İSTANBUL GÜBRE SANAYİİ A.Ş.
KÜTAHYA FABRİKASI

SECURITY INFORMATION FORM
AMMONIUM NITRATE

EU 2015 / 830, Commission Regulation

1.IDENTIFICATION OF THE SUBSTANCE / MIX AND COMPANY / DISTRIBUTOR :

1.1. Identification of the Substance / Mixture:

Product Form : Substance

Product Name : Porous Ammonıum Nıtrate

EC-No. : 229-347-8

CAS-No. : 6484-52-2

Our Reach reference no: 01/211 94 90 981 – 27 - 0060

1.2.The determined usage and not advised usage of the substance or mix :

Usage :

The usage by the workers in the industry;

IU1 : Fabrication of the substance including handling, storing and quality control

IU2 : The sampling, loading, filling, transfer, evacuation, bagging of the substance in the undetermined work (load / evacuation). Industry / Professional environment.

IU3 : The sampling, loading, filling, transfer, evacuation, bagging of the substance in the determined work (load / evacuation). Industry / Professional environment.

IU4 : Storage

IU5 : The transfer of the substance to the small containers (determined filling line including weighing). Industry / Professional environment.

IU6 : Quality control

IU7 : The usage of ammonıum nitrate for adhesives, insulators, explosives, fertilizers and water purification chemical substances to formulate

IU8 : To be covered the seeds with fertilizer including ammonium nitrate

IU9 : The usage of ammonium nitrate as a contact in the synthesis of other substances

The usages by professional workers

IU10 : Liquid fertigation in the open air (non-industrial repelling)

IU11 : : Liquid fertigation in the land

IU12 : Fertigation in the open air

IU13 : External mixture

IU14 : Internal mixture

IU15 : The greenhouse liquid fertigation in the land

IU16: The greenhouse liquid fertigation (non-industrial repelling)

The usages by consumers

IU17 : Fertilization in the open air

IU18 : Internal usage of fertilizer

IU19 : For matches and fireworks

The most common technical function of the substance

Fertilizers, contact substances

1.3. The Information of the Security information form's supplier

Company Name : İstanbul Gübre Sanayi A.Ş Kutahya Azot Factory

Address : The 7th km highway to Eskişehir KUTAHYA

Tel : 0 274 28073 00

Fax : 0 274 280 73 06 – 07

Web : www.kutahyaazot.com

e-mail : bilgi@igsas.com.tr

1.4. Telephone Number for Emergency Situations

Company Information Desk : +90 274 280 73 00

2.DETRIMENTAL DESCRIPTION

2.1. The Classification of the substance and mixture:

The usage of danger signs and expressions according to No 1272/2008 {CLP/GHS] regulations

Pictogram

Sign Word Warning

Detrimentalness Statements

H272 May intensify fire, oxidizer

H319 Causes serious eye irritation

Precaution Statesments

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources! – No smoking!

P220 Keep away from clothing/…/combustible materials.

P264 Wash thoroughly after handling

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P305+P351+P338 FOR EYE: Rinse your eyes with water for several minutes. Remove contact lenses if present. Continue rinsing.

P370+P378 In case of fire: Use water to extinguish the fire

2.3. Other harm:

It has toxic and irritating smokes when it is heated or burned. To heat the containers can risk cracking, breaking the containers with increasing pressure. It can risk fire and explosion in the case of contact with combustible materials and in the high temperature. PBT and vPvB evaluation result: Since Ammonıum Nitrate is not organic, PBT and vPvB evaluations cannot be done.

3.INFORMATION ABOUT COMPOUND / CONTENT

3.1. Materials:

Formula: NH4NO3

Molecular Weight: 80,04 gr/mol

CAS No: 6484-52-2

EC No: 229-347-8

MATERIAL NAME	CAS NO	EC NO	AMOUNT	CLASSIFICATION
Ammonıum Nitrate	6484-52-2	229-347-8	>99,0	Oxide. Solid 3, H272 Eye Irritation 2, H319

Whole text is givenin Part 16 for all statements (H).

