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This safety data sheet is in accordance with Regulation (EC) No. 1907/2006 and keeps in accordance with International Standard ISO* 11014-1 (except for the order of the headings 2 and 3).*

The changed headings in comparison with a previous version, if appropriate, are indicated with the symbol # in the left margin.

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. IDENTIFICATION OF THE PRODUCT

Product name: **5191**
 Chemical family: ketone-based additive
 Former name: not applicable

1.2. COMPANY IDENTIFICATION

Head office:

Imaje S.A.
 9, rue Gaspard Monge - BP 110
 26501 Bourg-lès-Valence cedex
 France
 Tel.: (33) 4 75 75 55 00 - Fax: (33) 4 75 82 98 10
 http://www.imaje.com
 E-mail: sds@fr.imaje.com

Supplier:

(if different from Imaje S.A.)

Markem-Imaje
 1650 Airport Road, Suite 101
 Kennesaw, GA 30144
 United States
 Phone : 770 421 7700
 Fax : 770 421 7702

1.3. EMERGENCY TELEPHONE NUMBERS

Imaje S.A.: (33) 4 75 75 55 00
 INRS* (Orfila): (33) 1 45 42 59 59

2. HAZARDS IDENTIFICATION

2.1. ADVERSE HUMAN HEALTH AND ENVIRONMENTAL EFFECTS

Irritating to eyes.
 Repeated exposure may cause skin dryness or cracking.
 Vapours may cause drowsiness and dizziness.

2.2. PHYSICAL AND CHEMICAL HAZARDS

Highly flammable.
 Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above the flash point.

See also heading 11 "TOXICOLOGICAL INFORMATION".

3. COMPOSITION / INFORMATION ON INGREDIENTS

Product: preparation

Hazardous component	CAS* No.	EINECS* No.	Index No.	% (weight)	Symbol(s)	Nature of special risks
Butanone	78-93-3	201-159-0	606-002-00-3	> 90	F - Xi	Highly flammable Irritating to eyes Repeated exposure may cause skin dryness or cracking Vapours may cause drowsiness and dizziness

	Reference:	5191
	Designation:	ADDITIVE

SH-5191-G

The unlisted components are not considered to be hazardous according to amended Directive 67/548/EEC*.

4. FIRST-AID MEASURES

4.1. INHALATION

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

4.2. SKIN CONTACT

Flush with large amounts of water; use soap if available. Remove grossly contaminated clothing, including shoes, and launder before reuse. Consult a doctor, if irritation persists.

4.3. EYE CONTACT

Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

4.4. INGESTION

If swallowed, do not induce vomiting. Keep at rest. Get prompt medical attention.

See also heading 8 "EXPOSURE CONTROLS / PERSONAL PROTECTION".

5. FIRE-FIGHTING MEASURES

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect men attempting to stop a leak. Either allow fire to burn under controlled conditions or extinguish with alcohol type foam or dry chemical extinguishers. Try to cover liquid spills with foam. Do not use water extinguisher in case of printer fire.

See also heading 10 "STABILITY AND REACTIVITY".

6. ACCIDENTAL RELEASE MEASURES

Eliminate sources of ignition. Warn occupants of downwind areas of fire and explosion hazard. Prevent liquid from entering sewers, watercourses or low areas. Keep public away. Shut off source if possible to do so without hazard. Advise authorities if product has entered a watercourse or sewer or has contaminated soil or vegetation. Take measures to minimize the effect on the ground water. Contain spilled liquid with sand or earth. Dilute contained spill with water. Recover by pumping (use an explosion-proof or hand pump) or with a suitable absorbent. If liquid is too viscous for pumping, scrape up with shovels or pails and place in suitable containers for recycle or disposal. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

See also heading 13 "DISPOSAL CONSIDERATIONS".

7. HANDLING AND STORAGE

7.1. HANDLING

Handle containers with care. Open slowly in order to control possible pressure release. Do not handle or open near an open flame, sources of heat or sources of ignition. Do not pressurize, cut, heat or weld containers. Empty product containers may contain product residue. Do not reuse empty containers without commercial cleaning or reconditioning. Container remains hazardous when empty. Continue to observe all precautions.

7.2. STORAGE

Keep container closed. Store in a cool, well-ventilated place away from incompatible materials. Do not store near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. The floor of the premises must be incombustible, impermeable and act like a reservoir so that in case of breaking, liquid will not spill outside.

