1 – Manufacturer and product identification

1.1 – Registered name: EDMfluid 108 MP-S

1.2 – Manufacturer: STEELFLUID S.r.l.
Via Cecchi, 9/6
16129-Genova
Tel. +39010-540691 Fax +39010-5451087

1.3 – Telephone: +39010-540.691

1.4 – Emergency telephone number: +39010-540.691

1.5 – To be used as: Dielectric fluid for die-sinking EDM

1.6 – Date of issue: 14/03/2003

2 - Chemical composition/Ingredients information

Contains substances known to be hazardous to health or subject to exposure limitations according to directive no. 67/548/CEE and updates:

<table>
<thead>
<tr>
<th>name</th>
<th>cas</th>
<th>einecs</th>
<th>%</th>
<th>danger phrase</th>
<th>symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALKANE MIXTURE</td>
<td>93924-07-3</td>
<td>272-007-9</td>
<td>99.0-100</td>
<td>R65-R66</td>
<td>Xn</td>
</tr>
</tbody>
</table>

R65: Noxious – may cause damage to the lungs if ingested.
R66: Repeated exposure may cause skin dryness or chafing.

Note H applicable. Hazardous characteristics classed according to annex 1. Further classification volunteered for those hazards not listed.

Note 4 of annex 1 applicable. Kinematic viscosity at 40 °C < 7 cSt.

3 - Risks identification

This preparation is classed as hazardous: see section 15 for classification.

HEALTH HAZARDS:
It may cause lung damage by breathing if accidentally ingested, being a low viscosity hydrocarbon. Repeated and prolonged exposure to high vapour or fumes concentration may cause vertigo, headaches, dizziness and eye, nose and throat irritation. Repeated exposure may cause skin dryness or chafing.

CHEMICAL AND PHYSICAL HAZARDS/FIRE AND EXPLOSION RISK:
Low risk. The product may generate flammable mixtures, or burn, only when heated to a temperature equal or above its flash point. The product may accumulate electrostatic charges, which, when freed, will start fires.

4 – First aid procedure

4.1 – General measures
Contact a doctor in case of accident, giving all the information found on the label and in this specifications sheet. Please remember that any medicines and medical equipment must be administered by medical personnel only. Please also remember that, in case of accident, first aid must be delivered by properly qualified personnel to avoid complications or damages to the casualty.

4.2 – If the product is inhaled
In case of inhalation of vapours, take the casualty away from the contaminated area, using adequate respiratory tract protection. If breathing is irregular or stops altogether, administer resuscitation. Keep the casualty still. Contact a doctor.

4.3 – Accidental contact with the eyes
Rinse well with water in case the product comes into contact with the eyes. If irritation occurs, contact a doctor.

4.4 – Accidental contact with the skin
Take the casualty away from the contaminated area and remove soiled clothing. If the product accidentally comes into contact with the skin, wash well with soap and water.

4.5 – If the product is ingested
In case the product is accidentally ingested do not drink, do not induce vomiting, and call a doctor immediately.
5 – Fire prevention

5.1 – To extinguish a fire
In case of fire or presence of the product in a fire, follow this procedure:

• to extinguish the fire use powder, foam or carbon dioxide
• use water to avoid overheating of containers exposed to the fire.

5.2 – Inadequate fire extinguishing means
There are no particular contraindications to the use of any of the following: powder, foam, carbon dioxide, halon, sand.

5.3 – Risks from combustion of the product
Should the product be in a fire or an explosion, do not breathe the fumes. Incomplete combustion may generate CO. Complete combustion may generate: water, carbon monoxides (TLV-TWA: 57mg/m³) and, in smaller amounts, mineral salts.

5.4 – Protective equipment for the fire fighters
Equip the fire fighting personnel with the following:

• full flash barrier suit
• helmet with eye shield or shielded hood
• heat proof gloves
• heat proof shoes
• breathing apparatus or gas mask
• organic vapours gas mask with filter for the risks described above, according to the fire type and place (if the fire occurs in an open or confined space), etc..
• suitable fire protective equipment.

5.5 – Special equipment
Do employ suitable positive pressure breathing apparatus (aqualung) in case of fire.

6 – Accidental spillage procedure

6.1 – Individual measures
In case of accidental spillage, use the following protective measures:

• protective goggles, eye shield, gloves, boots and aprons
• organic vapours gas mask with filter
• do not breathe the fumes, do not smoke.

