

Material Safety Data Sheet

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1. Identification of the substance/mixture and of the company/undertaking

Product name: KODAK FLEXICOLOR SM Tank Bleach

Product code: 5283981

Supplier: EASTMAN KODAK COMPANY, 343 State Street, Rochester, New York 14650

For Emergency Health, Safety & Environmental Information, call (585) 722-5151 (USA)

For further information about this product, call (800) 242-2424.

Synonyms: PCD F6041

Product Use: photographic processing chemical (bleach/bleach fixer), For industrial use only.

2. Hazards identification

CONTAINS: Ferric ammonium propylenediaminetetraacetic acid (111687-36-6), Trimethylenediaminetetraacetic acid (1939-36-2), Ammonium bromide (12124-97-9), Acetic acid (64-19-7), Ammonium nitrate (6484-52-2), Ferric nitrate nonahydrate (7782-61-8)

WARNING!

HEAT SENSITIVE - CAN DECOMPOSE IF HEATED

CONTAINS AN OXIDIZING MATERIAL.

CAUSES SKIN AND EYE IRRITATION

MAY BE HARMFUL IF SWALLOWED

THE PHYSICAL-CHEMICAL PROPERTIES OF THIS MATERIAL HAVE NOT BEEN FULLY INVESTIGATED

HMIS III Hazard Ratings: Health - 2, Flammability - 1, Reactivity (Stability) - 1

NFPA Hazard Ratings: Health - 3, Flammability - 1, Instability - 1

NOTE: HMIS III and NFPA 704 (2007) hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the magnitude of the potential hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

3. Composition/information on ingredients

Weight percent	Components - (CAS-No.)
5 - 10	Ferric ammonium propylenediaminetetraacetic acid (111687-36-6)
5 - 10	Trimethylenediaminetetraacetic acid (1939-36-2)
5 - 10	Ammonium bromide (12124-97-9)
1 - 5	Acetic acid (64-19-7)
1 - 5	Ammonium nitrate (6484-52-2)

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1 - 5 Ferric nitrate nonahydrate (7782-61-8)

4. First aid measures

Inhalation: If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

Skin: Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: If swallowed, only induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Notes to physician:

Symptoms: If signs and symptoms of cyanosis are present, treat for methemoglobinemia.

Treatment: Absorption of this material into the body leads to the formation of methemoglobin that, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures such as bed rest and oxygen inhalation. If cyanosis is severe, intravenous injection of methylene blue, one milligram per kilogram of body weight, may be of value.

5. Fire-fighting measures

Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers.

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

Hazardous Combustion Products: Carbon oxides, nitrogen oxides (NOx), (see also Hazardous Decomposition Products sections.)

Unusual Fire and Explosion Hazards: Elevated temperature can cause decomposition. Mixture contains an oxidizing material and may increase the burning rate of combustible materials. Dried product residue can act as an oxidizer.

6. Accidental release measures

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination.

7. Handling and storage

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Personal precautions: Avoid breathing mist or vapour at concentrations greater than the exposure limits. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.

Prevention of Fire and Explosion: Keep away from heat and sources of ignition. Keep from contact with oxidizing materials. Keep away from combustible material. Remove and wash contaminated clothing promptly.

Storage: Store in cool place. Keep container tightly closed to prevent the loss of water. Keep away from incompatible substances (see Incompatibility section.)

8. Exposure controls/personal protection

Occupational exposure controls

Chemical Name	Regulatory List	Value Type	Value
Ferric ammonium propylenediaminetetraacetic acid	ACGIH	time weighted average	1 mg/m3
Acetic acid		time weighted average	<i>Expressed as Fe</i> 10 ppm
		Short term exposure limit	15 ppm
Ferric nitrate nonahydrate	OSHA ACGIH	time weighted average	10 ppm 25 mg/m3
		time weighted average	1 mg/m3
			<i>Expressed as Fe</i>

Ventilation: Good general ventilation should be used. Ventilation should be sufficient so that applicable occupational exposure limits are not exceeded. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances.

