SAFETY DATA SHEET

Section 1: Identification

Product identifier used on the label;

Product name: Tamiya Color Spray for Polycarbonate PS-8 Light Green (#86008)

Product code: 0401203008

Other means of identification;

No information

Recommended use of the chemical and restrictions on use;

Recommended use: Polyvinyl chloride / polyvinyl acetate coatings（PS）

Restrictions on use: No information

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;

Name: Tamiya, Inc.

Department in Charge: International Division

Address: 3-7 Ondawara, Suruga-ku, Shizuoka JAPAN 422-8610

Telephone number: +81-(0)54-286-5105 (Headquarters)

Fax number: +81-(0)54-285-3230 (Headquarters)

e-mail address: intl_div@tamiya-inc.co.jp

Emergency phone number

+81-(0)54-286-5105 (Headquarters)

Section 2: Hazard(s) identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

Physical Hazards

Flammable aersols	Category 1

Health Hazards

Acute toxicity (Dermal):	Category 5
Acute toxicity (inhalation - vapors):	Category 4
Acute toxicity (inhalation –mist):	Category 5
Skin corrosion/irritation	Category 3
Serious eye damage/eye irritation:	Category 2A
Skin sensitization:	Category 1
Carcinogenicity:	Category 2
Reproductive toxicity:	Category 2
Specific target organ toxicity single exposure:	Category 1 (liver, blood, respiratory system, kidneys, central nerves and central nervous system)
Specific target organ toxicity repeated or prolonged exposure:	Category 1 (kidneys, systemic toxicity and lungs) Category 2 (blood)

Environmental Hazards

Hazardous to the aquatic environment (acute) Category 3

Other Hazards

Contact of liquefied gas with skin may cause frostbite.

Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200;

Symbol(s)



Signal word **Danger**

Hazard Statement(s)

H222: Extremely flammable aerosol
H229: Pressurized container: may burst if heated
H313: May be harmful in contact with skin
H316: Causes mild skin irritation
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H332: Harmful if inhaled
H333: May be harmful if inhaled
H351: Suspected of causing cancer
H361: Suspected of damaging fertility or the unborn child
H370: Causes damage to organs (liver, blood, respiratory system, kidneys, central nerves and central nervous system)
H372: Causes damage to organs (kidneys, systemic toxicity and lungs) through prolonged or repeated exposure
H373: May cause damage to organs (blood) through prolonged or repeated exposure
H402: Harmful to aquatic life

Precautionary Statement(s)

[Prevention]

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P211: Do not spray on an open flame or other ignition source.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/ lighting/equipment.
P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.
P251: Pressurized container: Do not pierce or burn, even after use.
P260: Do not breathe dust/fume/gas/mist/ vapors/spray.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing must not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

[Emergency response]
P302+P352: If on skin: Wash with plenty of water.
P303+P361+P353: If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311: If exposed or concerned: Call a poison center/doctor.
P308+P313: If exposed or concerned: Get medical advice/attention.
P312: Call a poison center/doctor/if you feel unwell.
P314: Get medical advice/attention if you feel unwell.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P337+P313: If eye irritation persists: Get medical advice/attention.
P363: Wash contaminated clothing before reuse.
P370+P378: In case of fire: Use suitable extinguishing media to extinguish.

[Storage]
P403+P235: Store in a well-ventilated place. Keep cool.
P405: Store locked up.
P410+P412: Protect from sunlight. Do not expose to temperatures exceeding 40ºC/104 ºF.

[Disposal]
P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Description of any hazards not otherwise classified;

No information

Ingredient with unknown acute toxicity in the mixture

5 - 10 % of the mixture consists of ingredients of unknown acute toxicity.

