

MATERIAL SAFETY DATA SHEET

RANMAN™ FUNGICIDE



MSDS Ref. No.: 120116-88-3-1

Date Approved: 05/15/2006

Revision No.: 2

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 2001/58/EC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	RANMAN™ FUNGICIDE
PRODUCT CODE:	6267
ACTIVE INGREDIENT(S):	Cyazofamid
CHEMICAL FAMILY:	Cyanoimidazole
MOLECULAR FORMULA:	C ₁₃ H ₁₃ C ₁ N ₄ O ₂ S
SYNONYMS:	CAS: 4-chloro-2-cyano-N,N-dimethyl-5-(4-methylphenyl)-1H-imidazole-1-sulfonamide; IUPAC: 4-chloro-2-cyano-N,N-dimethyl-5-p-tolylimidazole-1-sulfonamide

MANUFACTURER

ISHIHARA SANGYO KAISHA, LTD
3 - 15, Edobori 1-Chome
Nishi-ku, Osaka 550-0002
Japan
(440) 357-0640 (General Information - ISK
Biosciences Corp. Concord, OH)

DISTRIBUTED BY:
FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 331-3148 (FMC - U.S.A. & Canada)

(716) 735-3765 (FMC - Reverse charges)

(888) 484-7546 (ISK - 24-hour Emergency)

For leak, fire, spill, or accident emergencies, call:
(800) 424-9300 (CHEMTREC - U.S.A. & Canada)
(703) 527-3887 (CHEMTREC - All Other Countries)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Light-tan to beige liquid, with a slight musty latex paint odor.
- Slightly combustible. May support combustion at elevated temperatures.
- Thermal decomposition and burning may form toxic by-products.
- For large exposures or fire, wear personal protective equipment.

POTENTIAL HEALTH EFFECTS: No significant hazard expected unless large quantities are ingested. Repeated or prolonged inhalation exposure may cause lung irritation.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Cyazofamid	120116-88-3	34.5	None	Not classified

4. FIRST AID MEASURES

EYES: Flush with plenty of water. Get medical attention if irritation occurs and persists.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If any discomfort persists, obtain medical attention.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR: This product has low oral, dermal and inhalation toxicity. It is non-irritating to the skin and eyes, and is non-sensitizing to the skin. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: SMALL FIRES: Use water spray, dry chemical, foam or carbon dioxide. LARGE FIRES: Use water spray, dry chemicals, foam or carbon dioxide. DO NOT use water jet.

FIRE / EXPLOSION HAZARDS: Slightly combustible. This material may support combustion at elevated temperatures.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a solution of soap and water and add the solution to the drums of waste already collected. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

HANDLING AND STORAGE: Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For splash, mist or spray exposures wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

GLOVES: Wear chemical resistant, waterproof gloves. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum, or using tobacco. Shower at the end of the workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Slight musty latex paint
APPEARANCE:	Light-tan to beige liquid
AUTOIGNITION TEMPERATURE:	503 °C (937 °F) (using 100 ul)
FREEZING POINT:	-5 °C (23 °F)
MELTING POINT:	152.7°C (based on active ingredient)
MOLECULAR WEIGHT:	324.9 (cyazofamid)
pH:	6.2 (1% dilution in water)
SOLUBILITY IN WATER:	0.107 mg/L at pH 7 @ 20°C (based on active ingredient)
SPECIFIC GRAVITY:	1.154 g/mL (Water = 1)
VAPOR PRESSURE:	0.0000001 torr at 25°C (0.0000133 Pascal) (based on active ingredient)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Excessive heat and fire.
STABILITY:	Stable
POLYMERIZATION:	Will not occur
INCOMPATIBLE MATERIALS:	The active ingredient degrades with iron, aluminum, iron acetate or aluminum acetate at 54°C.
HAZARDOUS DECOMPOSITION PRODUCTS:	Under fire conditions, product may decompose to emit hazardous vapors and gases, which may irritate the respiratory tract.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Non-irritating (species unknown)

