



Arch Chemicals, Inc.

**MATERIAL  
SAFETY DATA**

FOR ANY EMERGENCY, CALL 24 HOURS/7 DAYS:	1-800-654-6911
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300
FOR ALL MSDS QUESTIONS & REQUESTS, CALL MSDS CONTROL:	1-800-511-MSDS

**PRODUCT NAME: TRIADINE® 20**

**SECTION 1 PRODUCT AND COMPANY IDENTIFICATION**

REVISION DATE: 03-11-1999 SUPERCEDES: None  
MSDS NO: 01065-0003 - 100072

MANUFACTURER: Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204

SYNONYMS: None  
CHEMICAL FAMILY: Organic mixture  
FORMULA: Not Applicable/Mixture  
USE DESCRIPTION: Bactericide, fungicide  
OSHA HAZARD CLASSIFICATION: Skin, eye and respiratory irritant; sensitizer

SECTION 2 COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: 1,3,5-Triazine-1,3,5-(2H,4H,6H)-triethanol  
CAS NUMBER: 4719-04-4  
PERCENTAGE RANGE: 70-75%  
HAZARDOUS PER 29 CFR 1910.1200: Yes  
EXPOSURE STANDARDS: None established

CAS or CHEMICAL NAME: 2-Pyridinethiol-1-oxide, sodium salt  
CAS NUMBER: 3811-73-2  
PERCENTAGE RANGE: 1-5%  
HAZARDOUS PER 29 CFR 1910.1200: Yes  
EXPOSURE STANDARDS: 0.35 mg/cubic meter, 8 hr. TWA - manufacturer recommended internal exposure standard

CAS or CHEMICAL NAME: Water  
CAS NUMBER: 7732-18-5  
PERCENTAGE RANGE: 20-25%  
HAZARDOUS PER 29 CFR 1910.1200: No  
EXPOSURE STANDARDS: None established

SECTION 3 PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS:

DO NOT STORE AT TEMPERATURES ABOVE: 42 Deg.C (108 Deg.F)  
DO NOT EXPOSE TO DIRECT LIGHT.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: One year

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Concentrated acids,

strong oxidizing agents, water-reactive materials

#### SECTION 4 PHYSICAL DATA

APPEARANCE: Clear amber liquid  
FREEZING POINT: -36 Deg.C (-33 Deg.F)  
BOILING POINT: 102 Deg.C (216 Deg.F)  
DECOMPOSITION TEMPERATURE: None (aqueous solution)  
SPECIFIC GRAVITY: 1.17  
BULK DENSITY: 1.172 (g/cc)  
pH @ 25 DEG.C: 10.5 (10% in neutral distilled water)  
VAPOR PRESSURE @ 22 DEG.C: 10.9 mm Hg  
SOLUBILITY IN WATER: Completely miscible  
VOLATILES, PERCENT BY VOLUME: 25%  
EVAPORATION RATE: < 1 (Water=1)  
VAPOR DENSITY: No Data  
MOLECULAR WEIGHT: Not Applicable/Mixture  
ODOR: Mild amine  
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

#### SECTION 5 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION:

Wear a NIOSH approved respirator if any exposures occurs.

VENTILATION:

Use local exhaust ventilation.

SKIN AND EYE PROTECTIVE EQUIPMENT:

Wear gloves, boots, apron and a face shield with safety glasses.  
A full impermeable suit is recommended if exposure is possible to large portion of body.

OTHER: An eyewash and safety shower should be immediately available in the area where materials are handled.

EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):

RESPIRATOR TYPE: NIOSH approved positive-pressure supplied-air respirator

PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Impervious

#### SECTION 6 FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

EXPLOSIVE: No

FLAMMABLE: No

COMBUSTIBLE: No

PYROPHORIC: No

FLASH POINT: None

AUTOIGNITION TEMPERATURE: Does not ignite

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not flammable UEL - Not flammable

NFPA RATINGS:

Not Established

HMIS RATINGS:

Health: 2

Flammability: 0

Reactivity: 0

**EXTINGUISHING MEDIA:**

Not Applicable-Choose extinguishing media suitable for surrounding materials.

**FIRE FIGHTING TECHNIQUES AND COMMENTS:**

This product would not be expected to burn unless all the water is boiled away. The remaining organic compounds may be ignitable. Use water to cool containers exposed to fire. See Section 11 for protective equipment for fire fighting.