3.2.Mixtures:

Cannot be practised.

4.FIRST AID MEASURES:

4.1. The first aid measures to be explained

General Information

When you go to doctor, show this security information form.

Contact with eyes

If you wear safety lenses, remove them and wash your eyes with water during 15 minutes. Go to doctor.

Contact with skin

Wash the parts which contact with skin with water. If it comes in contact with clothing, take off and wash them. Go to doctor for medical support.

Swallow

In the case of swallowing a small amount, drink water or milk. In the case of swallowing a large amount, rinse your mouth with water and go to doctor for medical attention.

Breathing

Provide medical attention immediately for the person who comes in contact with the material and inhales the vapor. Give all information you have.

4.2.Acute and important symptoms and effects seen after

After eye contact, it causes serious eye problems. It irritates the skin. It can cause breathing irritation.

4.3. Signs for medical attention and special treatment

Treat symptomatically.

5.FIRE FIGHTING MEASURES:

5.1.Fire Extinguishers

The things that will be used to extinguish: Use water spray. Make the containers cold with water.

Unproper fire extinguishers: Do not use the chemical extinguisher such as foam, dry chemicals and carbondioxyde.

5.2.Special harms that stem from the substance or mixture

It ıs a strong oxidizer. It increases the fire. It is possible to come out nitrogen oxide gases during the fire. It is not combustive but It has risk with combustive materials.

5.3.Advices for fire fighters

Protective equipment

Use the oxygen tank. Use protective clothing and gloves.

Supplementary Information

It is not combustive but It has risk with combustive materials, keep it away from combustive materials. Go down smokes by using water spray. Prevent mixing it with sewage and surface water. If it mixes with sewage or surface water, apply for the authority.

6.ACCIDENTAL RELEASE MEASURES

6.1.Personal Precautions, protective equipment and emergency procedures

Use personal protective equipments. Be careful not to occur dust. Avoid inhaling steam, smoke and gas. Make sure if there is a good vantilator. Take the staff to the safe area. Use the personal protective devices shown in Part 8.

6.2. Environmental Precautions

If it is possible, stop the leak. Block the spread with the facility you have. Be careful about it not to mix with sewage, surface and underground water. If it mixes with sewage, surface and underground water, apply for the authority.

6.3.Methods and materials for containments and cleaning up

Block the spread with the facility you have. Do not cover the substance with wood flour. To stop the leak, do not use tap made of organic materials like wood. Sweep and shovel. Clean the poured one with vacuum cleaner and wet sweeper and put them into waste containers. Keep the waste in the container which is closed and used for this work.

6.4.Attribution to the other parts

See part 7 for safe handling.

See part 8 for personel protection.

See part 13 to remove the waste.

7.HANDLING AND STORAGE

7.1.Precautions for safe handling

Avoid eye and skin contact. Avoid the formation of dust and aerosol. There must be exhaust ventilation system in the places where dust formed. Keep it away from igniter materials. No smoking. Keep it away from heat and everything that can cause igniting.

See 2,2 for precautions.

Information about fire and explosion protection:

Avoid heat and high pressure.

7.2.Conditions for safe storage, including any incompatibilities

The necessities of storage rooms and containers that need to be obeyed:

Keep in cold place. Keep tightly closed container in well vantilated place.

Information about storage in a common storage work:

Do not store with combustive materials.

7.3.Special Ultimate Usages

Do not store in the same place with combustive materials. Store far from heat, sunlight and flame, fire sources. It is hygroscopic, it can get moisture easily, keep it away from humid places.

8.EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1.Control Parameters

Occupational exposure limit

Occupational exposure limit does not include valuable factor.