SKIN EFFECTS: Non-irritating (rabbit)

DERMAL LD₅₀: > 2,000 mg/kg (rat)

ORAL LD₅₀: > 5,000 mg/kg (rat)

INHALATION LC₅₀: > 5.9 mg/l (4 h) (species unknown)

SENSITIZATION: (Skin) Non-sensitizing (species unknown)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has low oral, dermal and inhalation toxicity. It is non-irritating to the skin and eyes, and is non-sensitizing to the skin. No significant hazards are expected unless large quantities are ingested. Repeated or prolonged inhalation exposure may cause lung irritation. No other data are available at this time.

CHRONIC EFFECTS FROM OVEREXPOSURE: This product was negative in the Ames mutagenicity assay. This product is classified as "not likely to be carcinogenic to humans" based on rat and mouse studies. Appropriate precautions should be taken to minimize exposure. No other data are available at this time.

CARCINOGENICITY:

NTP:	Not listed
IARC:	Not listed
OSHA:	Not listed
OTHER:	(ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: No data available for the formulation.

Cyazofamid has a rapid degradation rate in soil (half-life ranges from 3.7 - 6.4 days depending on soil type) and water (approximately 11.9 days depending on pH), therefore it should not persist in the environment. Photolysis half-life is approximately 30 minutes. Cyazofamid has limited mobility in soil due to its strong affinity for adsorption to organic matter (Koc ranges from 815/657 to 1524/1062 depending on soil type). Therefore, there is little potential for movement into ground water.

ECOTOXICOLOGICAL INFORMATION: No data available for the formulation.

Cyazofamid is practically non-toxic to birds (LD₅₀ > 2000 mg/kg, species not specified) and honey bees (LD₅₀ > 100 g/bee). Due to its limited solubility, the LC₅₀ to freshwater fish and *Daphnia magna* is >0.1 ppm and >1.3 ppm, respectively. Cyazofamid is highly toxic to estuarine fish (LC₅₀ > 0.167 ppm, species not specified), and very highly toxic to mysid shrimp (LC₅₀ = 0.089 ppm) and mollusks (EC₅₀ = 0.015 ppm).

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers that held this material should be cleaned, prior to disposal, by triple-rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

ADDITIONAL INFORMATION:

This material is not a hazardous material as defined by US Department of Transportation at 49 CFR Parts 100 through 185.

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

ADDITIONAL INFORMATION:

This material is not a dangerous good as defined by the International Maritime Dangerous Goods Code.

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

ADDITIONAL INFORMATION:

This material is not a dangerous good as defined in ICAO and the International Air Transport Association Dangerous Goods Regulations.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):

Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370):

Immediate, Delayed

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.:

None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):

There are no ingredients in this product, which are subject to Section 313 reporting requirements.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):

Not listed

FEDERAL INSECTICIDE FUNGICIDE RODENTICIDE ACT

U.S. EPA Signal Word: CAUTION

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

Not a controlled product under the Canadian Workplace Hazardous Materials Information System (WHMIS).

INTERNATIONAL LISTINGS

Australian Hazard Code: 3XE

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

EC Symbols: (Not classified as hazardous)

EC Risk Phrases: (Not classified as hazardous)

EC Safety Phrases: (Not classified as hazardous)

16. OTHER INFORMATION

REVISION SUMMARY:

This MSDS replaces Revision #1, dated June 22, 2005.

Changes in information are as follows:

Section 9 (Physical and Chemical Properties)

Section 16 (Other Information)

FMC Logo - FMC Corporation Trademark

Ranman - ISK Biosciences Corporation Trademark

© 2006 FMC Corporation. All Rights Reserved.

FMC Corporation believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be applicable where such product is used in combination with any other materials or in any process. Use of this product is regulated by the U.S. Environmental Protection Agency (EPA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Further, since the conditions and methods of use are beyond the control of FMC Corporation, FMC Corporation expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.