SAFETY DATA SHEET
ACCORDING TO 1907/2006/EC, 453/2010/EU, 2015/830/EU (REACH)

MUSCLE-UP® K 360 SL

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

1.1 Product Identifier

Product Name : MUSCLE-UP® K 360 SL
Product description : Clear Yellow Soluble Concentrate Herbicide
Product Type : Soluble Concentrate

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

Relevant uses: Herbicide
Uses advised against: All uses not specified in this section or in section 7.3

1.3 Details of the supplier of the safety data sheet

Ag-Chem Africa (Pty) Ltd
288 Mundt Street
Waltloo
Pretoria
South Africa
Tel: +27(0)12 803 0145
Fax: +27(0)12 803 8418

1.4 Emergency telephone number

National advisory body/Poison Centre

Telephone number : SOUTH AFRICA
Griffon Poison Information Centre
(24 Hour Poisoning Emergency Helpline)
+27(0)82 446 8946

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

CLP Regulation (EC) no 1272/2008:

Classification of this product has been carried out in accordance with CLP Regulation (EC) no 1272/2008.

Aquatic Chronic 2: Aquatic Chronic, Category 2, H411

2.2 Label elements
CLP Regulation (EC) no 1272/2008:

Hazard pictogram(s):

Signal word : Warning
Hazard statement(s) : H411 - Toxic to aquatic life with long lasting effects

Precautionary statement(s) :
P101 - If medical advice is needed, have product container or label at hand.
P102 - Keep out of reach of children.
P103 - Read label before use.
P273 - Avoid release to the environment.
P391 - Collect spillage.
P501 - Dispose of the contents/containers in accordance with the current legislation on waste treatment

2.3 Other hazards
Non-applicable

SECTION 3: Composition/information on ingredients

3.1 Substance:
Non-applicable

3.2 Mixture:
Chemical description: Multi-constituent substance
Component(s):

Chemical Name:	Glyphosate (glycine) Isopropyl ammonium salt
CAS:	39600-42-5
EC:	-
Index:	-
REACH:	-
Formulation:	Glyphosate (glycine) 360 g/l

SECTION 4: First Aid Measures

4.1 Description of first aid measures

The symptoms resulting from intoxication can appear after exposure, therefore, in case of doubt, seek medical attention for direct exposure to the chemical product or persistent discomfort, showing the SDS of this product.

By inhalation:
Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Do NOT give mouth-to-mouth resuscitation if victim ingested or inhaled the substance. Keep person at rest and warm. Treat symptomatically and supportively as and when required. Obtain medical advice if necessary.
By skin contact:
Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists. Wash clothing before re-use.
By eye contact:
Immediately flush eyes with lukewarm water or saline solution for at least 15 minutes, lifting lower and upper eyelids occasionally. Check for and remove any contact lenses after 5 minutes. Get medical attention if necessary.

By ingestion / aspiration:
Have victim rinse mouth thoroughly with water. Give water to dilute the material if victim is alert and not convulsing. Induce vomiting immediately as directed by medical personnel. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomits, rinse mouth and administer more water. Never give anything by mouth to an unconscious person. Qualified medical personnel should perform administration of oxygen. Seek medical advice if necessary.

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

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician **:** None.
Specific treatments **:** Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Fire Extinguishing Media

Suitable extinguishing media:
Extinguish small fires with water, alcohol-resistant foam, dry chemical and carbon dioxide. Extinguish large fires with alcohol-resistant foam or water.

Unsuitable extinguishing media:
No information available.

5.2 Special hazards arising from the substance or mixture
Hazards from the substance or mixture:
Cool tank/containers exposed to fire with water spray. Isolate area. Do not allow run-off from firefighting to enter drains or water courses.

Hazardous thermal decomposition products:
On burning will emit toxic fumes, including those of oxides of carbon, oxides of phosphorus, oxides of nitrogen.