Respiratory protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. Respirator type: full-face organic vapour cartridge. A respirator must be worn if hazardous decomposition products are likely to be or have been released. Respirator type: full-face positive-pressure air-supplied. See Stability and Reactivity Section. If respirators are used, a program should be instituted to assure compliance with applicable federal, state, commonwealth, provincial, or local laws and regulations.

Eye protection: Wear safety glasses with side shields (or goggles).

Hand protection: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

9. Physical and chemical properties

Physical form: liquid

Colour: green brown

Odour: slight acetic acid

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Specific gravity: 1.1740

Vapour pressure (at 20.0 °C (68.0 °F)) : 23 mbar (17.3 mm Hg)

Vapour density: 0.6

Volatile fraction by weight: 55 - 60 %

Boiling point/boiling range: > 100 °C (> 212.0 °F)

Water solubility: complete

pH: 4.6

Flash point: does not flash

10. Stability and reactivity

Stability: Not fully evaluated. Materials containing similar structural groups can decompose if heated.

Incompatibility: Oxidizing agents, strong reducing agents, Combustible material, sodium hypochlorite (bleach), Strong bases, Metals. Contact with sodium hypochlorite (bleach) may form chloramine (toxic gas). Contact with base liberates flammable material. Contact with base liberates ammonia. Material can react violently with combustible materials or strong reducing agents.

Hazardous decomposition products: Ammonia, chloramine, nitrogen oxides (NO_x), hydrogen bromide

Hazardous Polymerization: Hazardous polymerisation does not occur.

11. Toxicological information

Effects of Exposure

General advice:

Contains: Ferric ammonium propylenediaminetetraacetic acid. This compound can chelate metals and may alter calcium and other cation balances.

Contains: Ammonium bromide. Ingestion of bromide salts can cause nausea, vomiting, headache, irritability, delirium, memory loss, decreased appetite, joint pain, hallucinations, stupor, coma, and acne like rash on face, legs, and trunk.

Contains: Acetic acid. Acute overexposure to extremely high airborne concentrations of respiratory irritants has been associated with development of an asthma-like reactive airways syndrome (RADS) in susceptible individuals. Extremely high airborne concentrations are not generated during normal conditions of use but may occur following a spill. The potential to generate extremely high airborne concentrations in a spill situation depends upon physical factors such as the concentration of the solution, the volume of the spill, the surface area of the spill, the size of the room where the spill occurred, and the ventilation rate in the room.

Contains: Ammonium nitrate. Under some circumstances methemoglobinemia may occur

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when nitrates are converted by bacteria in the stomach to nitrites.

Inhalation: Expected to be a low hazard for recommended handling.

Eyes: Causes eye irritation. However, immediate flushing of the eyes with water will minimize any irritative effect.

Skin: Causes skin irritation.

Ingestion: May be harmful if swallowed.

Data for Ferric ammonium propylenediaminetetraacetic acid (CAS 111687-36-6):

Acute Toxicity Data:

Oral LD50 (male rat): 2,828 mg/kg

- Oral LD50 (female rat): 4,000 mg/kg
- Skin irritation: slight
- Skin Sensitization: none
- Eye irritation (unwashed eyes): slight
- Eye irritation (washed eyes): none

Mutagenicity/Genotoxicity Data:

Salmonella-E. coli/Mammalian-Microsome Reverse Mutation Assay (TA1535, TA1537, TA1538, TA98, TA100): negative (in presence and absence of activation)

- CHO/HGPRT assay: positive (in presence of activation)
- CHO/HGPRT assay: negative (in absence of activation)
- Mouse lymphoma assay: negative (in presence and absence of activation)

Data for Trimethylenediaminetetraacetic acid (CAS 1939-36-2):

Acute Toxicity Data:

- Dermal LD50: > 1,000 mg/kg
- Skin irritation: slight
- Skin irritation: moderate irritation ((50% water), repeated skin application)
- Skin Sensitization: negative
- Eye irritation: moderate

Definitions for the following section(s): LOEL =lowest-observed-effect level, LOAEL = lowest-observed-adverse-effect, NOAEL = no observed-adverse-effect level, NOEL =no-observed-effect level.