Section 3: Composition/information on ingredients

Compositions (contents of the product)

Chemical name	CAS No.	Concentration/ concentration ranges (wt %)	Chemical Formula
Polyvinyl chloride-polyvinyl acetate	-	5 - 10	-
Butyl acetate	123-86-4	5 - 10	$C_6H_{12}O_2$
iso-Butyl acetate	110-19-0	5 - 10	$C_6H_{12}O_2$
Methyl isobutyl ketone	108-10-1	5 - 15	$C_6H_{12}O$
Ethylene glycol mono-*n*-butyl ether	111-76-2	1 - 5	$C_6H_{14}O_2$
iso-Butyl alcohol	78-83-1	1 - 5	$C_4H_{10}O$
Acetone	67-64-1	5 - 15	C_3H_6O
Cyclohexanone	108-94-1	＜1	$C_6H_{10}O$
Diacetone alcohol	123-42-2	1 - 5	$C_6H_{12}O_2$
Vinyl acetate	108-05-4	0.4	C_4H_6O
Titanium Oxide (IV)	13463-67-7	1 - 5	TiO_2
Other ingredients	-	1 - 5	-
Dimethyl ether (as propellant)	115-10-6	40 - 50	C_2H_6O

Section 4: First-aid measures

Necessary first-aid measures by relevant routes of exposure;

IF INHALED

If inhaled a large volume of vapor or gases, immediately remove victim to fresh air and keep patient at rest and warm.
If not breathing or breathing is weakened, give artificial respiration.
If you feel unwell after inhaling vapor or gases, keep at rest under fresh air and get medical advice/attention.

IF ON SKIN

Wipe off with a dry cloth then wash the contaminated area with soap and water.
Take off immediately all contaminated clothing.
Wash contaminated area with plenty of soap and water.
If exposed to the solvent to the whole body, wash thoroughly by taking a bath or shower.
When suffering from frostbite due to contact with the liquefied gas, rinse skin with plenty of regular/warm water without taking off clothes.
If appearance changes or pain occur, get medical advice/attention.

IF IN EYES

Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
If pain continues, immediately get medical advice/attention.

IF SWALLOWED	As this product is volatile, vomiting may increase risk. Immediately get medical advice/attention. Wash mouth out thoroughly with water. If unconscious, do not give anything by mouth.

Most important symptoms/effects, acute and delayed;

May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
Causes damage to organs (liver, blood, respiratory system, kidneys, central nerves and central nervous system).
Causes damage to organs (kidneys, systemic toxicity and lungs) through prolonged or repeated exposure.
May cause damage to organs (blood) through prolonged or repeated exposure.

Indication of immediate medical attention and special treatment needed, if necessary;

No information

Section 5: Fire-fighting measures

Suitable (and unsuitable) extinguishing media;

Suitable extinguishing media:

Keep away from aerosol products that might explode when exposed to high temperatures.
Do not use water.
In case of a small-scale fire: dry chemical powder, carbon dioxide or alcohol resistance foam.
In case of a large-scale fire: carbon dioxide, fire foam, dry chemical powder or dry sand.

Unsuitable extinguishing media

Direct water

Specific hazards arising from the chemical;

Aerosol containers may explode in fire.
Content is highly flammable combustible liquid.

Special protective equipment and precautions for fire-fighters;

Immediately extinguish a fire with fire extinguisher.
Use the specified fire extinguisher.
Immediately remove nearby flammable materials.
Take action from windward. Avoid breathing toxic gases (e.g. CO, NO_X).
Ensure to wear suitable protective equipment (e.g. heat resistant protective clothing, protective glasses and self-contained compressed air breathing apparatus) in firefighting.