5.3 Additional provisions:
Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full-face piece operated in the pressure demand or other positive pressure mode.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Slippery when spilt. Avoid accidents, clean up immediately. Wear appropriate personal protective equipment.

6.2 Environmental precautions:
This product is classified as harmful to the environment. Keep product away from drains, surface and underground water.

6.3 Methods and materials for containment and cleaning up

Spills:
Collect in containers for disposal. Wash contaminated surfaces to remove any residues. Minimize use of water to prevent environmental contamination.

Large Spills:
Prevent spillage or further leakage if it is safe to do so. Contain spillage with sand bags or by other means. Absorb with earth, sand or absorbent material. Dig up heavily contaminated soil. Flush with water to remove any residues. Keep product and wash water out of drains, sewers, ditches and waterways.

6.4 Reference to other sections:
See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling:
A.- Precautions for safe manipulation
Comply with the current legislation concerning the prevention of industrial risks. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions
Due to its non-flammable nature, the product does not present a fire risk under normal conditions of storage, manipulation and use.

C.- Technical recommendations to prevent ergonomic and toxicological risks
Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks
It is recommended to have absorbent material available at close proximity to the product (See subsection 6.3)

7.2 Conditions for safe storage, including any incompatibilities:
A.- Technical measures for storage
Minimum Temp.: 5 ºC
Maximum Temp.: 30 ºC
Maximum time: 36 Months

B.- General conditions for storage
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5. Keep containers closed when not in use - check regularly for leaks.

7.3 Specific end use(s)
Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
No specific occupational exposure limit has been established.

8.2 Exposure controls

Appropriate engineering controls:
Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

<u>Individual protection measures</u>

Hygiene measures:
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Eye/face protection:
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Possible: safety glasses with side-shields

Skin protection

Hand protection:
Protective gloves against minor risks.
Body protection:
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection:
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection:
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.
Environmental exposure controls:
In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. No significant release into the air is expected.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
For complete information, please refer to product datasheet.

Appearance

Physical state	: Liquid (Soluble Concentrate)
Colour	: Clear Yellow
Odour	: Strong organic odour

Volatility:

Boiling point at atmospheric pressure	: No data available
Vapour pressure at 20 ºC	: No significant volatility, aqueous solution.
Vapour pressure at 50 ºC	: No significant volatility, aqueous solution.
Evaporation rate at 20 ºC	: No data available

Product description:

Density at 20 ºC	: 1.24 g/mℓ
Relative density at 20 ºC	: Non-applicable *
Dynamic viscosity at 20 ºC	: Non-applicable *
Kinematic viscosity at 20 ºC	: Non-applicable *
Kinematic viscosity at 40 ºC	: Non-applicable *
pH	: 5.0 - 5.3
Vapour density at 20 ºC	: Non-applicable *
Partition coefficient n-octanol/water 20 ºC	: Non-applicable *
Solubility in water at 20 ºC	: Completely miscible.
Solubility properties	: Non-applicable *
Decomposition temperature	: Non-applicable *
Melting point/freezing point	: Non-applicable *
Explosive properties	: No explosive properties
Oxidising properties	: Non-applicable *

Flammability:

Flash Point	: Does not flash
Autoignition temperature	: 520 ºC
Lower flammability limit	: Non-applicable *
Upper flammability limit	: Non-applicable *

*Not relevant due to the nature of the product, not providing information property of its hazards.

9.2 Other information
No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity:
No hazardous reactions are expected because the product is stable under recommended storage conditions. See section 7.