Determined effect levels (DEL)

Exposure Frequency	Way of Exposure	DEL for workers	DEL for others
Long term systemic effect	Through skin	21.3 mg/kg bw/day	-
Long term systemic effect	İnhalation	37.6 mg/m3	-
Acute systemic effect	Through skin	-	12.8 mg/kg bw/day
Acute systemic effect	Inhalation	-	11.1 mg/m3
Acute systemic effect	oral	-	12.8 mg/kg bw/day

There is no determined effect level

Approximate effect density

PNEC EXPOSURE WAY	EVALUATION FACTOR	EXPLANATION
PNEC aqua (fresh water):0.45mg/L	1000	Ekstrapolation method: Evaluation factor
PNEC aqua (sea water):0.045mg/L	10000	Ekstrapolation method:
PNEC aqua (discontinuous cycle): 4.5 mg/L	100	Ekstrapolation method: Evaluation factor
PNEC deposition	Now, there is no data or inadequate data.	
PNEC land	Now, there is no data or inadequate data.	
PNEC waste water treatment facility: 18 mg/L	10	Ekstrapolation method: Evaluation factor
PNEC oral(secondary poisoning)	Now, there is no data or inadequate data.	

TLV/TWA: 10mg/m3 ACGIH (Tab. 1995-96)

PEL: 15 mg/m3 OSHA (total powder), 5mg/m3inhalable value

8.2.EXPOSURE CONTROLS

Personal Protection

General Protective and hygenic precautions

Waterproof cloth, type of protective tools must be determined according to every workplace depending on the amount of hazardous material and the concentration. Carry properly according to industrial hygen and security. Wash your hand before break-time and end of the day.

Respiration Protection Precautions:

Use your mask for powder not to be exposed to powder concentration. Use mask ın the standard of EN143 FFP2 or FFP3 type.

Hand Protection

Wear gloves while carrying. Gloves must be controlled before using. Take your gloves off properly to prevent the contact with skin (without using exterior part of gloves). The gloves which are contaminated must be removed properly to rules. Wash your hands and dry. The chosen protective gloves must be nitryl gloves which are proper to EN374 standards and work.

Gloves material

Use the gloves covered with nitryl.

Penetration time of gloves material

The certain perforation time of gloves must be learned from the producer and must be obeyed that.

Eye Protection

Use eye protection equipment according to EN166 forms, NIOSH (US) or EN 166 (EU) tested and approved.

Health Precautions:

Do not smoke in the places which are worked. During usage, do not eat or drink anything. Wash your hands before eating, smoking, shifting and going to toilet. Wash your dirty clothes before wearing.

Skin Protection

Wear waterproof, protective cloth. Type of protective tools must be determined according to every workplace depending on the amount of hazardous material and the concentration.

9.PHYSICAL AND CHEMICAL PROPERTIES:

Information about physical and chemical properties

Appearance: Prill solid

Boiling point: decomposes in 200-260 ˚C

Melting point: 170 ˚C (338˚F)

Specific Weight: 0,7 – 0,8 gr/cm3

Ammonium Nitrate: min. %99,0

Solubility in water (20˚C da): 190 gr/100 ml

Colour and Odour: white colour and odourless.

pH: 4,5 min.

Flash point: there is no available data.

Evaporation rate: there is no available data.

Evaporation rate: there is no available data.

Flammability (solid, gas): there is no available data.

Vapor Pressure: there is no available data.

Distribution Factor (n-octanol/water): there is no available data.

Spontaneous Combustion: there is no available data.

Viscosity (Dynamic/Kinematic): there is no available data.

Ignition temperature: there is no available data.

Risk of explosion: It is not explosive by itself. If it is heated in the closed containers, it has explosion risk. Owing to oxidizing property, it is explosive when it is mixed with flammable substances.

9.2.Other Information:

No Information.

10.STABILITY AND REACTIVITY

10.1.Reactivity

there is no available data.