6.2 – Environmental protection
In case of accidental spillage:

• stop or intercept the spillage and proceed to contain and collect the product following the indications set out at item 6.3 below
• keep unauthorised people away
• avoid or reduce product spillage in the ground and in the environment
• extinguish all open flames and possible sources of ignition. Do not smoke
• collect polluted water or soil in appropriate containers to send for proper waste disposal
• if the product has reached waterways or drainage systems, or has contaminated the ground or the vegetation, report to the authority in charge.

6.3 – Containing and collecting spillage
To contain and collect spillage, please follow the procedure below:

• use protective means described at item 6.1
• collect spillage in sealed containers
• contain and soak up the spillage with inert absorbent materials (soil, sand,...) or by pumping (anti-detonation or manual pump. If liquid viscosity is too high to be pumped, collect spillage with spades and place in suitable containers for disposal or re-use
• call an expert on disposal according to national legislation
• see section 4 “First Aid procedure” and section 10 “Stability and reactivity”. Spillage in water:
• contain spillage if at all possible
• remove spillage from the surface either by mechanical means or with suitable absorbent materials. In open waters sinking or dispersion of product may be done according to legislation in force.

7 – Storage and handling of product

7.1 - Handling
When handling the product, use protective means according to item 8 of this specifications sheet and the following procedures:

• do not smoke, eat or drink when handling the product
• avoid prolonged or frequent contact with the skin. Do not breathe the vapours
do not handle in areas where ignition sources are present

do not dispose of waste in the sewage system.

7.2 – Storage
Please follow the cautionary measures set out below:

- keep the containers hermetically sealed and stored in adequately ventilated areas. Protect the product from direct sun
- employ suitable grounding measures.

Suitable materials and coatings: carbon steel, stainless steel, polythene, polypropylene, polyester, Teflon.

Unsuitable materials and coatings: natural resins, butanol resin, EPDM, polystyrene.

Compatibility with plastics may vary, please check before using.

Containers normally employed for transportation: tankers, tank lorries, drums, canisters.

The containers, including the empties, must be stored in well ventilated areas at temperatures between –5 and 50 °C and with safety catch on.

OTHER WARNINGS: The container is still a danger even when emptied of the product contained. Please keep to the precautions set out.

| 8 – Exposure control/individual protection |

8.1 – General precautions
Use the product according to this specifications sheet, particularly with regards to item 7.1. Use protective means according to the following items 8.3, 8.4 and 8.5. It is recommended to employ mechanical ventilation systems when the product is kept in confined spaces, as well as when it is heated to temperatures above normal room temperature.

8.2 – Concentration limits in biological and working environments
Available data shows that the product does not contain any substance with exposure limitations. Data relating to TLV values is not available; however, it is recommended not to exceed exposure above 300 ppm. In open circuit systems where contact with the product is possible, personnel must wear protective goggles, long-sleeved uniforms and waterproof gloves. Where the product concentration in air is above the limits set out in this paragraph, and where the plant type, the working practices and other means to limit exposure are not sufficient, suitable respiratory tract protection is necessary.

PERSONAL HYGIENE:
provide suitable washing facilities in the working environment. Change coveralls, clothes worn under the coveralls, and shoes, whenever they become soaked by the product. Protective clothing, usefully employed to minimize contact with the preparation, may be source of contamination if continued to wear after being soaked with the product.

WORKING PRACTICE:
Use and choice of protective wear is relative to the risks posed by the product, by working conditions and the processing methods. As minimal protection, it is generally recommended to use protective wrap-around goggles, coveralls to protect the arms, legs and body. Each visitor to the area where product handling takes place must also wear protective wrap-around goggles.

TO LIMIT EXPOSURE:
keep clean the workplace, follow good working practices and, when product is handled by operators with dry skin, or in cold places, follow the instructions set out in the item below.

Change protective gloves (made of PVC, polyethylene, neoprene- non hevea rubber) when wear, tear or contamination is present. Where concentration of the product in air exceeds the limits set out in this paragraph, it is recommended to wear half-face filter mask to protect from inhalation overexposure. The filter used may vary according to the types and quantities of chemicals handled in the workplace.

