

MATERIAL SAFETY DATA SHEET

200000591/F/USA
Approval Date: 02/08/2001
Print Date: 05/14/2003
Page: 1/12

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: KODAK Rapid Fixer

Catalog Number(s): 146 4106 - To Make 1 gallon (U.S.)
 197 3247 - 5 gallons (U.S.) - Part A
 128 2839 - 30 gallons (U.S.) - Part A
 186 6342 - 52 gallons (U.S.) - Part A
 173 3013 - 72 ounce(s) - Part B
 197 3221 - 5 gallons (U.S.) - Part B

Manufacturer/Supplier: EASTMAN KODAK COMPANY, Rochester, New York 14650

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

For other information or to request an MSDS, call (800) 242-2424.

Synonym(s): Part A: KAN 427810, PCD 4896, D-0018.000
 Part B: CIN 10066362, D-0019.000
 Working solution (film): KAN 471329, D-0018.100
 Working solution (paper): KAN 471330, D-0019.100

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)

Part A:

40-45 Water (007732-18-5)
42 Ammonium thiosulfate (007783-18-8)
5-10 Sodium acetate (000127-09-3)
1-5 Boric acid (010043-35-3)
1-5 Ammonium sulfite (010196-04-0)
1-5 Acetic acid (000064-19-7)
< 1 Sodium bisulfite (007631-90-5)

Part B:

70-75 Water (007732-18-5)
15-20 Aluminum sulfate (010043-01-3)
10-15 Sulfuric acid (007664-93-9)

Working solution (film):

80-85 Water (007732-18-5)
10-15 Ammonium thiosulfate (007783-18-8)
1-5 Sodium acetate (000127-09-3)
< 1 Boric acid (010043-35-3)
< 1 Ammonium sulfite (010196-04-0)
< 1 Acetic acid (000064-19-7)
< 1 Sodium bisulfite (000064-19-7)
< 1 Sulfuric acid (007664-93-9)

Working solution (paper):

90-95 Water (007732-18-5)
5-10 Ammonium thiosulfate (007783-18-8)
1-5 Sodium acetate (000127-09-3)
< 1 Boric acid (010043-35-3)
< 1 Ammonium sulfite (010196-04-0)
< 1 Acetic acid (000064-19-7)
< 1 Sodium bisulfite (007631-90-5)

MATERIAL SAFETY DATA SHEET

200000591/F/USA
Approval Date: 02/08/2001
Print Date: 05/14/2003
Page: 2/12

< 1 Sulfuric acid (007664-93-9)

3. HAZARDS IDENTIFICATION

Part A:

CONTAINS: Boric acid (010043-35-3); Ammonium sulfite (010196-04-0); Acetic acid (000064-19-7); Sodium bisulfite (007631-90-5); Ammonium thiosulfate (007783-18-8)

WARNING!

MAY BE HARMFUL IF SWALLOWED

MAY BE HARMFUL IF ABSORBED THROUGH SKIN

DRIED PRODUCT RESIDUE CAN ACT AS A REDUCING AGENT. DRYING ON CLOTHING OR OTHER MATERIALS MAY CAUSE FIRE.

HMIS Hazard Ratings:

Health - 1 , Flammability - 1, Reactivity - 0, Personal Protection - B

NFPA Hazard Ratings:

Health - 3, Flammability - 1, Reactivity (Stability) - 0

Part B:

CONTAINS: Sulfuric acid (007664-93-9); Aluminum sulfate (010043-01-3)

DANGER!

POISON

MAY BE FATAL OR HARMFUL IF SWALLOWED

CAUSES SKIN AND EYE IRRITATION

HMIS Hazard Ratings:

Health - 2 , Flammability - 0, Reactivity - 0, Personal Protection - C

NFPA Hazard Ratings:

Health - 2, Flammability - 0, Reactivity (Stability) - 0

Working solution (film):

CONTAINS: Ammonium sulfite (010196-04-0), Sodium bisulfite (007631-90-5), Sulfuric acid (007664-93-9)

WARNING!

MAY BE HARMFUL IF SWALLOWED

HMIS Hazard Ratings:

Health - 1 , Flammability - 1, Reactivity - 0, Personal Protection - A

NFPA Hazard Ratings:

Health - 3, Flammability - 1, Reactivity (Stability) - 0

Working solution (paper):

CONTAINS: Ammonium sulfite (010196-04-0), Sodium bisulfite (007631-90-5), Sulfuric acid (007664-93-9)

WARNING!