10.2.Chemical Stability

Thermal decomposition/ conditions to avoid

It does not disintegrate when it is stored according to description. It must be avoided from humid places.

10.3.Possibility of hazardous reactions

there is no available data.

10.4.Conditions to avoid

there is no available data.

10.5.Conditions to avoid

Strong oxidizer. It causes fire when it comes in contact with flammable substances. It is incompatible with strong reductant agents, flammable substances, strong acid, organic substances, active metals.

10.6.Hazardous decomposition product

When it is exposed to blaze and excessive heat, ammoniac and nitrogen oxide gases come out.

11.TOXICOLOGICAL INFORMATION:

11.1.Information about toxic effects

Acute toxicity

LD50(oral) 2217 mg/kg (rat) [Europe Chemicals Bureau, IUCLID, January 22, 2007]

LD50 Rat oral 4500 mg/kg. {Canada Environment, Tech Info for Problem Spills: s.59 (1981)]

LD50 Rat oral 2800 mg/kg bw [Europe Chemicals Bureau, IUCLID, January 22, 2007]

Oral (rat) the lowest toxic dose: 10 mg/kg Kan:It causes methemoglobine.

Eye:

Irritating. There is no test data.

Respiration:

It causes irritation in the respiration and blockage in the lungs.

LC50 Rat 4 hour (Inhalation) > 88,8 mg/L [Europe Chemicals Bureau, IUCLID, January 22, 2007]

Skin

It irritates skin. There is no test data.

Swallow

It causes the irritation in digestion system.

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

12.ECOLOGICAL INFORMATION

12.1.Toxicity

Aquatic toxicity:

Acute Toxicity for fish

LC50 Cyprinus carpio 1.15 – 1.72 mg NH3 / L (48 hour)

LC50 many type 420 – 1.360 mg NO3 / L (96 hour)

Acute toxicity for invertebrate in water

EC50 Daphnia manga 555 mg / L

Toxicity Water Plant (Seaweed)

EC50 Scenedesmus quadricauda 83 mg / L

Chronic Toxicity for invertebrate in water

NOEC Bullia digitalis 300 mg / L (maximum 7 days)

12.2.Persistence and Degradability

It can be resoluble spontaneously in the nature.

12.3.Bioaccumulative Potential

No bioaccumulative.

12.4.Mobility in the soil

There is no available data.

12.5.Result of PBT and vPvB evaluation

Evaluation is not done.

12.6.Other Adverse effects

Ammonium nitrate is a nutrition for algaes in water. When ammonium nitrate is poured into static water, it can causes reproduction of big algaes and it affects the population of local species. In anaerobic soil, nitrate ions can transform into nitrite, molecular nitrogen, nitrogen oxide or ammonıum ions.

13.DISPOSAL INFORMATION

13.1.Methods of disposal

Recommendation:

Firstly if the reusability is provided, apply. United Nations Disposal Chemicals Treatment and Disposal Methods can be applied for disposal or disposal must be provided in the authorized disposal thesis.

Europe Waste Catalogue

There is no available data.

Unlaundered packing

Dispose as unused.

14.TRANSPORT INFORMATION

ADR	IMDG	IATA
14.1. UN number		
1942	1942	1942
14.2. UN proper shipping name		
AMMONIUM NITRATE	AMMONIUM NITRATE	AMMONIUM NITRATE
Transport document description		
UN 1942 AMMONIUM NITRATE, 5.1,III, (E)	UN 1942 AMMONIUM NITRATE, 5.1,III, (E)	UN 1942 AMMONIUM NITRATE, 5.1,III, (E)
14.3. Transport hazard class(es)		
		
14.4. Packing group		
III	III	III
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : NoMarine pollutant : No	Dangerous for the environment : No