10.2 Chemical stability:
Under normal use conditions of handling and storage, this product is stable for up to 2 years.

10.3 Possibility of hazardous reactions:
Hazardous polymerization does not occur.

10.4 Conditions to avoid:
Applicable for handling and storage at room temperature:

Shock and friction	Contact with air	Increase in temperature	Sunlight	Humidity
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

10.5 Incompatible materials:

Acids	Water	Combustive materials	Combustible materials	Others
Not applicable	Not applicable	Not applicable	Not applicable	Slightly reactive with alkalis. May also react with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.6 Hazardous decomposition products:
On decomposition emits toxic fumes of those of oxides of carbon, oxides of phosphorus, and oxides of nitrogen.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

LD50 Oral (Rat): > 5 000 mg/kg
LD50 Dermal (Rat): > 5 000mg/kg
LC50 Inhalation (Rat): > 5 mg/ℓ/4 hr

Dangerous health implications:
Moderately toxic upon acute oral exposure and poses very little if any risk to human health. The usual routes by which humans receive toxic exposure are through skin or eye contact, as well as by inhalation of powders and dusts.

A.- Ingestion (acute effect):
- Acute toxicity : Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Corrosivity/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

B- Inhalation (acute effect):
- Acute toxicity : Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Corrosivity/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

C- Contact with the skin and the eyes (acute effect):
- Contact with the skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Contact with the eyes: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

D- CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):
- Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for the effects mentioned.
- Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Reproductive toxicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

E- Sensitizing effects:
- Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous with sensitising effects.
- Cutaneous: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

F- Specific target organ toxicity (STOT)-time exposure:
Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

G- Specific target organ toxicity (STOT)-repeated exposure:
- Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

H- Aspiration hazard:
Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

Other information:
Non-applicable

SECTION 12: Ecological information

The experimental information related to the eco-toxicological properties of the product itself is not available.

12.1 Toxicity:

Glyphosate (glycine) as potassium salt			
	Acute toxicity	**Species**	**Genus**
LC50	21 mg/L (96 h)	Bluegill sunfish (*Lepomis macrochirus*)	Fish
EC50	56 mg/L (48h)	Daphnia magna	Water flea

12.2 Persistence and degradability:
When glyphosate comes into contact with the soil, it can be bound to soil particles, thereby slowing its degradation. In sewage sludge, unbound glyphosate has been degraded by bacteria.

12.3 Bio accumulative potential:
Glyphosate's low octanol/water coefficient and low fat (lipids) solubility indicate that it has a low tendency to bio accumulate.

12.4 Mobility in soil:
Can be bound to soil particles and do not move vertically in the soil profile.

12.5 Results of PBT and vPvB assessment:
No information found.

12.6 Other adverse effects:
No information found.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product
Methods of disposal:
The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Hazardous waste:
No information available.

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

Special precautions:
This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	Land transport (ADR/RID)	Inland waterway transport (AND/ADNR)	Sea Transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN Number	3082	3082	3082	3082
14.2 UN proper shipping name	Environmentally hazardous substance, liquid, N.O.S (contains Potassium salt of glyphosate)	Environmentally hazardous substance, liquid, N.O.S (contains Potassium salt of glyphosate)	Environmentally hazardous substance, liquid, N.O.S (contains Potassium salt of glyphosate)	Environmentally hazardous substance, liquid, N.O.S (contains Potassium salt of glyphosate)
14.3 Transport hazard class(es)	9 	9 	9 	9 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes 	Yes 	Yes 	Yes 
14.6 Special precautions for user	No data available	No data available	No data available	No data available
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code:	No data available	No data available	No data available	No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
Candidate substances for authorisation under the Regulation (EC) 1907/2006 (REACH): Non-applicable
Regulation (EC) 1005/2009, about substances that deplete the ozone layer: Non-applicable
Active substances not included in Annex I under Regulation (EU) No 528/2012: Non-applicable
REGULATION (EU) No 689/2012, in relation to the import and export of hazardous chemical products: Non-applicable

Limitations to commercialisation and the use of certain dangerous substances and mixtures (Annex XVII REACH,etc ….):
Non-applicable