MAY BE HARMFUL IF SWALLOWED

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 3/12

HMIS Hazard Ratings:

Health - 1 , Flammability - 0, Reactivity - 0, Personal Protection - A

NFPA Hazard Ratings:

Health - 3, Flammability - 0, Reactivity (Stability) - 0

NOTE: HMIS and NFPA 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. The personal protection index is only intended for general guidance on personal protection equipment (PPE) that is suitable for the potential hazards of the material. PPE (e.g., respirators) may not be needed if engineering controls (e.g., local ventilation) are adequate. An asterisk (*), in the HMIS health field, designates potential chronic or target organ hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

4. FIRST-AID MEASURES

Inhalation: If symptomatic, move to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Eyes:

Part A & Working solution: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

Part B: Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

Skin:

Part A & Working solution: Wash with soap and water. Get medical attention if symptoms occur.

Part B: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion:

Part A: Only induce vomiting at the instruction of medical personnel. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Part B: Do NOT induce vomiting. Give victim a glass of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Working solution: Drink 1-2 glasses of water. Seek medical attention. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Extinguishing Media:

Part A: Flood with water.

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 4/12

Part B & Working solution: Use appropriate agent for adjacent fire.

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

Hazardous Combustion Products:

Part A & Working solution (film): Carbon dioxide, carbon monoxide, oxides of nitrogen, oxides of sulfur (see also Hazardous Decomposition Products section)

Part B & Working solution (paper): None (noncombustible) (see also Hazardous Decomposition Products section)

Unusual Fire and Explosion Hazards:

Part A & Working solution (film): Solution contains a strong reducing agent. Dried product residue can act as a reducing agent.

Part B & Working solution (paper): None

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.

Part A: Collect in a noncombustible container for prompt disposal.

Working solution: Flush to sewer with large amounts of water.

7. HANDLING AND STORAGE

Personal Precautionary Measures:

Part A & Part B: Avoid breathing mist at concentrations greater than the exposure limits. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Working solution: Avoid breathing mist or vapor at concentrations greater than the exposure limits. Avoid contact with eyes and prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion:

Part A: Keep away from combustible material. Remove and wash contaminated clothing promptly. Keep from contact with oxidizing materials, highly oxygenated or halogenated solvents, organic compounds containing reducible functional groups.

Part B: No special precautionary measures should be needed under anticipated conditions of use.

Working solution (film): Keep from contact with oxidizing materials, highly oxygenated or halogenated solvents, organic compounds containing reducible functional groups.

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 5/12

Working solution (paper): Keep from contact with oxidizing materials.

Storage:

Part A: Keep container tightly closed to prevent the loss of water. Keep away from incompatible substances (see Incompatibility section). Do not store or ship together with combustible material. Store in original container.

Part B & Working solution (paper): Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section).

Working solution (film): Keep container tightly closed to prevent the loss of water. Keep away from incompatible substances (see Incompatibility section).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV):

Acetic acid: 10 ppm TWA; 15 ppm STEL
Aluminum sulfate: 2 mg/m³ TWA, as Al soluble salts
Sulfuric acid: 1 mg/m³ TWA; 3 mg/m³ STEL
Sodium bisulfite: 5 mg/m³ TWA

OSHA (USA) Permissible Exposure Limit (PEL - 1971 Table Z-1 Values):

Acetic acid: 10 ppm TWA
Sulfuric acid: 1 mg/m³ TWA

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, evaporation from large surfaces, spraying, heating, etc.

Respiratory Protection:

Part A & Working solution: None should be needed. A respirator should be worn if hazardous decomposition products are likely to be or have been released. Respirator type: Full-face positive-pressure air-supplied. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Part B: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn. Respirator type: Full-face cartridge respirator; acid gas with dust/mist prefilter. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Eye Protection:

Part A & Part B: Wear safety glasses with side shields (or goggles).

Working solution: It is a good industrial hygiene practice to minimize eye contact. Wear safety glasses with side shields (or goggles).

MATERIAL SAFETY DATA SHEET

200000591/F/USA
 Approval Date: 02/08/2001
 Print Date: 05/14/2003
 Page: 6/12

Skin Protection:

Part A & Part B: Wear impervious gloves and protective clothing appropriate for the risk of exposure.