14.6.Precautions for user

Overland transport

Classification code (ADR) : O2

Special provisions (ADR) : 306, 611

Limited quantities (ADR) : 5kg

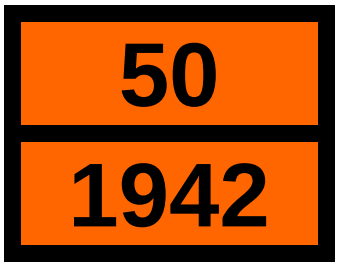
Excepted quantities (ADR) : E1

Transport category (ADR) : 3

Special provisions for carriage - Operation (ADR) : S23

Hazard identification number (Kemler No.) : 50

Orange plates :



Tunnel restriction code (ADR) : E

EAC code : 1Z

- Transport by sea

Special provisions (IMDG) : 900, 952, 967

Limited quantities (IMDG) : 5 kg

Excepted quantities (IMDG) : E1

EmS-No. (Fire) : F-H

EmS-No. (Spillage) : S-Q

Stowage category (IMDG) : C

Stowage and handling (IMDG) : SW1, SW14, SW23

Segregation (IMDG) : SG16, SG42, SG45, SG47, SG48, SG51, SG56, SG58, SG59, SG61

Properties and observations (IMDG) : Crystals, granules or prills. Soluble in water. Supporter of combustion. A major fire aboard a ship carrying this substance may involve a risk of explosion in the event of contamination (e.g. by fuel oil) or strong confinement. An adjacent detonation may also involve the risk of explosion. If heated strongly, decomposes, giving off toxic gases and gases which support combustion. Transport of AMMONIUM NITRATE liable to self heating sufficient to initiate decomposition is prohibited.

MFAG-No : 140

- Air transport

PCA Excepted quantities (IATA) : E1

PCA Limited quantities (IATA) : Y546

PCA limited quantity max net quantity (IATA): 10kg

PCA packing instructions (IATA) : 559

PCA max net quantity (IATA) : 25kg

CAO packing instructions (IATA) : 563

CAO max net quantity (IATA) : 100kg

Special provisions (IATA) : A64

ERG code (IATA) : 5L

14.7.Transport according to MARPOL 73/78 addition II and IBC code

No proper

15.REGULATORY INFORMATION

15.1.Safety, health and environmental regulations for the substance and mixture

National regulations

-Regulations (EC) No 1272 / 2008 (CLP),

-ADR - Europe Aggrement, Hazardous Substances Shipment with International Highway

-Commision Regulation (AB) 2015/830

No REACH Annex XVII restrictions

Ammonium nitrate is not on the REACH Candidate List

Ammonium nitrate is not on the REACH Annex XIV List

Seveso Information : Directive 2012/18/EU (SEVESO III)

15.2.Chemical Security Evaluation

Chemical Security Evaluation is done about ammonium nitrate.

16.OTHER INFORMATION

Information sources

This GBF product is arranged with information taken by firm owner.

Prepared By İstanbul Gübre Sanayi A.Ş. Kütahya Factory

All Hazard Expressions

H272 May intensify fire, oxidizer

H319 Causes serious eye irritation

Precaution Expressions

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources! – No smoking!

P220 Keep away from clothing/…/combustible materials.

P264 Wash thoroughly after handling

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P305+P351+P338 FOR EYE: Rinse your eyes with water for several minutes. Remove contact lenses if present. Continue rinsing.

P370+P378 In case of fire: Use water to extinguish the fire

Abbreviation

ADR : Europe Agreement about Hazardous Substances Shipment with International Highway

CLP : Classification and packing by labelling

CAS No: CAS Index Number

CSA : Chemical Security Assessment

CSR : Chemical Security Report

DNEL : Derived No Effect Level

EC : Europe Commision

ERC : Environmental Release Category

ES : Exposure Scenarious

GHS : Global Harmonization System

IATA : International Air Transport Association

ICAO : International Civil Aviation Organization

IMDG : International Maritime Dangerous Goods

IU : Identified Usage

LC50 : Lethal Concentration Resulting in %50 mortality

NOAEC : Adverse Effect Concentration is not established.

