SECTION 1 - IDENTIFICATION

1.1 Product identifier

Product name: **MALEIC ANHYDRIDE**
Product Identifier: -

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

Relevant identified uses: Manufacture of polyester and alkyd coating resins; raw material for the preparation of fumaric acids and tartaric, and maleic hydrazide; as a constituent of pesticides, preservatives for oils and fats, etc.

1.3 Details of the supplier of the Safety Data Sheet

YPF S.A.
Macacha Güemes n° 515, (C1106BKK) Puerto Madero, Ciudad Autónoma de Buenos Aires, Argentina.
P: +54 11 5441 2000. F: +54 11 5441 5796.

1.4 Emergency telephone number

Emergency phone (24 hours): CIQUIME 0800 222 2933 (from Argentina)
+54 11 4552 8747 (other countries)

SECTION 2 – HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to the Globally Harmonized System
Acute toxicity, oral (Category 4)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Respiratory sensitization (Category 1A)
Skin sensitization (Category 1A)
Specific target organ toxicity – repeated exposure (Category 1)
Short-term (acute) aquatic hazard (Category 3)

2.2 Label elements

Pictogram:

Signal word: DANGER

Hazard statements:
H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H372 - Causes damage to organs through prolonged or repeated exposure.
H402 - Harmful to aquatic life.
Precautionary statements:
P234 - Keep only in original packaging.
P390 - Absorb spillage to prevent material-damage.
P406 - Store in a corrosion resistant container with a resistant inner liner.
P260 - Do not breathe dust, fume, gas, mist, vapours or spray.
P280 - Wear protective gloves, protective clothing, eye protection and face protection.
P301 + P310 - IF SWALLOWED: Call a POISON CENTER or a doctor.
P333 + P313 - IF SKIN IRRITATION OR RASH OCCURS: Get medical advice or attention.
P363 - Wash contaminated clothing before reuse.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P405 - Store locked up.
P501 - Dispose of contents and/or container in accordance with national and international regulations.

2.3 Other hazards

Dust explosion hazard. Refer to section 9 for more information.Dust explosion hazard. See section 9 for more information.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

Maleic anhydride (CAS 108-31-6): 100% - Acute Tox. 4; Skin Corr. 1B; Resp. Sens. 1A; Skin Sens. 1A; STOT Rep. Exp. 1; Aquatic Acute 3

SECTION 4 – FIRST-AID MEASURES

4.1 Description of first aid measures

General advice:	Avoid exposure to the product and take appropriate protective measures. Consult your doctor with the safety data sheet.
Inhalation:	Move victim to an area with clean air. Keep her at rest. If not breathing, apply artificial respiration. Call the doctor.
Skin contact:	Immediately wash skin with plenty of soap and water for at least 15 minutes. Do not neutralize or add substances other than water.
Eye contact:	Immediately flush eyes with water for at least 15 minutes, keeping eyelids open. If you have contact lenses, remove them after 5 minutes and continue rinsing eyes. Consult the doctor.
Ingestion:	DO NOT INDUCE VOMITING. Rinse mouth with water. If the victim is unconscious, call a doctor immediately, and turn her on her side to reduce the risk of aspiration. Do not give the victim anything to drink or eat.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: May cause irritation to the respiratory tract. It can be toxic.
Skin Contact: May cause skin burns. It can be toxic.
Eye Contact: May cause burns.
Ingestion: May cause burns. It can be toxic.

4.3 Indication of any immediate medical attention and special treatment needed

Medical advice: Perform symptomatic treatment. For more information, consult a Poison Center.

SECTION 5 – FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Use dry chemical, alcohol-resistant foam, sand or carbon dioxide (CO_2). Some foams can react with the product. DO NOT USE water jets as it may spread fire.

5.2 Special hazards arising from the substance or mixture

The product and its packaging can burn, but do not ignite easily. Under certain conditions, any dust in the air can be a risk of explosion.

5.3 Advice for firefighters

5.3.1 Firefighting instructions
Spray the packaging with water to avoid ignition or to keep them cool if exposed to excessive heat or fire.
Remove the packages if they have not yet been reached by the flames, and you can do so without risk.
Cool containers with water until the fire is extinguished, removing the remains until the embers are cold.
Prevent water used for fire control or dilution from entering watercourses, drains or springs.
5.3.2 Protective clothing
Use SCBA and structural protection clothing for firefighters.
5.3.3 Hazardous combustion products
In case of fire, it may release irritating and/or toxic fumes and gases, such as carbon monoxide, and other substances derived from incomplete combustion.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel
Evacuate personnel to a ventilated area.
6.1.2 For emergency responders
In case of spill with fire, avoid contact with the product. If contact is likely, wear a fully chemical resistant firefighting suit and self-contained breathing apparatus. If firefighting gear is not available, wear chemical-resistant clothing and self-contained breathing apparatus and fight fire from a remote location.
In the event of a non-fire spill, or in the post-fire cleanup phase, wear chemical resistant clothing that is specifically recommended by the manufacturer.
Eliminate all sources of ignition (no smoking, flares, sparks or open flames in danger area). Evacuate people to a ventilated area. Do not touch contaminated objects or areas or walk on the spilled material. Use self-contained

breathing apparatus and skin and eye protection. Wear impervious protective gloves. Ventilate immediately, especially in low areas where vapors may accumulate. Do not allow reuse of spilled product.