Working solution: It is a good industrial hygiene practice to minimize skin contact. For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

Recommended Decontamination Facilities: Eye bath, washing facilities, safety shower

9. PHYSICAL AND CHEMICAL PROPERTIES

	Part A	Part B	Working solution (film)	Working solution (paper)
Physical Form:	liquid	liquid	liquid	liquid
Color:	light yellow	colorless	colorless	colorless
Odor:	slight sulfur dioxide, acetic acid	slight sulfur dioxide	slight sulfur dioxide	slight sulfur dioxide
Specific Gravity (water = 1):	1.32	1.30	1.09	1.04
Vapor Pressure at 20°C (68°F):	24 mbar (18 mm Hg)	24 mbar (18 mm Hg)	24 mbar (18 mm Hg)	24 mbar (18 mm Hg)
Vapor Density (Air = 1):	0.6	0.6	0.6	0.6
Volatile Fraction by Weight:	40-45%	70-75%	80-85%	90-95%
Boiling Point:	>100°C (>212°F)	>100°C (>212°F)	>100°C (>212°F)	>100°C (>212°F)
Solubility in Water:	complete	complete	complete	complete
pH:	5.0	1.0	4.4	4.4
Flash Point:	none	none, noncombustible liquid	none	none, noncombustible liquid

10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility:

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 7/12

Part A: Bases, sodium hypochlorite (bleach), strong oxidizing agents, halogenated materials, combustible material, strong acids. Contact with base liberates flammable material.

Part B: Bases

Working solution (paper): Bases, sodium hypochlorite (bleach), strong oxidizing agents, strong acids.

Working solution (film): Bases, sodium hypochlorite (bleach), strong oxidizing agents, combustible material, halogenated materials, strong acids.

Hazardous Decomposition Products:

Part A: Ammonia, sulfur dioxide, chloramine.

Part B: Sulfur dioxide

Working solution (film): Ammonia, sulfur dioxide, chloramine

Working solution (paper): Ammonia, nitrogen oxides (NOx), sulfur dioxide, chloramine

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General:

Part A:

Contains: boric acid. Based on repeated-dose ingestion studies in animals, may cause adverse reproductive and developmental effects. However, the doses administered were many times those to which humans would normally be exposed.

Part B & Working solution:

Contains: sulfuric acid. International Agency for Research on Cancer (IARC) has determined that occupational exposure to strong inorganic mists or vapors containing sulfuric acid is carcinogenic to humans. This product is not expected to generate mists or vapors when product instructions for mixing and use are followed.

Inhalation:

Part A & Working solution: Expected to be a low hazard for recommended handling. In contact with strong acids or if heated, sulfites may liberate sulfur dioxide gas. Sulfur dioxide gas is irritating to the respiratory tract. Some asthmatics or hypersensitive individuals may experience difficult breathing.

Part B: Expected to be a low hazard for recommended handling.

Eyes:

MATERIAL SAFETY DATA SHEET

200000591/F/USA
Approval Date: 02/08/2001
Print Date: 05/14/2003
Page: 8/12

Part A & Working solution: No specific hazard known. May cause transient irritation.

Part B: Causes irritation.

Skin:

Part A: May be absorbed in toxic amounts through damaged or abraded skin. This material has a low potential to cause allergic skin reactions; however, cases of human skin sensitization have been reported.

Part B: Causes irritation.

Working solution: This material has a low potential to cause allergic skin reactions; however, cases of human skin sensitization have been reported.

Ingestion:

Part A & Working solution: May be harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea.

Part B: May be fatal or harmful if swallowed. May cause burns of the gastrointestinal tract if swallowed.

Acute Toxicity Data:

Data for Part A

Oral LD-50 (rat): > 2540 mg/kg
Dermal LD-50: > 20 mL/kg
Skin irritation: slight
Eye irritation: slight

Data for Part B

Oral LD-50 (rat): 0.5-5.0 g/kg
Skin irritation: moderate
Eye irritation: slight
Skin sensitization: negative

12. ECOLOGICAL INFORMATION

The following properties are ESTIMATED from the components of the preparations. The effects of aluminum sulfate are considered the most significant in this estimation:

	Part A	Part B	Working solution (film)	Working solution (paper)
Potential Toxicity				
Fish LC50 mg/l:	>100	>100	>100	>100
Daphnid EC50 mg/l:	>100	10-100	>100	>100

MATERIAL SAFETY DATA SHEET

200000591/F/USA
 Approval Date: 02/08/2001
 Print Date: 05/14/2003
 Page: 9/12

Algal IC50 mg/l:	>100	1-10	10-100	10-100
Organics Readily Degradable (>70%):	Yes (7 days)	Not applicable	Yes (7 days)	Yes (7 days)
Potential Bioaccumulation:	Log Pow <1	Log Pow <1	Log Pow <1	Log Pow <1
COD (approximate g/l):	347	0	86	43
BOD5 (approximate g/l):	280	0	70	35
Potential Toxicity Waste treatment microorganisms EC50 (mg/l):	>100	>100	>100	>100

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Flush to sewer with large amounts of water. Since emptied containers retain product residue, follow label warnings even after container is emptied.

