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Prepared By: Brooke DiDomenico Administrative Control: Administrative Controller	Instruction No. SDS-015 PANA	Issue No: 4 Issue Date: 5/28/21 Page 1 of 11

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER

TRADE NAME: PANA

RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE

USAGE: Industrial intermediates for the synthesis of organic chemicals

DETAILS OF THE SUPPLIER OF SAFETY DATA SHEET

MANUFACTURER: NATION FORD CHEMICAL COMPANY
2300 Banks Street
Fort Mill, South Carolina 29715
United States of America

EMAIL: INFO@NATIONFORDCHEM.COM

PRODUCT INFO TELEPHONE: +1-803-548-3210

EMERGENCY TELEPHONE NUMBER

CHEMTREC: +1-800-424-9300

SECTION 2 - HAZARDS IDENTIFICATION

CLASSIFICATION OF A SUBSTANCE OR MIXTURE

Classification in accordance with 29CFR 1910.1200 (OSHA).

Acute Toxicity: Category 4

H302 Harmful if swallowed.

Skin Sensitizer: Category 1

H317 May cause an allergic skin reaction

Specific Target Organ Toxicity – Repeat Exposure: Category 2

H373 May cause damage to blood system through prolonged or repeated exposure

LABEL ELEMENTS

Labelling in accordance with 29CFR 1910 (OSHA).



HAZARD PICTOGRAMS



GHS07



GHS08

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SIGNAL WORD: Warning

HAZARD STATEMENTS:

H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H373 May cause damage to blood system through prolonged or repeated exposure.

PRECAUTIONARY STATEMENTS:

P261 Avoid breathing mist, vapours, or spray.
P264 Wash thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective clothing.
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P330 Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P333 + P313 If skin irritation or rash occurs: Get medical advice.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P314 Get medical advice if you feel unwell.
P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE NAME: N-Phenyl-1-naphthylamine
CAS NUMBER: 90-30-2
PURITY: 100%
SYNONYMES: PANA
Phenylnaphthylamine



SECTION 4 - FIRST AID MEASURES

GENERAL INFORMATION Immediately remove any clothing soiled by the product. Provide oxygen treatment if affected person has difficulty breathing. Take affected persons out into the fresh air.

INHALATION If large amounts are inhaled, remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, administer oxygen and call a physician.

SKIN CONTACT Immediately wash skin with soap and water while removing contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if irritation or rash occurs.

EYE CONTACT Immediately flush eyes with water for several minutes. Assure adequate flushing by separating eyelids with fingers. Seek medical attention if irritation occurs.

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INGESTION

Do not induce vomiting. Immediate vigorous rinsing of the mouth. Drink water in small sips (dilution effect). If unconscious place in recovery position and seek immediate medical attention. Maintain an open airway. Loosen tight clothing (such as a collar, tie, belt or waistband).

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

May cause eye and skin irritation. May cause allergic skin reaction (sensitization). May be harmful if swallowed. Prolonged or repeated contact may cause damage to the blood system.

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Immediate medical attention should not be necessary. Symptomatic treatment and if possible contact poison specialist.

SECTION 5 – FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

SUITABLE EXTINGUISHING MEDIA Carbon Dioxide (CO2)
Powder
Water Spray
Fight larger fires with water spray or alcohol resistant foam

UNSUITABLE EXTINGUISHING MEDIA Water with full jet

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

PANA can produce flammable dust clouds in air. Take precautionary measures against static discharges. If involved in a fire, it may emit oxides of nitrogen and carbon, and noxious and toxic fumes.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS



If excessive smoke or fumes are encountered, wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Dispose of fire debris and contaminated fire-fighting water in accordance with official regulations. Collect contaminated fire-fighting water separately. It must not enter the sewage system.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Ensure suitable personal protection during removal of spillages. Collect in a manner that minimizes dust creation and place in drum and hold for approved waste disposal in compliance with local, state, and federal requirements. Avoid skin and eye contact and inhalation.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

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Protect against dust generation and accumulation. Clear up spillage and transfer to a container for disposal. Wash the spill area. Do not allow to enter drains, sewers or watercourses.

SECTION 7 – HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

Store in well ventilated areas. Keep container tightly closed and dry. Do not store with acids. Take precautionary measures against static discharges.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

REQUIREMENTS TO BE MET BY
STOREROOMS AND
RECEPTACLES

Store in a dry place.
Keep away from sources of ignition and strong oxidizing agents.
Ensure that containers are clearly and permanently labelled.
Store in the original container if possible.
Keep container tightly closed.