Other legislation:
Law No.360 / 2003 on the dangerous substances and preparations
Law nr.349 / 2007 regarding the reorganization of the institutional framework for chemicals management
Law no.249 / 2011 to amend article 4 of Law nr.349 / 2007 on the reorganization of the institutional framework chemicals management
Government Decision no. 477/2009 on the establishment of penalties for infringements of the provisions of Regulation (EC) No. 1.907 / 2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45 / EC and repealing Regulation (EEC) No. 793/93 and

Regulation (EC) no. 1.488 / 94 Commission and Council Directive 76/769 / EEC and Directives 91/155 / EEC, 93/67 / EEC, 93/105 / EC and 2000/21 / EC Commission Law no.254 / 2011 amending article 26 of Law No.360 / 2003 on the preparations and substances dangerous GD nr.662 / 2011 repealing Government Decision no. 347/2003 regarding restrictions on the marketing and use of certain dangerous substances and preparations.
Emergency Ordinance no.60 / 2013 for completing art. 4 para. (1) of Law no. 349/2007 on the reorganization framework institutional management of chemicals GD Nr.1408 / 2008 and Annexes 1-6 on classification, packaging and labeling of dangerous substances GD nr.937 / 2010 and Annexes 1 to 5 on the classification, packaging and labeling in the marketing of dangerous preparations
GD no.122 / 2010 on the penalties applicable to infringements of the provisions of Regulation (EC) no.1272 / 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548 / EEC and 1999/45 / EC, and amending Regulation (EC) no.1907 / 2006
GD no.398 / 2010 establishing measures to enforce the provisions of Regulation (EC) nr.1272 / 2008 on classification, labeling and packaging of substances and mixtures.
Decision no. 1218/2006 establishing minimum safety requirements for ensuring occupational health and protection workers from risks related to chemical agents.
Law no. 319/2006 - Law on safety and health at work
GD 621/2005 on the management of packaging and packaging waste.
GD 1872/2006 amending and supplementing Government Decision 621/2005 on the management of packaging and packaging waste
The Waste Regulations 2011, 2011 No. 988.

Specific provisions in terms of protecting people or the environment:
It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of the local circumstances in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

15.2 Chemical Safety Assessment:
The supplier has not carried out evaluation of chemical safety.

SECTION 16: Other information

Legislation related to safety data sheets:
This safety data sheet has been designed in accordance with ANNEX II-Guide to the compilation of safety data sheets of Regulation (EC) Nº 1907/2006 (Regulation (EU) Nº 453/2010, Regulation (EC) Nº 2015/830)

Modifications related to the previous security card which concerns the ways of managing risks. :
Non-applicable

Texts of the legislative phrases mentioned in section 2:
The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3

Texts of the legislative phrases mentioned in section 3:
Non-applicable

CLP Regulation (EC) nº 1272/2008:
Aquatic Chronic 2: Aquatic Chronic, Category 2, H411

Classification procedure:
Non-applicable

Advice related to training:
Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:
http://esis.jrc.ec.europa.eu
http://echa.europa.eu
http://eur-lex.europa.eu

Relevant P-, H- and EUH-phrases (number and full text)
H411 - Toxic to aquatic life with long lasting effects
P101 - If medical advice is needed, have product container or label at hand.
P102 - Keep out of reach of children.
P103 - Read label before use.
P273 - Avoid release to the environment.
P391 - Collect spillage.
P501 - Dispose of the contents/containers in accordance with the current legislation on waste treatment

Abbreviations and acronyms:
ADR: European agreement concerning the international carriage of dangerous goods by road
IMDG: International maritime dangerous goods code
IATA: International Air Transport Association
ICAO: International Civil Aviation Organisation
COD: Chemical Oxygen Demand
BOD5: 5-day biochemical oxygen demand
BCF: Bioconcentration factor
LD50: Lethal Dose 50
CL50: Lethal Concentration 50
EC50: Effective concentration 50
Log-POW: Octanol–water partition coefficient
KOC: PARTITION COEFFICIENT OF ORGANIC CARBON

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