

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Ferrous sulphate, monohydrate</b>
<b>Other Names</b>	Iron sulfate, monohydrate
<b>Uses</b>	Colcothar; Deodorizer; Soil conditioner; Forage; Fertilizer.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	FeSO <sub>4</sub> .H <sub>2</sub> O
<b>Chemical Name</b>	Sulfuric acid, iron(2+) salt (1:1), monohydrate
<b>Product Description</b>	No Data Available

### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Not Scheduled

### Globally Harmonised System



<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Hazard Categories</b>	Acute Toxicity (Oral) - Category 4 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Acute Hazard To The Aquatic Environment - Category 2

**Pictograms**



**Signal Word** Warning

<b>Hazard Statements</b>	<b>H302</b>	Harmful if swallowed.
	<b>H315</b>	Causes skin irritation.
	<b>H319</b>	Causes serious eye irritation.
	<b>H401</b>	Toxic to aquatic life.

<b>Precautionary Statements</b>	Prevention	<b>P280</b>	Wear protective gloves/eye protection/face protection.
		<b>P273</b>	Avoid release to the environment.
		<b>P270</b>	Do not eat, drink or smoke when using this product.
	Response	<b>P302 + P352</b>	IF ON SKIN: Wash with plenty of soap and water.
		<b>P337 + P313</b>	If eye irritation persists: Get medical advice/attention.
		<b>P391</b>	Collect spillage.
		<b>P301 + P312</b>	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
		<b>P330</b>	Rinse mouth.
		<b>P332 + P313</b>	If skin irritation occurs: Get medical advice/attention.
		<b>P362</b>	Take off contaminated clothing and wash before reuse.
	Disposal	<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification** NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>HSNO Classifications</b>	Health Hazards	<b>6.1D</b>	Substances that are acutely toxic - Harmful
		<b>6.3A</b>	Substances that are irritating to the skin
		<b>6.4A</b>	Substances that are irritating to the eye
	Environmental Hazards	<b>9.1D</b>	Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action

**3. COMPOSITION/INFORMATION ON INGREDIENTS**



**Ingredients**

Chemical Entity	Formula	CAS Number	Proportion
Ferrous sulphate, monohydrate	FeSO4.H2O	17375-41-6	90 - 100 %
Contains: Manganese sulfate (as Mn)	H2O4S.Mn	7785-87-7	<1 %
Contains: Sulfuric acid	H2O4S	7664-93-9	<1 %
Other impurities and stabilising additives	Unspecified	Unspecified	Balance %

**4. FIRST AID MEASURES**

**Description of necessary measures according to routes of exposure**

- Swallowed** IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Call a Poison Centre or doctor/physician if you feel unwell. Never give anything by mouth to an unconscious person.
- Eye** IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
- Skin** IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
- Inhaled** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Apply resuscitation if victim is not breathing. Administer oxygen if breathing is difficult.
- Advice to Doctor** Treat symptomatically and supportively. Symptoms may be delayed.
- Medical Conditions Aggravated by Exposure** No information available.

**5. FIRE FIGHTING MEASURES**

- General Measures** If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
- Flammability Conditions** Non-combustible. This product does not burn or support combustion.
- Extinguishing Media** If material is involved in a fire, use extinguishing media appropriate to surrounding conditions.
- Fire and Explosion Hazard** Decomposes on heating, emitting toxic fumes.
- Hazardous Products of Combustion** Fire or heat will produce irritating and/or toxic gases, including Sulphur oxides, oxides of Iron.
- Special Fire Fighting Instructions** Contain runoff from fire control or dilution water - Runoff may pollute waterways.
- Personal Protective Equipment** Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
- Flash Point** No Data Available
- Lower Explosion Limit** No Data Available
- Upper Explosion Limit** No Data Available
- Auto Ignition Temperature** No Data Available
- Hazchem Code** No Data Available

**6. ACCIDENTAL RELEASE MEASURES**

- General Response Procedure** Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid dust formation. Avoid breathing dust and contact with eyes, skin and clothing.
- Clean Up Procedures** Carefully shovel or sweep up spilled material and place in suitable container (see SECTION 13). Avoid dispersal of dust in the air.



<b>Containment</b>	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
<b>Decontamination</b>	After cleaning, flush away traces with water.
<b>Environmental Precautionary Measures</b>	Prevent entry into drains and waterways.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
<b>Personal Precautionary Measures</b>	Use personal protective equipment as required (see SECTION 8).