Section 6: Accidental release measures

Personal precautions, protective equipment, and emergency procedures;

Appropriate protective equipment must be worn when handling spill of this material.
May cause organic solvent poisoning.
Hazardous to human health. This product has risk of acute or chronic effects.
Before taking any measures in the event of gas leakage (blowout), approach the spot from the windward side to empty out the gas container, with the leaking area facing upward.
Quickly remove ignition sources, high temperature materials or combustible materials from the surrounding. Evacuate people downwind from the fire. Keep out except responsible personnel.
Set up dry chemical powder or fire foam in preparation for ignition.
Pick up the gas container using tools made from materials that avoid impact/static-induced sparks (anti-spark).
Ventilate confined spaces before entering.
Wear suitable protective equipment (e.g. gloves, protective mask, apron and goggle).
Avoid release into the environment because spilled product may cause local effects.
In case of a small amount of spill, collect spilled product by absorbing in dry sand or sawdust and followed by placing it in a waste container.
If case of large amounts, prevent leakage and enclose by embankment.
Collect leakage into a closed container and then move to safe place.
Do not allow leakage to enter drains or sewers.
Dispose of contaminants or wastes in accordance with applicable laws and regulations.

Methods and materials for containment and cleaning up;

Immediately remove ignition sources nearby, and set up dry chemical powder or fire foam in preparation for ignition.
Do not walk over leaked materials more than necessary.
Use non-sparking tools.

Section 7: Handling and storage

Precautions for safe handling

Protective measures:

Install appropriate equipment and wear suitable protective apparatus described in "Section 8: Exposure controls/personal protection".
For protection against static electricity, grounding all equipment and use explosion proof (increased safety type) electric apparatus. Take necessary measures against static electricity. Wear electro conductive work clothes and shoes.
Use anti-spark tools.
Handle the product in a well-ventilated area and accordingly store in a closed container.
If used in a closed place, install sufficient local ventilation equipment and wear suitable protective equipments during work.
Do not handle until all safety precautions have been read and understood.
Wear protective equipment to prevent from exposure.
Do not use fire, spark or high temperature materials around the product.
Do not spray on an open flame.
Containers may burst when exposed to high temperatures.
When transporting, avoid making impacts on container or handling violently. Load so that falling,

dropping off or damage will not occur.
Wear suitable protective equipment to avoid contact with skin, mucosa, clothing, or eyes.
Do not contact, inhale or swallow this product.
Use only outdoors or in a well-ventilated area.

Advice on general occupational hygiene:

Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Technical measures:

In the storage area, install adequate light and ventilation systems to handle hazardous materials.
Take precautionary measures against static discharge.

Incompatible materials:

Strong oxidizers and strong alkali

Conditions for safe storage:

Keep out of reach of children.
Keep away from direct sunlight and store in a well ventilated place.
Because gas may leak or blow out from a rusted container, avoid storing this product in high-humidity environments near water sources.
Keep away from sources of ignition or heat.
Do not put this product at place over 40°C.
Electrical equipment used in the storage area must be explosion- proof and grounded.

Packing material:

Use the packaging container in accordance with regulations.

Section 8: Exposure controls/personal protection

Occupational Exposure Limits;

OSHA PEL	150 ppm, 710 mg/m^3 (*n*-Butyl acetate) 150 ppm, 700 mg/m^3 (Isobutyl acetate) 100 ppm, 307 mg/m^3 (Methyl isobutyl ketone (Hexone)) 50 ppm, 240 mg/m^3 (2-Butoxyethanol (EGBE)) 100 ppm, 300 mg/m^3 (Isobutanol (Isobutyl alcohol)) 1,000 ppm, 2,400 mg/m^3 (Acetone) 50 ppm, 200 mg/m^3 (Cyclohexanone) 50 ppm, 240 mg/m^3 (Diacetone alcohol (5-Hydroxy-4-methyl-2-pentanone)) 10 ppm, 30 mg/m^3 (Vinyl acetate) 15 mg/m^3 (Total dust) (Titanium dioxide)
ACGIH TLV-TWA (2014)	150 ppm, 713 mg/m^3 (*n*-Butyl acetate) 150 ppm, 713 mg/m^3 (Isobutyl acetate) 20 ppm, 82 mg/m^3 (Methyl isobutyl ketone (Hexone)) 20 ppm, 97 mg/m^3 (2-Butoxyethanol (EGBE)) 50 ppm, 152 mg/m^3 (Isobutanol (Isobutyl alcohol)) 500 ppm, 1,188 mg/m^3 (Acetone) 20 ppm (Cyclohexanone) 50 ppm, 238 mg/m^3 (Diacetone alcohol (5-Hydroxy-4-methyl-2-pentanone)) 10 ppm, 35 mg/m^3 (Vinyl acetate) 10 mg/m^3 (Titanium dioxide)
ACGIH TLV-STEL (2014)	200 ppm, 950 mg/m^3 (*n*-Butyl acetate) 75 ppm, 307 mg/m^3 (Methyl isobutyl ketone (Hexone)) 750 ppm, 1,782 mg/m^3 (Acetone) 50 ppm (Cyclohexanone) 15 ppm, 53 mg/m^3 (Vinyl acetate)