6.2 Environmental precautions

Contain solid and cover to prevent dispersion. Prevent the product in reaching waterways.

6.3 Methods and material for containment and cleaning up

Collect the product with a shovel and place it in an appropriate container. Clean the affected area completely. Dispose of the water and collected waste in marked containers for disposal as waste.

6.4 Reference to other sections

See Section 8 - Exposure Controls and Personal Protection, and Section 13 – Disposal considerations.

SECTION 7 – HANDLING AND STORAGE

7.1 Precautions for safe handling

Do not eat, drink or smoke during handling.
Avoid contact with eyes, skin and clothing. Wash arms, hands, and nails after handling. Facilitate access to safety showers and eyewash emergency. Avoid inhalation of the product. Use PPE. Keep container closed. Use with adequate ventilation. Handle containers carefully.

7.2 Conditions for safe storage, including any incompatibilities

Store in a clean, dry, well-ventilated area. Protect from sunlight. Periodically check the containers to warn of losses and breakages. Store at temperatures between 15 and 25 °C, in rooms with a waterproof and resistant to corrosion floor.

Packaging materials:	Supplied by the manufacturer.
Incompatibilities:	Keep away from Oxidizing mineral acids, alcohols and glycols, aldehydes, amines, azo and diazo compounds, hydrazines, caustics, cyanides, dithiocarbamates, inorganic fluorides, isocyanates, metals, nitrides, nitriles, inorganic sulfides, epoxides, explosives, their

7.3 Specific end use(s)

Manufacture of polyester and alkyd coating resins; raw material for the preparation of fumaric acids and tartaric, and maleic hydrazide; as a constituent of pesticides, preservatives for oils and fats, etc.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

TLV-TWA (ACGIH):	0,1 ppm
TLV-STEL (ACGIH):	N/D
PEL (OSHA):	1 mg/m³

	REL: 1 mg/m³
IDLH (NIOSH):	10 mg/m³

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Keep workplace ventilated. The normal routine ventilation is usually adequate. Local hoods should be used for operations that produce or release large amounts of product. In low or confined areas should be provided mechanical ventilation. Provide showers and eyewash stations.

8.2.2. Individual protection measures, such as personal protective equipment

Eye and face protection:	When necessary, wear safety glasses complying with EN 166.
Skin protection:	When necessary, wear impermeable protective PVC, nitrile or butyl gloves (complying with standards EN 374), clothes and safety footwear resistant to chemicals.
Respiratory protection:	When necessary, wear an dust and particles (P1) respirator. Special attention to oxygen levels in the air should be paid.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	Crystalline solid.
Colour:	Colorless.
Odour:	Acre.
Odour threshold:	0,3 ppm (0,001223 mg/L)
pH:	7 (sol. 1%)
Melting point:	52,8°C (127°F)
Boiling point:	202,2°C (396°F)
Evaporation rate:	Not volatile.
Flammability:	The product is a combustible powder.
Flash point:	Does not apply to powders.
Explosive limits:	Dust explosion hazard.
Auto-ignition temperature:	476°C (888,8°F)
Decomposition temperature:	N/D
Vapour pressure (20°C):	The product is a powder.
Vapour density (air=1):	Not volatile.
Relative density (20°C):	1,48 g/cm³
Solubility (20°C):	N/D
Partition coefficient (logKo/w):	1,62
Viscosity (70°C):	Does not apply to powders.

Henry constant (20°C):	Does not apply, because it is not volatile.
Explosive properties:	Dust in the air can create potentially explosive atmospheres. These properties vary depending on the size of the particles and their moisture content.
Oxidizing properties:	According to column 2 of Annex VII of REACH, this study is not necessary because the substances present in the product, due to their chemical structures, are incapable of reacting exothermically with combustible materials.

9.2 Other information

Other properties:	None.

SECTION 10 – STABILITY AND REACTIVITY

10.1. Reactivity

Reactions or decompositions of the product are not expected to occur under normal storage conditions. Does not contain organic peroxides. May be corrosive to metals. It does not react with water.