**SECTION 7 REACTIVITY INFORMATION**

**CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:**

TEMPERATURES ABOVE: 42 Deg.C (108 Deg.F) - Decomposes slowly  
MECHANICAL SHOCK OR IMPACT: No  
ELECTRICAL (STATIC) DISCHARGE: No  
OTHER: Exposure to strong acids, strong oxidizing agents, or water-reactive materials  
HAZARDOUS POLYMERIZATION: Will not occur  
INCOMPATIBLE MATERIALS: Concentrated acids, strong oxidizing agents, water-reactive materials  
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, nitrogen oxides, sulfur dioxide, formaldehyde

**SUMMARY OF REACTIVITY:**

EXPLOSIVE: No  
OXIDIZER: No  
PYROPHORIC: No  
ORGANIC PEROXIDE: No  
WATER REACTIVE: No  
OTHER: Decomposes slowly when heated or exposed to UV light

**SECTION 8 FIRST AID**

**EYES:**

Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

**SKIN:**

Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

**INGESTION:** Immediately drink large quantities of water. Vomiting may occur, but DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

**INHALATION:**

If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough product to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

SECTION 9 TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, dermal contact, oral, eye contact

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF SWALLOWED. AVOID BREATHING MIST OR VAPORS.  
CAUSES MODERATE TO SEVERE SKIN AND EYE IRRITATION. MAY CAUSE  
RESPIRATORY IRRITATION. MAY CAUSE ALLERGIC SKIN SENSITIZATION.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Not established  
IRRITATION THRESHOLD: Not established  
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH concentration has not  
been established.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation may cause moderate to severe irritation to the throat, mucous membranes, upper respiratory tract, and lungs. Any irritation would be expected to be transient with no permanent damage expected. Inhalation of high concentrations, generally outside the context of industrial exposure, may cause pulmonary edema.

CHRONIC:

There are no known or reported effects from chronic exposure except for effects similar to those experienced from acute exposure.

SKIN

ACUTE:

Skin contact would be expected to cause moderate to severe irritation consisting of transient redness and swelling. This irritant effect would not be expected to result in permanent damage. Dermal contact with this product may also result in a yellow-staining effect on the skin.

CHRONIC:

Effects would be similar to those listed under acute dermal exposure. Repeated or prolonged skin contact may cause some individuals to develop skin rash and other skin complications due to allergic skin sensitization.

EYE

Contact with the eyes would be expected to cause moderate to severe irritation consisting of redness, swelling and mucous membrane discharge to the conjunctiva. Reversible corneal opacity or visual impairment may occur if this product is not washed out promptly and left in the eye for an extended period of time.

INGESTION

ACUTE:

Ingestion may cause irritation and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhea.

CHRONIC:

There are no known or reported effects from chronic exposure except for effects similar to those experienced from single exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Dermatitis may be aggravated following exposure.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

Inhalation LC 50: No LC 50 was obtained when animals were tested; however, no deaths or effects were observed in any of the animals exposed to 7.44 mg/L for one hour based on similar product.

Dermal LD 50: > 2 g/kg (rabbit) based on similar product

Oral LD 50: Approximately 0.73 g/kg (rat) based on similar product

Irritation: Severe irritant to skin and eyes; allergic sensitizer to skin

ACUTE TARGET ORGAN TOXICITY:

Lung damage, skin, and eye damage

CHRONIC TARGET ORGAN TOXICITY:

Prolonged or repeated dermal contact may cause allergic skin sensitization in some individuals.

Skeletal muscle atrophy has been observed from inhalation, dermal, or oral exposure to 2-Pyridinethiol-1-oxide, sodium salt in rats. In addition dermal exposure to rats showed evidence of damage to peripheral nerves. Exposure to monkeys at several times the dose given to rats gave no indication of either muscle or nerve damage. Although these effects are possible with human exposure, the evaluation of the animal toxicological data makes the above effects unlikely from industrial product use. It is judged that these effects will not occur from exposure to this product due to the low percentage of 2-Pyridinethiol-1-oxide, sodium salt in this product.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY:

This product is not known or reported to effect reproductive function or fetal development.

1,3,5-triazine-1,3,5-(2H,4H,6H)-triethanol has been tested in rats and no evidence of teratogenicity or embryotoxicity was seen at oral dose levels of 250,500 and 750 mg/kg/day.

Fertility was shown to be reduced from exposure to 2-Pyridinethiol-1-oxide, sodium salt but only indirectly because of impaired hindlimb muscle function. Sodium 2-pyridinethiol-1-oxide does not exert a direct effect on reproductive performance or post-natal development. This material does not produce fetal malformations from dermal exposure. Fetal toxicity was noted, but only at doses which produced maternal toxicity. It is judged that these effects will not occur from exposure to this product due to the low percentage of 2-Pyridinethiol-1-oxide, sodium salt in this product.

CARCINOGENICITY:

This product is not known or reported to be carcinogenic by any reference including IARC, NTP, OSHA, or EPA.

MUTAGENICITY:

This product is not known or reported to be mutagenic.

AQUATIC TOXICITY:

The following LC50 data is based on a similar product:

LC 50 - 42	mg/l (rainbow trout, 96 hours)
77	mg/l (bluegill, 96 hours)
36	mg/l (channel catfish, 96 hours)
5.4	mg/l (water flea, 48 hours)

SECTION 10 TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

SECTION 11 SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: (Per 40 CFR 302.4) Not Applicable

SPILL MITIGATION PROCEDURES:

Evacuation procedures must be placed into effect. Hazardous concentrations in air may be found in local spill area and immediately downwind. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of water fog or spray. Contain all liquid for treatment or neutralization.

WATER RELEASE: This material is heavier than and soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so. If unable to divert, create a dam to contain material. Continue to handle as described in land spill.