Appropriate engineering controls;

Use explosion proof equipment.
Take precautionary measures against static discharge.
Install eye washer and safety shower around the handling place.
With the help of a ventilator, prevent the gas steam from staying afloat.
In handling this product, make sure that there are no high-temperature devices or potential ignition sources nearby.
If used indoor, install equipment to prevent workers from direct exposure, or provide local exhaust ventilation system to prevent workers exposed to vapors.

Individual protection measures, such as personal protective equipment;

Respiratory protection	Wear gas mask for organic gases, dust mask and/or air-supplied respirator (in confined spaces) if necessary.
Hand protection	Wear solvent resistance protective gloves if necessary.
Eye protection	Wear protective glasses (goggle or with a side plate) or face protector if necessary.
Skin and body protection	Wear protective clothing, boots or solvent resistance apron if necessary.

Hygiene measure

Do not eat, drink or smoke during work.
Wash hands thoroughly after handling.

Section 9: Physical and chemical properties

	Product Liquid	Propellant (DME)
Appearance (physical state, color, etc.)	Green liquid	Under atmospheric pressure: Clear and colourless liquefied gas In pressure container: Clear and colourless liquid
Odor	Solvent or sharp odor	Slight sweet odor
Odor threshold	No information	No information
pH	Not applicable	Not applicable
Melting point/freezing point	-	-141.5°C
Initial boiling point and boiling range	56.2 - 171.2°C	-24.82°C
Flash point	-20°C	-41.1°C
Evaporation rate	No information	No information
Flammability (solid, gas)	No information	No information
Upper/lower flammability or explosive limits	No information	No information
Vapor pressure	24.6 KPa (20°C)	0.41 MPa (20°C)
Vapor density	No information	1.59 (Air = 1)
Relative density	No information	No information
Solubility (ies)	-	Water: 7.0 g/100 cc (18°C 760 mmHg)
Partition coefficient: *n*-octanol/water	No information	No information
Auto-ignition temperature	No information	No information
Decomposition temperature	No information	No information
Viscosity	No information	No information
Ignition point	≥ 244°C	350°C
Range of explosion	1.1 - 15.0 vol%	3.4 - 24 vol%
Specific gravity	ca. 0.9	0.661 (20°C)

Other information

No information

Section 10: Stability and reactivity

Reactivity

This product may explode at 40˚C or above.
Static electrical charge may induce explosion.

Chemical stability

This product is a flammable liquefied gas, which tends to form an explosive gas mixture with air.

Possibility of hazardous reactions

This product contains high-pressure gas. This product may explode due to heating and shock.
The use of this product in cars may cause smothering or lack of oxygen. Thoroughly ventilate car after use. Before ventilating, make sure of the absence of ignition sources nearby.
Keep in mind that the gas tends to stay afloat at lower positions.

Conditions to avoid

Storage under high temperature and humidity conditions and use near fire (ignition source such as flame or sparks).

Incompatible materials

Strong oxidizers and strong alkali

Hazardous decomposition products

May produce toxic gases (e.g. CO, NO_X) by inflammation.