10.2. Chemical stability

The product is chemically stable and does not require stabilizers.

10.3. Possibility of hazardous reactions

Hazardous polymerization is not expected.

10.4. Conditions to avoid

Avoid high temperatures. Avoid dispersing dust.

10.5. Incompatible materials

Keep away from Oxidizing mineral acids, alcohols and glycols, aldehydes, amines, azo and diazo compounds, hydrazines, caustics, cyanides, dithiocarbamates, inorganic fluorides, isocyanates, metals, nitrides, nitriles, inorganic sulfides, epoxides, explosives, their

10.6. Hazardous decomposition products

If heated, it may give off irritating and toxic vapors. In case of fire, see Section 5.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:
There is no information about the toxicity of the product, but acute toxicity estimations are presented. ATE-LD50 oral (calc.): 300 - 2000 mg/kg
ATE-LD50 der (calc.): > 2000 mg/kg
ATE-LC50 inh. (4 hs., calc): > 5 mg/l
Skin irr. (rabbit, estim.): corrosive
Eye irr. (rabbit, estim.): corrosive
Skin sens (Guinea pig, estim.): sensitising
Resp. sens (Guinea pig, estim.): sensitizing
Carcinogenicity, mutagenicity, reproductive toxicity and other effects:
Carcinogenicity: No information is available on any component of this product, present at levels greater than or equal to 0.1%, that is classified as probable, possible or confirmed human carcinogen by IARC (International Agency for Research on Cancer).
Mutagenicity: There are no components of this product, present at a concentration greater than or equal to 0.1%, that classify as mutagens according to the GHS.
Tox. Repr .: There are no components of this product, present at a concentration greater than or equal to 0.1%, that classify as hazardous for reproduction according to the GHS.
Teratogenicity: There are no components of this product, present at a concentration greater than or equal to 0.1%, that classify as a teratogen.
STOT-SE: There are no components of this product, present at a concentration greater than or equal to 1%, that they classify as toxic to target organs according to the GHS.
STOT-RE: Causes damage to organs through prolonged or repeated exposure.
Aspiration: There are no components of this product, present at a concentration greater than or equal to 10%, that classify as toxic by aspiration according to the GHS.
Acute and delayed effects:
Routes of exposure: Inhalation, skin and eye contact.
Inhalation: May cause irritation to the respiratory tract. It can be toxic.
Skin Contact: May cause skin burns. It can be toxic.
Eye Contact: May cause burns.
Ingestion: May cause burns. It can be toxic.

SECTION 12 – ECOLOGICAL INFORMATION

12.1. Toxicity

There is no information about the ecotoxicity of the product, but acute toxicity estimations are presented.LC50 (L. macrochirus, 96 h): 75 mg/l
EC50 (D. magna, 48 h): 42.8 mg/l
EC50 (P. subcapitata, 72 h): 74.3 mg/l
Chronic toxicity data not available or validated.
PNEC (water): N/D
PNEC (sea): N/D
PNEC-STP: N/D

12.2. Persistence and degradability

BIODEGRADABILITY (OECD 301B): The product is readily biodegradable.

12.3. Bioaccumulative potential

Log $K_{o/w}$: 1,62
BIOCONCENTRATION FACTOR - BCF (OCDE 305): N/A. Since the n-octanol/water distribution coefficient (log Pow) is less than 3, significant bioaccumulation in organisms is not expected.

12.4. Mobility in soil

HENRY CONSTANT (20°C): Does not apply, because it is not volatile.
LogKoc: N/D .

12.5. Results of PBT and vPvB assessment

This product does not meet the PBT criteria of Annex XIII of REACH. This product does not meet the vPvB criteria in Annex XIII of REACH.

12.6. Other adverse effects

AOX and metal containing: Does not contain organic halogens nor metals.

SECTION 13 – DISPOSAL CONSIDERATIONS

Eliminate excess product and empty containers according to current legislation on environmental protection and hazardous waste (National Law No. 24,051 and regulations). Disposal procedure: neutralization. Sewage treatment.

