

PRODUCT

NALCO(R) 19 PULV**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME : **NALCO(R) 19 PULV**APPLICATION : **OXYGEN SCAVENGER**

COMPANY IDENTIFICATION :

CHINA :	NALCO INDUSTRIAL SERVICES (SUZHOU) CO	TEL: 86-512-68255001	FAX: 86-512-68251030
INDIA :	NALCO INDIA LIMITED	TEL: 91-33-22172066	FAX: 91-33-22296858
INDONESIA :	PT. NALCO INDONESIA	TEL: 62-21-8753175	FAX: 62-21-8753167
KOREA :	NALCO KOREA LIMITED	TEL: 82-2-789-6961	FAX: 82-2-786-3140
MALAYSIA :	NALCO INDUSTRIAL SERVICES MALAYSIA SDN BHD	TEL: 603-5569 4118	FAX: 603-5569 5955
	MALAYSIAN ENERGY CHEMICAL & SERVICES SDN BHD	TEL: 609-862 3200	FAX: 609-862 3201
PHILIPPINES :	NALCO PHILIPPINES INC.	TEL: 63-49-5451550	FAX: 63-49-5453442
SINGAPORE :	NALCO PACIFIC PTE LTD	TEL: 65- 6505-6868	FAX: 65-6862 0850
THAILAND :	NALCO INDUSTRIAL SERVICES (THAILAND) CO.	TEL: 66-38-955-160	FAX: 66-38-955-166

Date issued : 31.03.2008

Version Number : 1.0

See Section 16 for address information.

EMERGENCY TELEPHONE NUMBER(S) : See section 16, for Emergency Telephone Numbers.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

CHEMICAL NAME	CAS NO	% (w/w)
Sodium Metabisulfite	7681-57-4	1 - 5
Sodium Sulfite	7757-83-7	60 - 100

The balance of the substances in this product are not classified as hazardous or are present below hazard cut-off limits

3. HAZARDS IDENTIFICATION

HUMAN HEALTH HAZARDS - ACUTE

EYE CONTACT

Can cause moderate irritation.

SKIN CONTACT

Can cause moderate irritation.

INGESTION

There may be irritation to the gastro-intestinal tract with nausea and vomiting. May cause asthmatic-like attack.

INHALATION

Dust irritating to eyes, nose, throat and lungs. Causes asthmatic signs and symptoms in hyper-reactive individuals.

PRODUCT

NALCO(R) 19 PULV**HUMAN HEALTH HAZARDS - CHRONIC :**

Ingestion of sulfite can cause a severe allergic reaction in asthmatics and some sulfite sensitive individuals. The resulting symptoms can include difficulty in breathing, flushed skin and a rash. Chronic exposure to sulfites may cause symptoms of upper respiratory disease and affect sense of taste and smell.

ENVIRONMENTAL HAZARDS :

Keep out of waterways. See section 12, ecotoxicity.

PHYSICAL AND CHEMICAL HAZARDS :

Contact with acids liberates toxic gas.

4. FIRST AID MEASURES**EYE CONTACT :**

Brush off excess powder. Immediately flush with plenty of water for at least 15 minutes. If symptoms develop, seek medical advice.

SKIN CONTACT :

Brush off excess powder. Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :

Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

INHALATION :

Remove to fresh air, treat symptomatically. Artificial respiration and/or oxygen may be necessary. Get medical attention.

NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not flammable

EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD :

May evolve oxides of sulfur (SO_x) under fire conditions. Not flammable or combustible.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

SENSITIVITY TO STATIC DISCHARGE :

Not expected to be sensitive to static discharge.

6. ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO(R) 19 PULV

safe to do so. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :

Sweep up and shovel. Reclaim into recovery or salvage drums. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water., If drains, streams, soil or sewers become contaminated, notify local authority.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid generating dusts. Keep the containers closed when not in use. Ensure all containers are labeled.

STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store separately from oxidizers. Store separately from acids. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles. Keep in dry place.