## 7. HANDLING AND STORAGE

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Take precautionary measures against static discharge. Avoid release to the environment.
<b>Storage</b>	Store in a cool, dry and well-ventilated place, out of direct sunlight. Avoid storing in hot and humid conditions. Keep container tightly closed when not in use. Protect from moisture. Keep away from incompatible materials (see SECTION 10).
<b>Container</b>	Materials for containers/packaging: Acid-resistant materials are appropriate. Non-acid resistant metals are unsuitable (Iron, aluminium, etc).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No value assigned for this specific material by Safe Work Australia. For Iron salts, soluble (as Fe): - Safe Work Australia Exposure Standard: TWA = 1 mg/m <sup>3</sup> - New Zealand Workplace Exposure Standard: TWA = 1 mg/m <sup>3</sup>
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	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.
<b>Personal Protection Equipment</b>	- Respiratory protection: Wear respiratory protection when dust is generated. Recommended: Dust mask/particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles. - Hand protection: Wear protective gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Protective apron; Boots; Overalls.
<b>Special Hazards Precautions</b>	Do not use this product if coated with brownish-yellow basic ferric sulphate!
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off contaminated clothing and wash before storage or reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder or granules
<b>Odour</b>	Odourless
<b>Colour</b>	Greyish white
<b>pH</b>	3.0 - 5.0 (10% solution)
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	Decomposes



<b>Melting Point</b>	No Data Available
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water (29.7 g/100 mL) 20°C
<b>Specific Gravity</b>	2.97
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	>=300 °C
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	Hygroscopic.
<b>Potential for Dust Explosion</b>	No information available.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Non-combustible. This product does not burn or support combustion.
<b>Reactions That Release Gases or Vapours</b>	Decomposes on heating emitting toxic fumes, including Sulphur oxides, oxides of Iron.
<b>Release of Invisible Flammable Vapours and Gases</b>	No information available.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	Gradual oxidation occurs in wet air, resulting in production of ferric sulfate, Fe(OH)SO <sub>4</sub> .
<b>Chemical Stability</b>	Material is stable under normal conditions.
<b>Conditions to Avoid</b>	Avoid dust formation. Avoid exposure to air. Protect from moisture/humidity.
<b>Materials to Avoid</b>	Incompatible/reactive with alkalis, oxidising agents, fine metal powder, soluble carbonates.
<b>Hazardous Decomposition Products</b>	Decomposes on heating emitting toxic fumes, including Sulphur oxides, oxides of Iron.
<b>Hazardous Polymerisation</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION



**General Information**

- Acute toxicity: Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Symptoms of swallowing large amounts of soluble iron compounds maybe delayed several hours and can include epigastric pain, vomiting blood and circulatory failure.
- Skin corrosion/irritation: Causes skin irritation due to strong acidity. Symptoms include redness.
- Eye damage/irritation: Causes serious eye irritation due to strong acidity. Symptoms include redness, pain, weeping.
- Respiratory/skin sensitisation: No sensitizing effects known.
- Germ cell mutagenicity: No biologically relevant genotoxic activity.
- Carcinogenicity: Not listed as a suspected/confirmed carcinogen by IARC, NTP.
- Reproductive toxicity: No information available.
- STOT (single exposure): Dust may cause respiratory irritation, coughing and shortness of breath.
- STOT (repeated exposure): Gastrointestinal disturbances, including colic, constipation and diarrhoea may occur in humans following the ingestion of iron sulfate. In children, ingestion of large quantities can cause vomiting (the vomit may contain blood), liver damage, rapid heart beat and peripheral vascular collapse.
- Aspiration toxicity: No information available.

**Acute**

**Ingestion**

Acute toxicity (Oral):  
 - LD50, Rat: 319 mg/kg (Ferrous sulfate).

**Carcinogen Category**

None

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

Aquatic toxicity:  
 - LC50, Fish (various species): >0.41 - 28 mg/L (96 h) [Ferrous sulfate].  
 - EC50, Crustacea (Daphnia magna): 1 - 10 mg/L (48 h) [Ferrous sulfate].

**Persistence/Degradability**

Not applicable for an inorganic compound.

**Mobility**

No information available.

**Environmental Fate**

Toxic to aquatic life - Prevent entry into drains and waterways.

**Bioaccumulation Potential**

Bioconcentration of iron to species is relatively low. Iron is an essential element for most living species and may be actively regulated in organisms.

**Environmental Impact**

No Data Available

**13. DISPOSAL CONSIDERATIONS**

**General Information**

Dispose of contents/container in accordance with local/regional/national regulations.