Section 11: Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics;

Information on product:

Acute toxicity (Dermal):	This product is classified Category 5 by GHS classification.
Acute toxicity (inhalation: vapors):	This product is classified Category 4 by GHS classification.
Acute toxicity (inhalation: dust, mist):	This product is classified Category 5 by GHS classification.
Skin corrosion/irritation	This product is classified Category 3 by GHS classification.
Serious eye damage/irritation:	This product is classified Category 2A by GHS classification.
Skin sensitization:	This product is classified Category 1 by GHS classification.
Carcinogenicity:	This product is classified Category 2 by GHS classification.
Reproductive toxicity:	This product is classified Category 2 by GHS classification.
Specific target organ toxicity single exposure:	This product is classified Category 1 (liver, blood, respiratory system, kidneys, central nerves and central nervous system) by GHS classification.
Specific target organ toxicity repeated exposure:	This product is classified Category 1 (kidneys, systemic toxicity and lungs) and Category 2 (blood) by GHS classification.

Other toxicological information: Contact of liquefied gas with skin may cause inflammation or frostbite.

Information on ingredients:

Butyl acetate

Acute toxicity (oral): Rat LD_{50} = 14,000 - 14,870 mg/kg
Other toxicological information: No information

iso-Butyl acetate

Acute toxicity (oral): Rat LD_{50} = 15,400 mg/kg
Other toxicological information: No information

Methyl isobutyl ketone

Acute toxicity (oral): Rat LD_{50} = 2,080 mg/kg
Carcinogenicity: Methyl isobutyl ketone is classified Group 2B by IARC.
Other toxicological information: No information

Ethylene glycol mono-*n*-butyl ether

Acute toxicity (oral): Rat LD_{50} = 500 mg/kg
Carcinogenicity: Ethylene glycol mono-*n*-butyl ether is classified Group 3 by IARC.
Other toxicological information: No information

iso-Butyl alcohol

Acute toxicity (oral): Rat LD_{50} = 2,460 mg/kg
Other toxicological information: No information

Acetone

Acute toxicity (oral): Rat LD_{50} = 6,800 mg/kg
Other toxicological information: No information

Cyclohexanone

Acute toxicity (oral): Rat LD_{50} = 1,544 - 1,620 mg/kg
Carcinogenicity: Cyclohexanone is classified Group 3 by IARC.
Other toxicological information: No information

Diacetone alcohol

Acute toxicity (oral): Rat LD_{50} = 4,000 mg/kg
Other toxicological information: No information

Vinyl acetate

Acute toxicity (oral): Rat LD_{50} = 2,900 mg/kg
Carcinogenicity: Vinyl acetate is classified Group 2B by IARC.

Other toxicological information: No information

Titanium Oxide (IV)

Carcinogenicity: Titanium Oxide (IV) is classified Group 2B by IARC.
Other toxicological information: No information

Delayed and immediate effects and also chronic effects from short- and long-term exposure;

May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
Causes damage to organs.
Causes damage to organs through prolonged or repeated exposure.
May cause damage to organs through prolonged or repeated exposure.

Numerical measures of toxicity (such as acute toxicity estimates);

Acute toxicity was estimated based on ingredients of the product by additivity formula.

Section 12: Ecological information

Ecotoxicity:

Information on product: No information

Information on ingredients:

Polyvinyl chloride-polyvinyl acetate

Aquatic acute toxicity: No information
Aquatic chronic toxicity: No information

Butyl acetate

Aquatic acute toxicity: A toxicity rank for aquatic life is 100～10ppm.
Aquatic chronic toxicity: No information

iso-Butyl acetate

Aquatic acute toxicity: A toxicity rank for aquatic life is 1000ppm.
Aquatic chronic toxicity: No information

Methyl isobutyl ketone

Aquatic acute toxicity: Fish (*Carassius auratus auratus*) 24h-TLm = 460 mg/L
Aquatic chronic toxicity: No information