SUITABLE CONSTRUCTION MATERIAL :

HDPE (high density polyethylene), Polypropylene, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

Exposure limits are listed for sulfur dioxide (SO₂) since this product evolves SO₂ when open to the atmosphere. Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Country/Source	Substance(s)	Category:	ppm	mg/m3
CHINA	Sulfur Dioxide	TWA		5
		STEL		10
HONG KONG	Sulfur Dioxide	TWA	2	5.2
		STEL	5	13
INDIA	Sulfur Dioxide	TWA	2	5
		STEL	5	10
INDONESIA	Sodium Metabisulfite	TWA		5
	Sulfur Dioxide	TWA	2	5.2
		TWA		1
SOUTH KOREA	Sodium Metabisulfite	TWA		5
	Sulfur Dioxide	TWA	2	5
		STEL	5	10
MALAYSIA	Sodium Metabisulfite	TWA		5

PRODUCT

NALCO(R) 19 PULV

	Sulfur Dioxide	TWA	2	5.2
PHILIPPINES	Sulfur Dioxide	TWA	5	13
SINGAPORE	Sodium Metabisulfite	TWA		5
	Sulfur Dioxide	TWA STEL	2 5	5.2 13
THAILAND	Sulfur Dioxide	TWA	5	13
TAIWAN	Sulfur Dioxide	TWA	2	5.2
USA	Sodium Metabisulfite	ACGIH/TWA		5
	Sulfur Dioxide	ACGIH/TWA ACGIH/STEL OSHA Z1/PEL	2 5 5	13

* A skin notation refers to the potential significant contribution to overall exposure by the cutaneous route, including mucous membranes and the eyes.

MONITORING MEASURES :

A small volume of air is drawn through an absorbant or barrier to trap the substance(s) which can then be desorbed or removed and analyzed as referenced below:

Substance(s)	Method	Analysis	Absorbant
Sodium Metabisulfite	US OSHA: 121	Atomic absorption spectroscopy	Cellulose ester filter
Sulfur Dioxide	US NIOSH: 6004	Ion chromatography	Cellulose ester filter treated with Sodium Bicarbonate

ENGINEERING MEASURES :

General ventilation is recommended. Local exhaust ventilation may be necessary when dusts or mists are generated.

PERSONAL PROTECTION

GENERAL ADVICE :

The use and choice of personal protection equipment is related to the hazard of the product, the workplace and the way the product is handled. In general, we recommend as a minimum precaution that safety glasses with side-shields and workclothes protecting arms, legs and body be used. In addition any person visiting an area where this product is handled should at least wear safety glasses with side-shields.

RESPIRATORY PROTECTION :

An approved respirator must be worn if the occupational exposure limit is likely to be exceeded. A dust respirator may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

Nitrile gloves Neoprene gloves PVC gloves Rubber gloves

SKIN PROTECTION :

Wear impervious apron and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :

Wear safety glasses with side-shields.

HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Powder
APPEARANCE	Off-white
ODOR	Slight
pH (10 %)	7.6 - 8.2 ASTM E-70
VAPOR PRESSURE	No data available.
VAPOR DENSITY	No data available.
SPECIFIC GRAVITY	No data available.
DENSITY	No data available.
BULK DENSITY	1.6 - 1.9 kg/m ³ (25 °C)
SOLUBILITY IN WATER	Complete
MELTING POINT	No data available.
BOILING POINT	No data available.
FLASH POINT	Not flammable
LOWER EXPLOSION LIMIT	No data available.
UPPER EXPLOSION LIMIT	No data available.
AUTOIGNITION TEMPERATURE	No data available.

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY**STABILITY :**

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Moisture

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. SO₂ may react with vapors from neutralizing amines and may produce a visible cloud of amine salt particles.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of sulfur, Oxides of carbon

PRODUCT

NALCO(R) 19 PULV

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY DATA :

The following results are for the active components.

SENSITIZATION :

Sulfites can cause an allergic reaction in sensitive individuals.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

For additional information on the hazard of the preparation, please consult section 2 and 12.