NOAEL : Adverse Effect Concentration is established.

RISK

It is arranged according to Material Security Form and information which is taken by reliable sources is true. This information is open to evaluation, research and question. The user has to obey this guide shown in this Security Form. The user takes the responsibility about usage, storage and handling under the laws and regulations. İstanbul Gübre Sanayii A.Ş. does not guarantee directly or indirectly the truth and accuracy of information in the form. İstanbul Gübre Sanayii A.Ş.cannot be held responsible of the truth and accuracy of information in the form. Materials can cause unknown dangers, it must be used carefully. Some dangers are shown here but it is not told that all dangers are shown. The users must use the latest Information Form everytime.

END OF SDS

Name : Ammonium Nitrate

EC no : 229-347-8

CAS No : 6484-52-2

ERC8b	Wide dispersive indoor use of reactive substances in open systems
ERC8e	Wide dispersive outdoor use of reactive substances in open systems
PC11	Explosives
PC12	Fertilizers
PC37	Water treatment chemicals
PROC1	Use in closed process, no likelihood of exposure
PROC11	Non industrial spraying
PROC14	Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15	Use as laboratory reagent
PROC19	Hand-mixing with intimate contact and only PPE available
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU1	Agriculture, forestry, fishery
SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU19	Building and construction work
SU23	Electricity, steam, gas water supply and sewage treatment
SU2a	Mining, (including offshore industries)

- Exposure scenario-1 : Manufacture of substances *(page 2 of ES)*
- Exposure scenario-2 : Professional use *(page 8 of ES)*

1. Exposure scenario-1 : Manufacture of substances

Use descriptors
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC14, PROC15,
ERC1

Processes, tasks, activities covered
Manufacture of substance or use as an intermediate, process chemical or extracting agent.
Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container)

Assessment method Used
ECETOC TRA model

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1)

PROC1 Use in closed process, no likelihood of exposure

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use in closed process
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374 (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.2 Contributing scenario controlling worker exposure (PROC2)

PROC2 Use in closed, continuous process with occasional controlled exposure

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use in closed, continuous process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.3 Contributing scenario controlling worker exposure (PROC3)

PROC3 Use in closed batch process (synthesis or formulation)

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use in closed batch process (synthesis or formulation). With occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.4 Contributing scenario controlling worker exposure (PROC4)

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Semi-closed process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.5 Contributing scenario controlling worker exposure (PROC8a)

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands (960 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.6 Contributing scenario controlling worker exposure (PROC8b)

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands (960 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Semi-closed process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.7 Contributing scenario controlling worker exposure (PROC9)

PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Semi-closed process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, efficacy 90%)

Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.8 Contributing scenario controlling worker exposure (PROC14)

PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.9 Contributing scenario controlling worker exposure (PROC15)

PROC15 Use as laboratory reagent

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation.: 37.6 mg/m³ Dermal: 21.3 mg/kg bodyweight/day					
Contributing scenario	inhalation exposure mg/m³	RCR	Dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method
PROC1	0.01	0.000	0.003	0.000	0.000	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC2	0.01	0.000	0.137	0.006	0.006	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC3	0.1	0.003	0.069	0.003	0.006	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC4	0.5	0.013	0.686	0.032	0.045	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC8a	0.5	0.013	1.371	0.064	0.077	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC8b	0.1	0.003	1.371	0.064	0.067	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC9	0.1	0.003	0.686	0.032	0.035	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC14	0.1	0.003	0.343	0.016	0.019	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC15	0.1	0.003	0.034	0.002	0.005	Inhalation: Used ECETOC TRA model Dermal: Used ECETOC TRA model

3.2. Environment

Not required.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance – Health

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4.2. Environment

Guidance – Environment

Not required.

Additional good practice advice beyond the REACH CSA

Good standard of personal hygiene. Containment as appropriate.

