:
Moderate skin irritant and mild eye irritant.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Eyes-mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>0,5min, 100mg</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>Skin-moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24h, 500mg</td>
<td></td>
</tr>
</tbody>
</table>

Sensitization respiratory or skin: Not available.

Mutagenicity: Not available.
Carcinogenicity: Not available.

Reproductive toxicity: Not available.

Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Category 3</td>
<td>Inhalation</td>
<td>Narcotic effects</td>
</tr>
<tr>
<td>White spirit</td>
<td>Category 3</td>
<td>Inhalation</td>
<td>Narcotic effects</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Category 2</td>
<td>Inhalation</td>
<td>Unspecified</td>
</tr>
</tbody>
</table>

Aspiration hazard: No classifications because the product has a viscosity greater than 20,5cSt at 40°C.

Potential acute health effects
Eye contact: Causes serious eye irritation.
Skin contact: Causes skin irritation.
Inhalation: May cause drowsiness or dizziness.
Ingestion: May cause serious problems in the airways and stomach.

Symptoms related to the physical, chemical and toxicological characteristics
Eye contact: Pain or irritation, redness.
Skin contact: Irritation, redness.
Inhalation: Headache, drowsiness, dizziness, nausea.
Ingestion: Nausea, puke.

Delayed and immediate effects and also chronic effects from short and long term exposure
Short term exposure:
Potential immediate effects: Not available.
Potential delayed effects: Not available.

Long term exposure:
Potential immediate effects: Not available.
Potential delayed effects: Not available.

Potential chronic health effects: Not available.

Conclusion/Summary
General: May cause damage to organs after prolonged or repeated exposure in case of inhalation.
Carcinogenicity: No known significant effects or critical hazards.
Mutagenicity: No known significant effects or critical hazards.
Fertility effects: Suspected of damaging the unborn child or fertility in case of inhalation.
Developmental effects: No known significant effects or critical hazards.
Other information: No known significant effects or critical hazards.

12. Ecological information

The product is dangerous for the environment and for aquatic organisms. Floats in water. Evaporizes in 24 hours under normal conditions leaving the bitumen ingredient. Contamination of water with the product can cause mortality to aquatic organisms, algae, bacteria etc. In case of soil contamination the product remain on the soil surface and decomposed in present of oxygen

12.1 Toxicity:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>Acute EC50 12500 ug/l</td>
<td>Seaweed Pseudokirchneriella subcapitata</td>
<td>72h</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 &gt;433 ppm sea water</td>
<td>Seaweed Skeletonema costatum</td>
<td>96h</td>
</tr>
</tbody>
</table>
According to 1907/2006/EC, Article 31 and 453/2010/EU

Revision Date: 11/02/2015, Edition: 02

<table>
<thead>
<tr>
<th>White spirit</th>
<th>Acute EC50 10-20mg/l</th>
<th>Acute EC50 10-30mg/l</th>
<th>Daphnia magna</th>
<th>Fish Oncorhynchus mykiss</th>
<th>48h 96h</th>
</tr>
</thead>
</table>

12.2 Persistence and degradability: Not available.
12.3 Bioaccumulative potential: Not available.
12.4 Mobility in soil: Not available.
12.5 Results of PBT and vPvB assessment: Not available.
12.6 Other adverse effects: Not available.

13. Disposal considerations

13.1 Waste treatment methods
Recovery and reuse of the product is preferred. If this is not possible, incinerate the material in suitable incineration plant in accordance with the law and the approval of local authorities. Product residues should be considered hazardous waste and must be treated according to current regulations. The same shall apply to the absorption materials accidental release of the product.

Uncleaned packaging:
The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

14. Transport information

These goods must be transported by vehicles authorized to the carriage of dangerous goods according to the provisions set out in the current edition of the Code of International Carriage of Dangerous Goods by Road (ADR) and in all the applicable national regulations. People loading and unloading dangerous goods must be trained on all the risks deriving from these substances and on all actions that must be taken in case of emergency situations.

**Road and Rail transport ADR/RID**

UN number: 1999
UN proper shipping name: Tars, liquid including road asphalt and oils, bitumen and cut backs
ADR/RID, class: 3 Flammable liquids
Packaging group: III
Environmental hazards: Yes
Special precautions for user: Not available.
Additional information: Label: 3, Danger code Kemler: 30, Tunnel restriction code: D/E

**Maritime transport IMDG**

UN number: 1999
UN proper shipping name: Tars, liquid including road asphalt and oils, bitumen and cut backs
IMDG class: 3 Flammable liquids
Packaging group: III
Environmental hazards: Yes, Marine pollutant
Special precautions for user: Not available.
Additional information: Label: 3, EMS number: F-E, S-E
### Air transport ICAO και IATA

**UN number:** 1999  
**UN proper shipping name:** Tars, liquid including road asphalt and oils, bitumen and cut backs  
**ICAO/IATA-class:** 3 Flammable liquids  
**Packaging group:** III  
**Environmental hazards:** Yes  
**Special precautions for user:** Not available.  
**Additional information:** Label: 3, Special Instructions: A3, A72

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not rated.

### 15. Regulatory information

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

**Category Seveso:** 7b  
**Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006:**  
Product: point 3-40, Contained substance: point 48 Toluene  
**Substances in Candidate List (Art. 59 REACH):** None  
**Substances subject to authorization (Annex XIV REACH):** None  
**Substances subject to exportation reporting pursuant to (EC) Reg. 689/2008:** None  
**Substances subject to the Rotterdam Convention:** None  
**Substances subject to the Stockholm Convention:** None  
**Healthcare controls:** Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.  
**VOC Directive 2004/42/EK:** Special coatings. VOC=490 gr/lt  
**15.2 Chemical safety assessment:** No chemical safety assessment has been processed for the mixture and the substances it contains.

### 16. Other information

Text of hazard (H) indications and explanation of symbols mentioned in the previous paragraphs

| Fl. Liq. 2 | Flammable liquid, category 2 |
| Fl. Liq. 3 | Flammable liquid, category 3 |
| Repr. 2 | Reproductive toxicity, category 2 |
| Asp. Tox. 1 | Aspiration hazard, category 1 |
| STOT RE 2 | Specific target organ toxicity - repeated exposure, category 2 |
| Skin Irrit. 2 | Skin irritation, category 2 |
| STOT SE 3 | Specific target organ toxicity - single exposure, category 3 |
| Aquatic Chronic 2 | Hazardous to the aquatic environment, chronic toxicity, category 2 |
| H225 | Highly flammable liquid and vapour. |
| H226 | Flammable liquid and vapour. |
| H361d | Suspected of damaging the unborn child. |
H304  May be fatal if swallowed and enters airways.
H373  May cause damage to organs through prolonged or repeated exposure.
H315  Causes skin irritation.
H336  May cause drowsiness or dizziness.
H411  Toxic to aquatic life with long lasting effects.
EUH066 Repeated exposure may cause skin dryness or cracking

- ACGIH: American Conference of Govermental Industrial Hygienists
- ADR: Agreement on dangerous goods by road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- NIOSH: National Institute for Occupational Safety and Health
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- REL: Recommended Exposure Limit
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation.

**Notice to reader:**
The information contained in this SDS is based on our current knowledge and information gained by applicable law. Any descriptions and data given herein may be changed without prior notice. Reported information is not a guarantee of product properties and do not justify legal consequences, but provide a framework welfare of the product for particular uses.