HUMAN HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential human hazard is: Low

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	130 mg/l		Product

ADDITIONAL ECOLOGICAL DATA:

Depletes oxygen content in water courses.

MOBILITY AND BIOACCUMULATION POTENTIAL :

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM , provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to float on the surface.

This preparation or material is not expected to bioaccumulate.

PERSISTENCY AND DEGRADATION :

Chemical Oxygen Demand (COD) : 113,000 mg/l

The organic portion of this preparation is expected to be poorly biodegradable.

ENVIRONMENTAL HAZARD CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Low

PRODUCT

NALCO(R) 19 PULV**13. DISPOSAL CONSIDERATIONS**

Dispose of in accordance with local, state, and federal regulations.

Empty drums should be taken for recycling, recovery, or disposal through a suitably qualified or licensed contractor.

NATIONAL REGULATIONS, CHINA
Comply with local regulations.

NATIONAL REGULATIONS, INDIA
Dispose of unused product in accordance with the "Hazardous Wastes (Management and Handling) Rules 1989" and local and State legislation, as applicable.

NATIONAL REGULATIONS, INDONESIA
Dispose of unused product in accordance with "Government Regulation No.85/1999 on Amendment of Government Regulation No. 18/1999 regarding Hazardous and Toxic Waste Management", which also replaces Government Regulation No. 19/1994 and No.12/1995, (and amendments) as applicable.

NATIONAL REGULATIONS, KOREA
Waste disposal should comply with the Waste Control Act.

NATIONAL REGULATIONS, MALAYSIA
Dispose of in accordance with the Environmental Quality (Scheduled Wastes) Regulation 1989 and other guidelines issued by DOE and/or local authorities.

NATIONAL REGULATIONS, PHILIPPINES
Dispose of in accordance with Presidential Decree No. 984-1976 ("The Pollution Control Law"); DENR Department Administrative Order No.29-92 ("The Implementing Rules or Regulations of RA6969") and Presidential Decree No.825.

NATIONAL REGULATIONS, SINGAPORE
Dispose of waste in accordance with the Environmental Health Act (Chapter 95, Rg 11), Environmental Public Health (Toxic Industrial Waste) Regulations 1990 Ed.

NATIONAL REGULATIONS, THAILAND
Dispose of hazardous waste in accordance with the " The Notification of the Ministry of Industry B.E. 2548, subject : Disposal of Wastes or Unusable Materials".

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT

Proper Shipping Name :

**PRODUCT IS NOT REGULATED DURING
TRANSPORTATION**

NATIONAL REGULATIONS, CHINA
Comply with local regulations.

PRODUCT

NALCO(R) 19 PULV**NATIONAL REGULATIONS, INDIA**

Transport in accordance with the Central Motor Vehicles Rules 1989.

NATIONAL REGULATIONS, INDONESIA

Transport in accordance with all government regulations, including "Regulation of the Minister of Transportation No. 69/1993 on Land Transportation".

NATIONAL REGULATIONS, KOREA

Land transport should comply with the Ministerial Decree of Toxic Chemicals Control Law and the Regulations Regarding the Fire Fighting Techniques Standards, as applicable.

NATIONAL REGULATIONS, MALAYSIA

There are no regulations specifically governing the transport of chemicals. Use best practice.

NATIONAL REGULATIONS, PHILIPPINES

Transport in accordance with the following legislation (as applicable): Presidential Decree No. 1185, 1977 ("Fire Code of the Philippines") and implementing rules and regulations; Presidential Decree No. 856, 1975 ("Code of Sanitation"); Republic Act No 6969, 1990 ("Toxic Substances and Hazardous and Nuclear Wastes Control Act") and implementing rules and regulations.

NATIONAL REGULATIONS, SINGAPORE

Land Transport complies with the Environmental Pollution Control (Hazardous Substances) Regulations 1999, which follows the "Specification for Caution Labelling for Hazardous Substances" - Singapore Standard 286 (1984).