1. Exposure scenario-2: Professional use

Use descriptors

SU1, SU2a, SU10, SU19, SU23
PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC11, PROC15, PROC19
PC11, PC12, PC37
ERC8b, ERC8e

Processes, tasks, activities covered

Manufacture of substance or use as an intermediate, process chemical or extracting agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (ncluding marine vessel/barge, road/rail car and bulk container)

Assessment method

Used ECETOC TRA model.

2. Operational conditions and risk management measures

2.1.1 Contributing scenario controlling worker exposure (PROC1)

PROC1 Use in closed process, no likelihood of exposure

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use only in closed systems permitted
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.2 Contributing scenario controlling worker exposure (PROC2)

PROC2 Use in closed, continuous process with occasional controlled exposure

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use in closed, continuous process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.3 Contributing scenario controlling worker exposure (PROC3)
PROC3 Use in closed batch process (synthesis or formulation)

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Use in closed batch process (synthesis or formulation). With occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374 (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.4 Contributing scenario controlling worker exposure (PROC5)
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.5 Contributing scenario controlling worker exposure (PROC8a)

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands (960 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.6 Contributing scenario controlling worker exposure (PROC8b)

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands (960 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Semi-closed process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.7 Contributing scenario controlling worker exposure (PROC9)

PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands face (480 cm^2)

Risk management measures

Technical conditions and measures at process level (source) to prevent release
Semi-closed process with occasional controlled exposure
Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.8 Contributing scenario controlling worker exposure (PROC11)

PROC11 Non industrial spraying

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands and upper wrists (1500 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.9 Contributing scenario controlling worker exposure (PROC15)

PROC15 Use as laboratory reagent

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: One hand face (240 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

2.1.10 Contributing scenario controlling worker exposure (PROC19)

PROC19 Hand-mixing with intimate contact and only PPE available

Product characteristics

Concentration of substance in product : 100 %
Dustiness : Solid, low dustiness

Operational conditions

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)
Other given operational conditions affecting workers exposure
Indoor
Other given operational conditions affecting workers exposure
Exposed skin surface assumed: Two hands and forearms (1980 cm^2)

Risk management measures

Technical conditions and measures to control dispersion from source towards the worker
General ventilation
Organisational measures to prevent /limit releases, dispersion and exposure
Occupational exposure controls
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374, (efficacy 90%)
Conditions and measures related to personal protection, hygiene and health evaluation
Chemical goggles or safety glasses

3. Exposure estimation and reference to its source

3.1. Health

Long-term - systemic effects						
DNEL	Inhalation.: 37.6 mg/m³ Dermal: 21.3 mg/kg bodyweight/day					
Contributing scenario	inhalation exposure mg/m³	RCR	Dermal exposure mg/kg bodyweight/day	RCR	Sum RCR	Assessment method
PROC1	0.01	0.000	0.003	0.000	0.000	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC2	0.01	0.000	0.137	0.006	0.006	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC3	0.1	0.003	0.069	0.003	0.006	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC5	1	0.027	1.371	0.064	0.091	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC8a	0.5	0.013	1.371	0.064	0.077	Inhalation.: Used ECETOC TRA model Dermal: Used ECETOC TRA model
PROC8b	0.5	0.013	1.371	0.064	0.077	Inhalation.: Used ECETOC TRA model

						Dermal: Used ECETOC TRA model
PROC9	**0.5**	**0.013**	**0.686**	**0.032**	**0.045**	**Inhalation.: Used ECETOC TRA model** **Dermal: Used ECETOC TRA model**
PROC11	**1**	**0.027**	**4.284**	**0.201**	**0.228**	**Inhalation.: Used ECETOC TRA model**

3.2. Environment

Not required.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance – Health

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4.2. Environment

Guidance – Environment

Not required.

Additional good practice advice beyond the REACH CSA

Good standard of personal hygiene. Containment as appropriate.

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