Keep product in its original packaging.
Storage temperature: < 35 °C (95 °F).

See also heading 8 "EXPOSURE CONTROLS / PERSONAL PROTECTION".

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. ENGINEERING MEASURES

The use of mechanical dilution ventilation is recommended whenever this product is used in a confined space, is heated above ambient temperature or otherwise to maintain ambient concentration below the recommended threshold exposure limits. Use explosion-proof ventilation equipment.

8.2. CONTROL PARAMETERS

European Community:

Butanone	Limit value (8 hours) 200 ppm (600 mg/m ³)	Limit value (short-term) 300 ppm (900 mg/m ³)
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USA:

Butanone	TLV*/TWA* 200 ppm (590 mg/m ³)	TLV*/STEL* 300 ppm (885 mg/m ³)
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8.3. PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection:

Where concentrations in air may exceed the limits given in this section, it is recommended to use a half face filter mask to protect from overexposure by inhalation.

Hand protection:

When handling this product, it is recommended to wear chemical resistant gloves (butyl rubber). Gloves should be replaced immediately if sign of degradation is observed.

Eye protection:

When handling this product, it is recommended to wear splash resistant goggles.
Allow a washing solution for the eyes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state and colour:	pink liquid
Odour:	ketone
pH (at 20 °C (68 °F)):	not applicable
Melting point:	< - 85 °C (- 121 °F)
Boiling point:	> 75 °C (167 °F)
Flash point (in a closed cup):	about - 9 °C (16 °F)
Autoignition temperature:	> 500 °C (932 °F)
Explosion properties (volume % in air):	1.8 < < 11.5
Vapour pressure:	13.3 kPa at 25 °C (77 °F) (butanone)
Vapour density (/ air):	> 1
Density (at 20 °C (68 °F)):	0.80 < < 0.81
Water solubility:	partial
n-octanol / water partition coefficient (log P(o/w)):	0.26 (butanone)

Nota: the flash point of the preparation has not been determined. The flash point indicated is the one of the solvent with the lowest value.

10. STABILITY AND REACTIVITY

Stability: stable
Hazardous polymerization: no
Hazardous reactions with (incompatibility): strong oxidizing agents
Hazardous decomposition products: none

11. TOXICOLOGICAL INFORMATION

11.1. ACUTE TOXICITY

Inhalation:

Vapour concentrations above recommended exposure levels may be irritating to the eyes and the respiratory tract, may cause headaches and dizziness, could be anaesthetic and may have other central nervous system effects.

LC₅₀* (rat, 4 hours) > 9000 ppm (butanone)

Skin contact:

Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

LD₅₀* (rabbit) = 13 g/kg (butanone)

Eye contact:

Irritating and will injure eye tissue if not removed promptly.

Ingestion:

Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

LD₅₀* (rat) = 3000 mg/kg (butanone)

11.2. CHRONIC TOXICITY

There is no evidence that exposure to butanone alone causes progressive or irreversible neurotoxic effects. However, simultaneous over-exposure to butanone and n-hexane can potentiate the known irreversible effects of n-hexane.

11.3. OTHER INFORMATION

Avoid exposure for pregnant women.

12. ECOLOGICAL INFORMATION

12.1. BUTANONE

WGK* 1

Mobility:

This substance is relatively volatile.

Degradability:

Readily biodegradable.

Ecotoxicity:

LC₅₀* (fishes, 96 hours) = 4600 mg/l

EC₅₀* (daphnia, 48 hours) = 7060 mg/l

EC₅₀* (bacteria, 16 hours) = 1150 mg/l

13. DISPOSAL CONSIDERATIONS

Empty containers should be taken for recycling, recovery or disposal through a suitably qualified or licensed contractor. This product is not suitable for disposal by either landfill or via municipal sewers, drains, natural streams or rivers. This product can be burned directly in appropriate equipment.

Care should in any case be taken to ensure compliance with national and local regulations.