NATIONAL REGULATIONS, THAILAND

The product should be transported in accordance with "Hazardous Substances Acts B.E.2535", "Notification of Ministry of Public Health Re: Label and Level of Toxicity of Dangerous Articles Which are Under the Responsibility of Food and Drug Administration 2534 (If applicable)" and "Notification of Land Transportation Department, Subject : Label of truck which contain hazardous material, Notification date : 14 November B.E.2543 (14 November 2000)".

AIR TRANSPORT (ICAO/IATA)

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO)

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING
TRANSPORTATION

15. REGULATORY INFORMATION**NATIONAL REGULATIONS EUROPE :**

HAZARD SYMBOLS

PRODUCT

NALCO(R) 19 PULV

IRRITANT

Contains:..Sodium Sulfit

RISK PHRASES

R31 - Contact with acids liberates toxic gas.

R36/38 - Irritating to eyes and skin.

NATIONAL REGULATIONS, MALAYSIA :

HAZARD SYMBOLS



IRRITANT

RISK PHRASES

R36/38 - Irritating to eyes and skin.

R31 - Contact with acids liberates toxic gas.

SAFETY PHRASES

S22 - Do not breathe dust.

S24/25 - Avoid contact with skin and eyes.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

INTERNATIONAL REGULATIONS

NFPA RATING

HEALTH : 2 FLAMMABILITY : 0 INSTABILITY : 0 OTHER :

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect.

INTERNATIONAL CHEMICAL CONTROL LAWS**AUSTRALIA**

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

UNITED STATES :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADA :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Ministry of International Trade & Industry List (MITI).

CHINA

All substances in this product comply with the Chemical Control Law and are listed on the Inventory of Existing Chemical Substances China (IECSC).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippine Inventory of Chemicals & Chemical Substances (PICCS).

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

NALCO INDUSTRIAL SERVICES (SUZHOU) CO; 88 Ta Yuan Road, Suzhou New Development Zone, Jiangsu 215011 PRC

NALCO INDIA LIMITED; 20/A Park St, Calcutta 700016 India

PT. NALCO INDONESIA; Jl. Pahlawan, Desa Karang Asem Timur, Citeureup, Bogor, Indonesia

NALCO KOREA LIMITED; 11th Fl, 63BLDG, 60, Yoido-dong Young Deung Po-Gu, Seoul, Korea

NALCO INDUSTRIAL SERVICES MALAYSIA SDN BHD; No 1, Jalan Jururancang U1/21, Seksyen U1, Hicom-Glenmarie Industrial Park, 40150 Shah Alam, Selangor Darul Ehsan, Malaysia



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO(R) 19 PULV

MALAYSIAN ENERGY CHEMICAL & SERVICES SDN BHD (MECAS); Lot 6, KSB-Fasa 2, 8km Utara
Kemaman-K.Terengganu, 24007 Kemaman, Terengganu

NALCO PHILIPPINES INC.; Barrio Real, Calamba, Laguna, Philippines

NALCO PACIFIC PTE LTD; 21 Gul Lane, Jurong Town, Singapore 629416

NALCO INDUSTRIAL SERVICES (THAILAND) CO.; Rayong Plant, 109/19 M00 4, Eastern Seaboard Industrial
Estate, Soi ESIE 6, T. Pluakdaeng, A. Pluakdaeng Rayong 21140 Thailand

EMERGENCY TELEPHONE NUMBER(S) :

CHINA :	0532-83889090
KOREA :	82-2-789-6961
INDIA :	0-33-6740395
INDONESIA :	62-21-8753175
MALAYSIA :	603-5569 4118 (NALCO)
	603-7725-8005 (MECAS)
PHILIPPINES :	63-49-5451550
SINGAPORE :	65- 6505-6868
THAILAND :	38-955-160

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the MSDS.

Prepared By: Nalco Asia Pacific, Safety, Health and Environment (SHE) Specialist