SKIN PROTECTION:
personal cleanliness is the most effective of protections. Do not use abrasives or solvents. After work, it is recommended to use reconditioning creams to restore the lipidic layer in the skin, especially in case of dry skin sufferers and during the winter months. Humidity and low temperatures may cause grazes, making personnel more vulnerable to chemicals handled.

8.3 – Respiratory tract protection
When handling heated, employ the following protection means:

- organic vapours gas mask with filter

8.4 – Hands protection
When handling the product, protect the hands as follows:

- wear solvent resistant gloves.

8.5 – Eye protection
When handling the product, protect the eyes as follows:

- wear protective wrap-around goggles

8.6 – Skin protection
When handling the product, wear protective clothing.
8.7 – Further information
If the product is overheated, it is good practice to employ suitable individual protective measures.

9 – Chemical and physical characteristics

9.1 - Physical state (at 20 °C and at 101.3 kPa) : Liquid
9.2 - Odour : odourless
9.3 - pH: N.A.
9.4 – Boiling point from: 246 °C (IBP)
9.5 – Pour point: 6 °C
9.6 – Flash point : 110 °C
9.7 - Flammability (solids, gas) : Not applicable (the product is liquid)
9.8 – Self-flammability : Self-ignition temperature > 200°C. Flammability limits in air % vol.:0.6-6.5
9.9 – Explosive properties: None
9.10 – Combustive properties: None
9.11 – Vapour pressure: <1 kPa at 20°C
9.12 – Relative density: 0.76
9.13 - Solubility: Water solubility: Insoluble
Lipo-solubility: soluble with main organic solvents
9.14 – Distribution coefficient n-tetrahydrolinalool/water: N.D.
9.15 – Other parameters
Colour (ASTM D 156): +30
Pour point (ASTM D 97): +6°C
Viscosity at 20°C (ASTM D 445): 3 cSt
Density at 15°C (ASTM D 1298): 0.767 kg/l
Content in water (ASTM D 1533): <100 ppm
Doctor test (DIN 51765): negative
Copper corrosion (ASTM D 130): 1

N.B.: The data on this specifications sheet are average values, not specifications limits.

10 - Stability and reactivity

10.1 - Stability
The available data does not show any special risks.

10.2 – Conditions to avoid
Avoid the following:
- exposure of product to heat, sparks or naked flames

10.3 – Incompatible materials
The available data does not show any special materials or substances incompatible with the product. However, it is best to avoid contact with oxidising mineral acids.

10.4 – Dangerous decomposition materials
The available data shows that the product does not generate dangerous decomposition materials.
The product generates carbon monoxide by combustion (CO if incomplete combustion occurs).
Thermal decomposition: the product vaporizes without decomposing.

11 – Toxicity information

11.1 – Toxicity from inhalation
Concentration of vapours above the recommended exposure limits are eye and respiratory tract irritant; they may also cause headaches and dizziness, are anaesthetics, and may affect the central nervous system.

11.2 – Toxicity from ingestion
Even small quantities of the liquid in the respiratory tract, either due to ingestion or to vomiting, may cause pneumonia or pulmonary aedema. Minimum toxicity index.
DL50 oral: >5000mg/kg (rat)

11.3 – Toxicity from skin contact
Frequent and prolonged exposure may scour the skin, causing discomfort and dermatitis.

DL50 cutaneous: >2000mg/kg rabbit

11.4 – Toxicity from eye contact
The available data does not show any special risks. The product will cause discomfort to the eyes without actual damage to the ocular tissue.

11.5 – Sensitisation effects
The available data does not show any special risks from sensitisation.

11.6 – Prolonged exposure effects
The available data does not show any special risks from prolonged exposure.

11.7 – Carcinogenic effects
The available data does not show any special risks of carcinogenic effects.

11.8 - Mutagenic/teratogenetic effects
The available data does not show any special risks of mutagenic/teratogenic effects.

11.9 – Special risks from components
The available data does not show any special risks from individual components.

12 – Environmental information

12.1 – Possible product toxicity
Follow good working practices when using the product, avoiding dispersion in the environment. Water hazard: Class 1 (WGK1) (self-classification): low hazard.
Toxicity in water:
LC50 fish 96h : ineffective at saturation strength
EC50 Daphnia 48h : ineffective at saturation strength
EC50 seaweed 48h : ineffective at saturation strength

12.2 – Persistency and degradability
Photodegradability: t1/2< 0.6 dd (OECD test)
Total biodegradability: easily biodegradable (OECD301F)

12.5 - Magnification potential
Log Pow > 7

12.6 - Ecotoxicity
No acute toxicity of water organisms is expected from maximum water solubility of the product. No long term damage to water organisms is expected.