Ethylene glycol mono-*n*-butyl ether

Aquatic acute toxicity: Fish (*Carassius auratus auratus*) 24h-LC_{50} = 1,700 mg/L
Aquatic chronic toxicity: No information

iso-Butyl alcohol

Aquatic acute toxicity: Fish (*Carassius auratus auratus*) 24h-TLm = 2,600 mg/L
Aquatic chronic toxicity: No information

Acetone

Aquatic acute toxicity: Fish (*Lepomis macrochirus*) 96h-TLm = 8,300 mg/L
Aquatic chronic toxicity: No information

Cyclohexanone

Aquatic acute toxicity: Fish (*Pimephales promelas*) 96h-LC_{50} = 527 mg/L
Fish (Bluegill sunfish) 48h-LC_{50} = 460 mg/L
Aquatic chronic toxicity: No information

Diacetone alcohol

Aquatic acute toxicity: Fish (*Carassius auratus auratus*) LC_{50} = 12,250/8,930 mg/L
Aquatic chronic toxicity:

Vinyl acetate

Aquatic acute toxicity: Fish (Oryzias latipes) LC_{50} = 2.39 mg/L
Fish (*Lepomis macrochirus*) 96h-LC_{50} = 18mg/L
Crustaceans (*Daphnia magna*) EC_{50} = 52/330 mg/L
Aquatic chronic toxicity: No information

Titanium Oxide (IV)

Aquatic acute toxicity: No information
Aquatic chronic toxicity: No information

Dimethyl ether (as propellant)

Aquatic acute toxicity: No information
Aquatic chronic toxicity: No information

Persistence and degradability:

Information on product: No information

Information on ingredients:

Polyvinyl chloride-polyvinyl acetate

No information

Butyl acetate

Readily degradable.

iso-Butyl acetate

Readily degradable.

Methyl isobutyl ketone

Readily degradable.

Ethylene glycol mono-*n*-butyl ether

Readily degradable.

iso-Butyl alcohol

Readily degradable.

Acetone

Degradable by activated sludge.

Cyclohexanone

No information

Diacetone alcohol

Readily degradable.

Vinyl acetate

Readily degradable (degradation by BOD = 90%) and bioaccumulative potential is low.

Titanium Oxide (IV)

No information

Dimethyl ether (as propellant)

No information

Bioaccumulative potential:

Information on product: No information

Mobility in soil:

Information on product: No information

Other adverse effects:

No information available at this time. However, be careful because the leakage or disposal of the product may cause affects to the environment.

Section 13: Disposal considerations

Waste treatment methods

Dispose of material waste in accordance with governmental regulations.
Prevent release of material into natural.
Incinerate in a where permitted by appropriate federal, state and local regulations.
Comply with all federal, state and local regulations.
Do not dump this product into sewers, on the ground or into any body of water.

Section 14: Transport information

UN number	1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	2
Packing group	-
Environmental hazards	Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and IBC code

Not applicable

Special precautions for user

On transportation, keep containers under 40°C.
Perform loading making sure that overrun, fall down, or any damage does not occur.

Section 15: Regulatory information

OSHA:	Hazardous chemical
TSCA inventory:	These substances are on the inventory or exempt from listing.
TSCA SNUR	Not listed

Section 16: Other information, including date of preparation or last revision

Update history:

Date of issue: 31st March, 2015

References:

Information of Tamiya, Inc.
ACGIH, American Conference of Governmental Industrial Hygienists (2014) TLVs and BEIs.

[Disclaimer]

This SDS has been prepared based on the best available information however, it may not be sufficient in some cases. It is user's responsibility to modify or update any contents in this SDS regarding information on hazardous properties and/or instruction for safe handling of the product when they become available. Precautionary measures in this SDS are only applicable for normal handling conditions and it is necessary to take appropriate additional measures to ensure safe handling which depend on your specific use conditions or situations.