Repeated dose toxicity:

- Oral (14 weeks, rat): NOEL; 300 mg/kg/day

Data for Ammonium bromide (CAS 12124-97-9):

Acute Toxicity Data:

Oral LD50 (rat): 2,700 mg/kg

- Dermal LD50 (rat): > 2,000 mg/kg
- Skin irritation: irritating

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- Skin Sensitization: none
- Eye irritation: Irritating to eyes.

Data for Acetic acid (CAS 64-19-7):

Acute Toxicity Data:

- Oral LD50 (rat): 3,310 - 3,530 mg/kg
- Inhalation LC50: 5620 ppm / 1.00 hr
 - Inhalation LC50 (rat): 11.4 mg/l 4641 ppm / 4 hr
 - Dermal LD50: 1,060 mg/kg
 - Skin irritation: severe
 - Eye irritation (washed eyes): severe
 - Eye irritation (unwashed eyes): severe

Data for Ammonium nitrate (CAS 6484-52-2):

Acute Toxicity Data:

- Oral LD50 (rat): 2,217 mg/kg
- Inhalation LC50 (rat): > 88.8 mg/l / 4 hr

Data for Ferric nitrate nonahydrate (CAS 7782-61-8):

Acute Toxicity Data:

Oral LD50 (rat): 3,250 mg/kg

12. Ecological information

The following properties are ESTIMATED from the components of the preparations.

Potential Toxicity:

Toxicity to fish (LC50): > 100 mg/l

Toxicity to daphnia (EC50): > 100 mg/l

Persistence and degradability: Readily biodegradable.

13. Disposal considerations

Discharge, treatment, or disposal may be subject to federal, state, commonwealth, provincial, or local laws. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

The information given below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions. Please consult the product packaging for further details.

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IATA:	UN number:	UN1760
	Proper shipping name:	CORROSIVE LIQUID, N.O.S. (Ammonium bromide)
	Class:	8
	Packaging group:	III
IMDG:	UN number:	UN1760
	Proper shipping name:	CORROSIVE LIQUID, N.O.S. (Ammonium bromide)
	Class:	8
	Packaging group:	III
US DOT:	UN number:	UN1760
	Proper shipping name:	CORROSIVE LIQUIDS, N.O.S. (Ammonium bromide)
	Class:	8
	Packaging group:	III

For more transportation information, go to: www.kodak.com/go/ship.

15. Regulatory information

Notification status

Regulatory List	Notification status
TSCA	Not all listed
DSL	Not all listed
NDSL	None listed
EINECS	Not all listed
ELINCS	Listed
NLP	None listed
AICS	All listed
IECS	All listed
ENCS	All listed
ECI	Not all listed
NZIoC	All listed
PICCS	All listed

"Not all listed" indicates one or more component is either not on the public Inventory or is subject to exemption requirements. If additional information is needed contact Kodak.

Other regulations

American Conference of Governmental Industrial Hygienists (ACGIH):	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
International Agency for Research on Cancer (IARC):	Group 2A - Probably Carcinogenic to