INFORMATION ABOUT STORAGE
IN ONE COMMON STORAGE
FACILITY

Do not store together with acids.
Store away from foodstuffs.
Store away from flammable substances.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS

Chemical Name	Exposure Limits
N-Phenyl-1-naphthylamine	None Established

APPROPRIATE ENGINEERING CONTROLS:

VENTILATION:

Normal criterion for workplace air changes. A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

PERSONAL PROTECTIVE EQUIPMENT

PERSONAL PROTECTIVE
EQUIPMENT GENERAL
PROTECTIVE AND HYGIENIC
MEASURES:



Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

RESPIRATORY PROTECTION

NIOSH/MSHA approved respirator.
In case of an accidental release it is recommended to wear respiratory protection such as particle filter P2 or P3.

HAND PROTECTION

Protective gloves

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The glove material has to be impermeable and resistant to the substance.

EYE/FACE PROTECTION



In cases where there is likelihood of eye contact, wear chemical goggles.

SKIN AND BODY PROTECTION

Protective work clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Yellow to tan solid crystalline flakes or pellets
Odor	Pungent odor
Odor threshold	Not determined
pH	Not applicable
Melting / Freezing Point	62°C (143.6°F)
Boiling point	363°C (685.4°F) (estimated)
Flash Point	202°C (396°F)
Evaporation Rate	Not applicable
Flammability (solid, gas)	Product is classified. As with most organic compounds, fine dust dispersed in air in the presence of an ignition source is a potential dust explosion hazard.
Upper Explosion Limit	Not applicable
Lower Explosion Limit	Not applicable
Vapor Pressure	0.00385 Pa (estimated) @ 25°C
Vapor Density	Not available
Relative Density	1.16 g/cm ³
Solubility (ies)	1.256 mg/l (estimated) with Water (20°C)
Partition coefficient (n-octanol/ water) at 25°C	4.47 log POW (estimated)
Auto-Ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	Not applicable

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SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY

Product is not reactive under normal conditions of storage and use.

CHEMICAL STABILITY

Product is stable under normal conditions of storage and use.

POSSIBILITY OF HAZARDOUS REACTIONS

Can react with acids

CONDITIONS TO AVOID

Heat, sparks, and open flames.

INCOMPATIBLE MATERIALS

Strong oxidizers.



HAZARDOUS DECOMPOSITION PRODUCTS

The substance emits toxic fumes of oxides of carbon and nitrogen under fire conditions. PANA can produce flammable dust could in air. Take precautionary measure against static discharges. If involved in a fire, it may emit noxious and toxic fumes.

SECTION 11 - TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Skin Irritation/Corrosion	No irritation was found in a 24-hour and 72-hour study with rabbits.
Eye Irritation/Corrosion	Rabbit ca. 1(mean) (Time Point: 24, 48, and 72h) (fully reversible) OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Acute Oral Toxicity	LD ₅₀ : 1625 mg/kg bw (rat)
Acute Dermal Toxicity	LD ₅₀ : >5000 mg/kg bw (rabbit)
Acute Inhalation Toxicity	No study performed as exposure is highly unlikely due to low vapor pressure.

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Skin Sensitization

Product was found to be an extreme sensitizer in guinea pig tests under Magnusson and Kligman rating.

**Germ Cell Mutagenicity
in vitro:**

Product was found to be negative in a chromosome aberration study. Product was found to be negative in a mammalian cell gene mutation assay.

***in vivo*:**

Product was found to be negative in a dominant lethal assay.

Carcinogenicity

This product is not classified as a carcinogen by IARC, NPT, OSHA, or the EU CLP.

Reproductive toxicity oral

Not a reproductive toxin.

STOT: Single Exposure

No Information Available

STOT: Repeated Exposure

Product may cause damage to the blood system through repeated or prolonged exposure.

Aspiration Hazard

No Information Available

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to Fish

Fish (low toxicity to fish)
LC50: 0.44 mg/L
Exposure time: 96 h

Toxicity to Aquatic Invertebrates

Daphnia (Harmful to aquatic invertebrates)
EC50: 0.3 mg/L
Exposure time: 48 h

PERSISTANCE AND DEGREDABILITY

69% after 28 days

BIOACCUMULATIVE POTENTIAL



Due to the distribution coefficient n-octanol/water an accumulation in organisms is expected.