13 – Waste disposal

13.1 – Disposal of the product or of its residues
The product as is must be classed as: special hazardous waste. Reclaim if possible. This product CAN NOT be disposed of in dumps and/or public drainage systems, canals, natural waterways or rivers. The product does not generate cinders, and may be burnt in properly fitted incinerator plants according to legislation in force. Product waste or contaminated waste must be classed, stored and sent to a good waste disposal plant according to national and regional by-laws. Handling and storage of waste by-products must be carried out according to procedures set out at items 6 and 7 of this specifications sheet.

13.2 – Container disposal
All containers, even when completely empty, must not be disposed of in the environment. The containers must be properly treated before sending to disposal plants. The containers still containing product residues must be classed, stored and sent to a suitable waste disposal plant according to national and regional by-laws.

13.3 – European Waste Catalogue Code
The product may be coded differently according to its use. It is not possible to supply general information. The product as is does not contain halogenated compounds. The consumer must be aware that the conditions of use may affect the waste code of the product after use. Please refer to directive number 2001/118/EC for waste coding.

14 – Information on transport

14.1 - Precautions
The product has not been classed dangerous goods by the Expert Committee of the United Nations (ECOSOC).

14.2 – Road transportation
The product does not represent a hazard for road transportation.

14.3 – Rail transportation
The product does not represent a hazard for rail transportation.

14.4 – Sea transportation
The product does not represent a hazard for sea transportation.

14.5 – Air transportation
The product does not represent a hazard for air transportation.

15 - Regulations

15.1 – Labels according to CEE/67/548 provision and updating

| SYMBOL: | Xn-NOXIOUS |
| R WORDING: | R65: Noxious: may cause damage to lungs if ingested  
R66: Repeated exposure may cause skin dryness and chafing |
| S WORDING: | S23: Do not breathe gas/fumes/vapours/aerosols  
S24: Avoid contact with the skin  
S62: If accidentally swallowed, do not induce vomiting: contact a doctor immediately and show him the label or the container |

Labelling and classification: CONTAINS ALKANES

National legislation: According to the following provisions where applicable

- Presidential Decree no. 175/88 and further updates
- Presidential Decree no. 303/56 of 19/05/1956
- Ministerial circulars nos. 45 and 61
- Legislation Decree no. 626/94 and further updates

National legislation: Further directives in force:

- threshold limit values (TLV) and biological exposure indicator (BEI) ACGIH 1998.
- Significant accident risks (Severo bis) (legislative decree no. 334 of 17/08/1999) (implementation of directive 96/82/CE on significant accident risk control in relation to specific hazardous substances) (published on: Gazzetta Ufficiale Italiana no. 228 of 28/09/1999).
- Regulations on emissions (Ministerial decree of 12/7/90) (Guidelines for the containment of industrial plant emissions and fixed minimum emission values) (published on: Gazz. Uff. Suppl. Ordin. no. 176 of 30/07/1990).
- Ministerial Circulars nos. 45 and 61 and implementation thereof.
15.2 – Sale and use limitations
There are no limitations on the sale and/or use of the components.

16 - Further information

Limitations of use: only for use in industrial processing
Safety data sheet distribution: the information contained herein must be made available to all those who handle the product.

HAZARD WARNINGS GLOSSARY
R65 – noxious: may cause lung damage if ingested
R66 – repeated exposure may cause skin dryness and chafing

All information on this specifications sheet is according to our knowledge and our experience of the product and must not be considered exhaustive. It relates to the product as per specifications. If mixed or combined with other products, please make sure this cannot result in new risks or dangers.

The consumer is not, in any case, exempt from observing the regulations in force, relating either to the administrative or regulatory use of the product, or to work hygiene and safety practices.

This specifications sheet was prepared using ESWIN, and the SINTALEX database.

N.B.: Classed according to Decree no. 31/07/1934: the preparation must be classed as fule Category C (flash point above 65 °C) according to title II, par. 1 of the above Decree.

Revision summary:
This safety data sheet has been revised at section/s: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16 since 13th March, 2003.
A vertical bar (|) on the left margin indicates a new entry from the previous version. If a section is indicated but the bar is not present the text has been erased.