LAND SPILL: Create a dike or trench to contain materials. Spill materials may be absorbed using sand, clay or commercial absorbent. Do not place spill materials back in their original containers. Containerize and label all spill materials properly. Decontaminate all clothing and the spill area using a soap solution and flush with large amounts of water.

SPILL RESIDUES:

Dispose of per guidelines under Section 12, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

In case of fire, wear normal fire-fighting equipment, including a NIOSH approved self-contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots, gloves, splash-proof goggles, full face shield, impervious clothing, i.e., chemically impermeable suit.

SECTION 12 WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

SECTION 13 ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:

This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. The only registered use is as a biocide.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65:

"WARNING: This product contains detectable amounts of a chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm."

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:

. HEALTH:

Immediate (Acute)  
Delayed (Chronic)

PHYSICAL:

None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

SECTION 14 ADDITIONAL INFORMATION MSDS REVISION STATUS: Exposure standards & personal protective equipment revised

SECTION 15 MAJOR REFERENCES

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3. Poitou, P. and Marignac, B. 1978. Sensitizing effect of Grotan BK in the guinea pig. Contact Dermatitis, 4(3), 166.
4. Rycroft, R. 1978. Is Grotan BK a contact sensitizer? Review Article. British Journal of Dermatology, 99, 346-347.
5. Urwin, C. et al. 1976. An Evaluation of the Mutagenicity of the Cutting Oil Preservative Grotan BK. Mutation Research, 40, 43-46.
6. E. I. du Pont de Nemours and Company, Haskell Laboratory for Toxicology and Industrial Medicine. In Vitro Microbial Mutagenicity Studies of 2-Pyridinethiol-1-oxide, Sodium Salt. Haskell Laboratory Report No. 552-76. July 27, 1976.
7. EG&G, Bionomics. Wareham, MA. February, 1982. Acute Toxicity of Triadine 10 to Rainbow Trout (*Salmo gairdneri*). Toxicity Test Report. Bionomics Report #BW-82-2-1117.
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9. EG&G, Bionomics. Wareham, MA. February, 1982. Acute Toxicity of Triadine 10 to Channel Catfish (*Ictalurus punctatus*). Toxicity Test Report. Bionomics Report #BW-82-2-1120.
10. EG&G, Bionomics. Wareham, MA. February, 1982. Acute Toxicity of Triadine-10 to the Water Flea (*Daphnia magna*). Toxicity Test Report. Bionomics Report #BW-82-2-1122.
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- Fish. Laboratory No. 88969.
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  13. Industrial BIO-TEST Laboratories, Inc. Northbrook, IL. March 14, 1977. Acute Aerosol Inhalation Toxicity Study in Rats. Triadine-10, 70% Active Sample No. 873158. P.O. No. RC-37926. I.B.T. No. 8562-10345.
  14. Industrial BIO-TEST Laboratories, Inc. Northbrook, IL. July 14, 1977. Acute Toxicity Studies with Triadine-10, 70% Active. Sample No. 873158. P.O. No. RC-37926. I.B.T. No. 8530-10344.
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  16. International Research and Development Corporation, Mattawan, Michigan. Teratology Study in Rats. Study No. 397-017. January 21, 1980.
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  18. International Research and Development Corporation, Mattawan, Michigan. Thirteen Week Subchronic Inhalation Toxicity Study on Na Omadine in Rats. Study No. 397-042. 1989.
  19. International Research and Development Corporation, Mattawan, Michigan. One Year Oral Toxicity Study in Cynomolgus Monkeys. Sodium Omadine. Study No. 397-047. 1989.
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  26. MB Research Laboratories, Inc. Spinnerstown, PA. 1983. Primary Dermal Irritation in Albino Rabbits. Triadine 3, #CM-83139, Index #1141. Project Number MB 83-6874 C.
  27. MB Research Laboratories, Inc. Spinnerstown, PA. 1983. Eye Irritation in Rabbits. Triadine 3, #CM-83139, Index #1141. Project Number MB 83-6874 D.
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32. Toxicol Laboratories Limited, Ledbury, Herefordshire, ENGLAND. Rat Two-Generation Reproduction Toxicity Study. Sodium Omadine. Reference No. OLA/9/88. Volumes I and II. September, 1988.
  33. Toxicol Laboratories Limited, Ledbury, Herefordshire, ENGLAND. 90 Day Dermal Toxicity Study in the Rat. Sodium Omadine. No. OLA/5/88. Volumes I and II. November, 1988.
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  35. Toxicol Laboratories Limited, Ledbury, Herefordshire, ENGLAND. 80 Week Dermal Carcinogenicity Study in the Mouse. Sodium Omadine. Study No. OLA/7/C.
  36. Triazine Rat Teratology Study, Triadine-3. Toxicol Laboratories, Ltd., Ledbury, England. Reference No. LEF/8/89, June 16, 1989.

Other References are available upon request.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.

**Arch Chemicals, Inc.**  
MSDS Control  
501 Merritt 7  
PO Box 5204  
Norwalk, CT 06856-5204