Part B: Contract with a licensed chemical disposal agency.

14. TRANSPORT INFORMATION

For transportation information regarding this product call the Kodak Worldwide Transportation Hazmat Hot Line: (585) 722-2400 between 8 a.m. and 5 p.m. (Eastern Standard Time), Monday through Friday.

15. REGULATORY INFORMATION

Material(s) known to the State of California to cause cancer: None
 Material(s) known to the State of California to cause adverse reproductive effects: None

Carcinogenicity Classification (components present at 0.1% or more):

International Agency for Research on Cancer (IARC): Group 1A, Strong inorganic mists or vapors containing sulfuric acid; Sodium bisulfite, Group 3; Not classifiable.

American Conference of Governmental Industrial Hygienists (ACGIH): Sodium bisulfite, A4; Not classifiable as a human carcinogen.

National Toxicology Program (NTP): None

Occupational Safety and Health Administration (OSHA): None

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: Ammonium thiosulfate, as a source of aqueous ammonia.

16. OTHER INFORMATION

US/Canadian Label Statements:

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 10/12

Part A:

CONTAINS: Boric acid (010043-35-3); Ammonium sulfite (010196-04-0); Acetic acid (000064-19-7); Sodium bisulfite (007631-90-5); Ammonium thiosulfate (007783-18-8)

WARNING!

MAY BE HARMFUL IF SWALLOWED

MAY BE HARMFUL IF ABSORBED THROUGH SKIN

DRIED PRODUCT RESIDUE CAN ACT AS A REDUCING AGENT. DRYING ON CLOTHING OR OTHER MATERIALS MAY CAUSE FIRE.

Keep container tightly closed to prevent the loss of water.

Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly.

Avoid breathing mist or vapor.

Avoid contact with eyes, skin, and clothing.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, only induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. In case of skin contact, immediately wash with soap and plenty of water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Keep out of reach of children.

For additional information, see Material Safety Data Sheet (MSDS) for this material.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

IN CASE OF FIRE: Flood with water.

Part B:

CONTAINS: Sulfuric acid (007664-93-9), Aluminum sulfate (010043-01-3)

DANGER!

POISON

MAY BE FATAL OR HARMFUL IF SWALLOWED

CAUSES SKIN AND EYE IRRITATION

Avoid breathing mist.

Avoid contact with eyes, skin, and clothing.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, do NOT induce vomiting. Give victim a glass of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. In case of contact, immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 11/12

Keep out of reach of children.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

Do not handle or use until safety precautions in Material Safety Data Sheet (MSDS) have been read and understood.

Working solution (film)

CONTAINS: Ammonium sulfite (010196-04-0), Sulfuric acid (007664-93-9), Sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF SWALLOWED

Keep container tightly closed to prevent the loss of water.
Avoid breathing mist or vapor.
Avoid contact with eyes and prolonged or repeated contact with skin.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: If swallowed, seek medical advice. Never give anything by mouth to an unconscious person.

IN CASE OF FIRE: Use water spray, carbon dioxide (CO2), dry chemical, alcohol foam.

Keep out of reach of children

For additional information, see Material Safety Data Sheet (MSDS) for this material.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

Working solution (paper)

CONTAINS: Ammonium sulfite (010196-04-0), Sulfuric acid (007664-93-9), Sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF SWALLOWED

Avoid breathing mist or vapor.
Avoid contact with eyes and prolonged or repeated contact with skin.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: If swallowed, seek medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Keep out of reach of children.

For additional information, see Material Safety Data Sheet (MSDS) for this material.

Since emptied containers retain product residue, follow label warnings

MATERIAL SAFETY DATA SHEET

200000591/F/USA

Approval Date: 02/08/2001

Print Date: 05/14/2003

Page: 12/12

even after container is emptied.

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.

A:R-1, S-2, F-1, C-1

B:R-1, S-2, F-0, C-0

WS:R-1, S-1, F-1, C-0 - Working solution (film)

WS:R-1, S-1, F-0, C-0 - Working solution (paper)