14. TRANSPORT INFORMATION

14.1. LAND (ADR*)

Name of substance: methyl ethyl ketone

UN* No.	Class	Classification code	Packing group	Label(s)	Special provisions	Limited quantities	Packaging		
							Instructions	Special provisions	Mixed packing provisions
1193	3	F1	II	3		LQ4	P001 / IBC02 / R001		MP19

Transport category	Special provisions for carriage			Hazard identification No.
	Packages	Loading, unloading and handling	Operation	
2			S2 / S20	33

Total exemption: 3 L per inner packaging and 30 kg gross per package

Partial exemption: 333 L

14.2. SEA (IMDG* CODE)

Proper shipping name: methyl ethyl ketone

UN* No.	Class	Subsidiary risk(s)	Packing group	Special provisions	Limited quantities	Packing / IBC*		Emergency schedule No.	Stowage and segregation
						Instructions	Provisions		
1193	3	-	II	-	1 L	P001 / IBC02	- / -	F-E, S-D	Category B

Marine pollutant: no

14.3. AIR (IATA* REGULATIONS)

Proper shipping name: methyl ethyl ketone

UN* No.	Class	Subsidiary risk(s)	Hazard label(s)	Packing group	Passenger and cargo aircraft		Cargo aircraft only		Special provisions	ERG* code
					Packing instructions	Maxi net quantity / package	Packing instructions	Maxi net quantity / package		
1193	3	-	3	II	Y305 / 305	1 L / 5 L	307	60 L	-	3L

15. REGULATORY INFORMATION

15.1. EUROPEAN COMMUNITY

Governing Directives: amended Directive 67/548/EEC* (dangerous substances) and amended Directive 1999/45/EC* (dangerous preparations)

Label name: **5191**

Symbols and indications of danger:



F: Highly flammable



Xi: Irritant

Nature of special risks:

R11: Highly flammable

R36: Irritating to eyes

R66: Repeated exposure may cause skin dryness or cracking

R67: Vapours may cause drowsiness and dizziness

Safety advice:

S9: Keep container in a well-ventilated place
S16: Keep away from sources of ignition – No smoking

15.2. USA

NFPA*	Butanone
Health	1
Flammability	3
Reactivity	0

In the USA, the hazardous components of this product are mentioned in the following lists:

1F: Toxic Substance Control Act (TSCA) Section 8(d) Health and Safety Data Reporting Rule Substances
5B: Clean Air Act Section 111 Volatile Organic Compounds
5D: Clean Air Act Section 112 Statutory Air Pollutants (1990 Amendments)
6: National Institute for Occupational Safety and Health (NIOSH) Recommendation Substances
7A: Resource Conservation and Recovery Act (RCRA) Hazardous Substances
7B: RCRA Hazardous Constituents for Groundwater Monitoring
8A: Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances
8C: Superfund Amendments and Reauthorization Act (SARA) Title III Section 313 Toxic Chemicals
8D: SARA Title III Section 110 Priority List of CERCLA Hazardous Substances
9A: Occupational Safety and Health Administration (OSHA) Air Contaminants (Tables Z1, Z2 and Z3)
9D: American Council of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) Chemicals
9H: OSHA Table Z-1-A [revoked]
11B: Drug Enforcement Administration (DEA) Precursor and Essential Chemicals - Essential chemical
13A: Department of Transportation (DOT) Hazardous Materials
13B: DOT Hazardous Substances Other Than Radionuclides; and Radionuclides
MA1: Massachusetts Substance List
NJ1: New Jersey Right To Know Hazardous Substance List
PA1E: Pennsylvania Hazardous Substance List - Environmental hazard

In Canada, the hazardous components of this product are mentioned in the following lists:

CN1: Canadian Workplace Hazardous Materials Information System (WHMIS) Ingredient Disclosure List - Ingredient must be disclosed at concentration of 1 %

The user of the product must refer to official regulations concerning his obligations.

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16. OTHER INFORMATION

Abbreviations:

EC: European Community
ISO: International Organization for Standardization
INRS: Institut national de recherche et de sécurité
CAS: Chemical Abstracts Service
EINECS: European inventory of existing commercial chemical substances
EEC: European Economic Community
TLV: Threshold limit value
TWA: Time weighted average
STEL: Short-term exposure limit
LC₅₀: Lethal concentration 50%
LD₅₀: Lethal dose 50%
WGK: Wassergefährdungsklasse
EC₅₀: Effect concentration 50%
ADR: European Agreement concerning the international carriage of dangerous goods by road
UN: United Nations
IMDG: International Maritime Dangerous Goods
IBC: Intermediate bulk container
IATA: International Air Transport Association
ERG: Emergency Response Drill
NFPA: National Fire Protection Association