SECTION 14 – TRANSPORT INFORMATION

14.1 Transport by land

Proper Shipping Name:	MALEIC ANHYDRIDE
UN/ID Number:	2215
Hazard class:	8
Packing group:	III
Hazard identification number:	80
Excepted and limited quantity:	1000 / 5 kg
Special provisions:	-

14.2 Air transport (ICAO/IATA)

Proper Shipping Name:	MALEIC ANHYDRIDE
UN/ID Number:	2215
Hazard class:	8
Packing group:	III
PAX and Cargo Packing instructions:	Y845; 5 kg / 860; 25KG
Cargo Packing instructions:	864; 100 kg
ERC:	8L
Special provisions:	A803

14.3 Sea transport (IMO)

IMDG Code

Proper Shipping Name:	MALEIC ANHYDRIDE
UN/ID N°:	2215
Hazard class:	8
Packing group:	III
EMS:	F-A, S-B
Stowage and manipulation:	Category A
Segregation:	SG50; SG57
Marine pollutant:	NO

Proper Shipping Name: UN2215; MALEIC ANHYDRIDE; Class 8; PG III

SECTION 15 – REGULATORY INFORMATION

Not dangerous for the ozone layer.
Volatile organic compounds (VOC's): N/D
NFPA: 3 1 1 COR- EPP: E

Regulation

Globally Harmonized System of Classification and Labelling of Chemicals, fifth revised edition, 2013 (GHS 2013 - 'ST / SG / AC 10/30 / Rev.5'). The fifth edition is taken into consideration because it is the one valid for Argentina according to Resolution 801/2015 of the SRT. In any case, the information is contrasted with Revision 7 ('ST / SG / AC 10/30 / Rev.7') and clarification is made if required.
Agreement on Transport of Dangerous Products within the MERCOSUR, MERCOSUR\CMC\DEC N° 2/94.
European Agreement on the International Carriage of Dangerous Goods by Road (ADR 2021) and amendments.
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID 2021) and amendments.
International Maritime Dangerous Goods Code (IMDG 2020 - Amendment 40-20), International Maritime Organization (IMO).
Regulations of the International Air Transport Association (IATA 63 ed., 2022) on the transport of dangerous goods by air.

SECTION 16 – OTHER INFORMATION

16.1 Abbreviations and acronyms

N/A: not applicable.
N/D: no data available.
CAS: Chemical Abstracts Service
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists.
TLV: Threshold Limit Value
TWA: Time Weighted Average
STEL: Short Term Exposure
REL: Recommended Exposure Limit.
PEL: Permissible Exposure Limit.
INSHT: National Institute for Safety and Health at Work.
ATE: Acute toxicity estimate.
LD50: Lethal Dose.
LC50: Lethal Concentration.
EC50: Average Effective Concentration.
IC50: Inhibitory Concentration Medium.

DENOMINATION OF GHS CLASSES
Aer.: aerosols
Oxid. Gas: oxidizing gas
Compressed gas: compressed gas
Dissolved gas: dissolved gas
Flam. Gas: flammable gas
Liquefied Refr. Gas: refrigerated liquefied gas
Liquefied gas: liquefied gas
Oxid. Liquid: oxidizing liquid
Flam. Liquid: flammable liquid
Pyr. Liq.: pyrophoric liquid
Met. Corr.: corrosive for metals
Org. Perox.: organic peroxide
Water React. Flam. Gas: substance reactive with water, which emits flammable gases
Oxid. Solid: oxidizing solid
Flam. Solid: flammable solid
Asp Tox.: aspiration toxicity
Carc.: carcinogenicity
Skin Corr. / Irrit.: Corrosion / skin irritation
Eye Damage / Irrit .: Serious eye damage / eye irritation
Lac.: toxic for reproduction - lactation
Muta.: mutagenicity
Repr.: toxic for reproduction
Skin Sens.: skin sensitizer
Resp. Sens.: respiratory sensitizer
STOT Rep. Exp.: Specific target organ toxicity - repeated exposure
STOT Single Exp.: Specific target organ toxicity - single exposure
Acute Tox.: Acute toxicity
Aquatic Acute: Hazardous to the aquatic environment - acute danger
Aquatic Chronic: Dangerous for the aquatic environment - chronic danger
Ozo.: Dangerous for the ozone layer.

16.2 Key literature references and sources for data

International Agency for Research on Cancer (IARC), carcinogen classification.
European Regulation 1272/2008, Classification, labeling and packing (CLP)

16.3 Classification and procedure used to derive the classification for mixtures

The classification has been made based on chemical analogues and product information.
SECTION 2: classification by analogy with other products, and based on product data in CIQUIME.
SECTION 9: product data.
SECTIONS 11 & 12: GHS Acute Toxicity Estimate Calculation.

Track changes: v.14 - Phrase and format update.

16.4 Disclaimer

This information only concerns the above-mentioned product and is not to be valid for other (s) product (s) or in any process. This safety data sheet provides health and safety information. The information is to our best knowledge, correct and complete. It is given in good faith but without warranty. The product should be used in applications consistent with our product literature. Individuals handling this product should be in-formed of the recommended safety precautions and should have access to this information. For any other use, exposure should be evaluated so that they can implement appropriate handling practices and training programs to ensure safe operations in the workplace.
It remains the user's own responsibility that this information is appropriate and complete for the special use of this product.