MOBILITY IN SOIL

No further relative information available

OTHER ADVERSE EFFECTS

No further relevant information available

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SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

Must not be disposed together with household garbage. Do not allow product to reach sewage system. Dispose of in accordance with local, regional, national, and international regulations.

SECTION 14 - TRANSPORT INFORMATION

	UN Number	UN Proper Shipping Name	Hazard Class(s)	Packing Group	Environmental Hazards
DOT	None	Not Regulated	None	None	Not applicable
DOT	UN3257	Elevated temperature liquid, n.o.s. at or above 100°C and below its flashpoint (Phenyl-1-naphthylamine)	9	III	Not applicable
ADR/RID	None	Not Regulated	None	None	Not applicable
IMDG	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-Phenyl-1-naphthylamine)	9	III	Yes
IATA/ICAO	UN3077	Environmentally hazardous substance, solid, n.o.s. (N-Phenyl-1-naphthylamine)	9	III	Marine Pollutant

Special Precautions for User: Not applicable.

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.



SECTION 15 – REGULATORY INFORMATION

U.S. Federal Regulations

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA): This product is not subject to CERCLA reporting requirements. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Toxic Substances Control Act (TSCA): All of the components of this product are listed on the TSCA inventory.

Clean Water Act (CWA): This material is not regulated under the Clean Water Act.

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Clean Air Act (CAA): This material is not regulated under the Clean Air Act.

Superfund Amendments and Reauthorization Act (SARA) Title III Information:

SARA Section 311/312 (40 CFR 370) Hazard Categories:

Immediate Hazard:	Yes	Pressure Hazard:	No
Delayed Hazard:	No	Reactivity Hazard:	No
Fire Hazard:	No		

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372):

Components	C.A.S. #
None	

State Regulations

California: This product contains the following substances known to the state of California to cause cancer and/or reproductive toxicity:

Components	C.A.S. #
Aniline	62-53-3

International Regulations

Canadian Environmental Protection Act: All of the components in this product are listed on the Domestic Substances list (DSL).



SECTION 16 - OTHER INFORMATION

Date of Latest Revision: May 28, 2021

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and Acronyms



EC50: Effective concentration, 50 percent

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GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

Annexes

Annex 1: Exposure Scenario 1 – Manufacturing
Annex 2: Exposure Scenario 2 – Manufacturing of fine chemicals
Annex 3: Exposure Scenario 3 – Formulation

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Annex 1: Exposure Scenario 1 – Manufacturing

PROCESS	DURATION	RESPIRATORY PROTECTION	FURTHER RISK MANAGEMENT MEASURES
PROC 1: Use in a closed process, no likelihood of exposure	> 4 hours (default)	No	No
PROC 2: Use in a closed, continuous process with occasional controlled exposure	> 4 hours (default)	No	No
PROC 3: Use in a closed batch process (synthesis or formulation)	> 4 hours (default)	No	No
PROC 4: Use in a batch and other process (synthesis) where opportunity for exposure arises	> 4 hours (default)	90%	Gloves: 80% effective
PROC 8A: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	1 – 4 hours	90%	Gloves: 80% effective
PROC 8B: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	> 4 hours (default)	90%	Gloves: 80% effective

Setting – Industrial; Form – Solid; Dustiness – High; Ventilation – Indoor w/o LEV;

Annex 2: Exposure Scenario 2 – Manufacturing of Fine Chemicals

PROCESS	DURATION	RESPIRATORY PROTECTION	FURTHER RISK MANAGEMENT MEASURES
PROC 3: Use in a closed batch process (synthesis or formulation)	> 4 hours (default)	No	No
PROC 4: Use in a batch and other process (synthesis) where opportunity for exposure arises	> 4 hours (default)	No	No
PROC 15: Use of laboratory reagents in small scale laboratories	> 4 hours (default)	No	No

Setting – Industrial; Form – Solid; Dustiness – High; Ventilation – Indoor w/o LEV;

Annex 3: Exposure Scenario 3 – Formulation

PROCESS	DURATION	RESPIRATORY PROTECTION	FURTHER RISK MANAGEMENT MEASURES
PROC 4: Use in a batch and other process (synthesis) where opportunity for exposure arises	> 4 hours (default)	90%	Gloves: 80% effective