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	Humans: Ammonium nitrate, Ferric nitrate nonahydrate
U.S. National Toxicology Program (NTP):	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
U.S. Occupational Safety and Health Administration (OSHA):	OSHA Carcinogen or Potential Carcinogen: Ammonium nitrate, Ferric nitrate nonahydrate
California Prop. 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
U.S. - CERCLA/SARA (40 CFR § 302.4 Designation of hazardous substances):	Acetic acid, Ferric nitrate nonahydrate
U.S. - CERCLA/SARA - Section 302 (40 CFR § 355 Appendices A and B - The List of Extremely Hazardous Substances and Their Threshold Planning Quantities):	No components of this product are subject to the SARA Section 302 (40 CFR 355) reporting requirements.
U.S. - CERCLA/SARA - Section 313 (40 CFR § 372.65 Toxic Chemical Release Reporting):	Ferric ammonium propylenediaminetetraacetic acid, Ammonium bromide, Ammonium nitrate, Ferric nitrate nonahydrate
U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances:	Ferric ammonium propylenediaminetetraacetic acid, Acetic acid, Ferric nitrate nonahydrate
U.S. - California - 8 CCR Section 5200-5220 - Specifically Regulated Carcinogens:	No components found on the California Specifically Regulated Carcinogens List.
U.S. - California - 8 CCR Section 5203 Carcinogens:	No components found on the California Section 5203 Carcinogens List.
U.S. - California - 8 CCR Section 5209 Carcinogens:	No components found on the California Section 5209 Carcinogens List.
U.S. - Massachusetts - General Law Chapter 111F (MGL c 111F) - Hazardous Substances Disclosure by Employers (a.k.a. Right to Know Law):	Ammonium bromide, Acetic acid, Ammonium nitrate, Ferric nitrate nonahydrate
U.S. - Minnesota Employee Right-to-Know (5206.0400, Subpart 5. List of Hazardous Substances):	Ferric ammonium propylenediaminetetraacetic acid, Acetic acid, Ferric nitrate nonahydrate
U.S. - New Jersey - Worker and Community Right to Know Act (N.J.S.A. 34:5A-1):	Acetic acid, Ammonium nitrate, Ferric nitrate nonahydrate

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U.S. - Pennsylvania - Part XIII. Worker and Community
Right-to-Know Act (Chapters 301-323):

Ferric ammonium
propylenediaminetetraacetic acid,
Ammonium bromide, Sodium
acetate,
Trimethylenediaminetetraacetic
acid, Acetic acid, Ammonium
nitrate, Water, Ferric nitrate
nonahydrate

U.S. - Rhode Island - Title 28 Labor and Labor Relations
(Chapters 28-21 Hazardous Substance Right-to-Know
Act):

Ferric ammonium
propylenediaminetetraacetic acid,
Ammonium bromide, Acetic acid,
Ammonium nitrate, Ferric nitrate
nonahydrate

16. Other information

The data below reflects current legislative requirements whereas the product in your possession may carry a different version of the label depending on the date of manufacture.

US/Canadian Label Statements:

KODAK FLEXICOLOR SM Tank Bleach

CONTAINS: Ferric ammonium propylenediaminetetraacetic acid (111687-36-6),
Trimethylenediaminetetraacetic acid (1939-36-2), Ammonium bromide (12124-97-9), Acetic acid
(64-19-7), Ammonium nitrate (6484-52-2), Ferric nitrate nonahydrate (7782-61-8).

**WARNING! HEAT SENSITIVE - CAN DECOMPOSE IF HEATED. CONTAINS AN OXIDIZING
MATERIAL.. CAUSES SKIN AND EYE IRRITATION. MAY BE HARMFUL IF SWALLOWED. THE
PHYSICAL-CHEMICAL PROPERTIES OF THIS MATERIAL HAVE NOT BEEN FULLY
INVESTIGATED.**

Keep container tightly closed to prevent the loss of water. Keep away from combustible material. Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Store in cool place. Avoid breathing mist or vapour. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. **FIRST AID:** If inhaled, remove to fresh air. Get medical attention if symptoms occur. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes. If swallowed, only induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur. **Note to Physicians:** Absorption of this material into the body leads to the formation of methemoglobin that, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures such as bed rest and oxygen inhalation. If cyanosis is severe, intravenous injection of methylene blue, one milligram per kilogram of body weight, may be of value. Keep out of reach of children. Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood. Since emptied containers retain product residue, follow label warnings even after container is emptied. **IN CASE OF FIRE:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use water spray to cool unopened containers. **IN CASE OF SPILL:** Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Additional Components Include: Water (7732-18-5).

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The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment. The information relating to the working solution is for guidance purposes only, and is based on correct mixing and use of the product according to instructions.

R-1, S-2, F-1, C-1HT