**Special Precautions for Land Fill**

Recycle containers after cleaning, or dispose properly under relevant regulations and local government standards. Remove residual content completely before disposing of empty containers.

**14. TRANSPORT INFORMATION**

**Land Transport (Australia)**

ADG Code

**Proper Shipping Name**

Ferrous sulphate, monohydrate

**Class**

No Data Available

**Subsidiary Risk(s)**

No Data Available

No Data Available

**UN Number**

No Data Available

**Hazchem**

No Data Available

**Pack Group**

No Data Available

**Special Provision**

No Data Available



**Comments** NON-DANGEROUS GOODS: Not regulated for LAND transport.

**Land Transport (Malaysia)**

ADR Code

**Proper Shipping Name** Ferrous sulphate, monohydrate  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
 No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**Comments** NON-DANGEROUS GOODS: Not regulated for LAND transport.

**Land Transport (New Zealand)**

NZS5433

**Proper Shipping Name** Ferrous sulphate, monohydrate  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
 No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**Comments** NON-DANGEROUS GOODS: Not regulated for LAND transport.

**Land Transport (United States of America)**

US DOT

**Proper Shipping Name** Ferrous sulphate, monohydrate  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
 No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**Comments** NON-DANGEROUS GOODS: Not regulated for LAND transport.

**Sea Transport**

IMDG Code

**Proper Shipping Name** Ferrous sulphate, monohydrate  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**EMS** No Data Available  
**Marine Pollutant** No  
**Comments** NON-DANGEROUS GOODS: Not regulated for SEA transport.



**Air Transport**

IATA DGR

<b>Proper Shipping Name</b>	Ferrous sulphate, monohydrate
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for AIR transport.

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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**15. REGULATORY INFORMATION**

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not Scheduled

**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR002503
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**National/Regional Inventories**

<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	605-688-1
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	Not Determined
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Listed
<b>Philippines (PICCS)</b>	Not Determined
<b>Switzerland (Giftliste 1)</b>	Not Determined





Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

## 16. OTHER INFORMATION

<b>Related Product Codes</b>	FESULP0100, FESULP0200, FESULP0300, FESULP0400, FESULP0401, FESULP0402, FESULP0500, FESULP0501, FESULP0900, FESULP1000, FESULP1001, FESULP1002, FESULP1003, FESULP1004, FESULP1005, FESULP1006, FESULP1007, FESULP1008, FESULP1009, FESULP1010, FESULP1011, FESULP1012, FESULP1013, FESULP1014, FESULP1015, FESULP1016, FESULP1017, FESULP1018, FESULP1019, FESULP1020, FESULP1021, FESULP1022, FESULP1036, FESULP1037, FESULP1100, FESULP1200, FESULP2200, FESULP2300, FESULP2600, FESULP2700, FESULP2701, FESULP2710, FESULP2800, FESULP2801, FESULP2810, FESULP3000, FESULP3001, FESULP3002, FESULP3003, FESULP3004, FESULP3100, FESULP3101, FESULP3102, FESULP3103, FESULP3104, FESULP3200, FESULP3201, FESULP3300, FESULP3301, FESULP3400, FESULP3600, FESULP3601, FESULP3602, FESULP3603, FESULP3604, FESULP3605, FESULP3700, FESULP3701, FESULP3702, FESULP3703, FESULP3704, FESULP3705, FESULP3706, FESULP3710, FESULP3720, FESULP3800, FESULP3801, FESULP4000, FESULP4001, FESULP4200, FESULP4300, FESULP4301, FESULP4400, FESULP4700, FESULP5600, FESULP5601, FESULP5602, FESULP5700, FESULP5701, FESULP5800, FESULP5801, FESULP5802, FESULP5900, FESULP6300, FESULP6400, FESULP6401, FESULP6410, FESULP6420, FESULP6430, FESULP6601, FESULP6602, FESULP6700, FESULP6705, FESULP6710, FESULP6711, FESULP6715, FESULP6800, FESULP6801, FESULP6802, FESULP6803, FESULP6810, FESULP6825, FESULP6850, FESULP6851, FESULP6900, FESULP7100, FESULP7200, FESULP7300, FESULP7600, FESULP7601, FESULP7602, FESULP7700, FESULP7800, FESULP8500, FESULP8501, FESULP9200
<b>Revision</b>	4
<b>Revision Date</b>	23 Mar 2021
<b>Reason for Issue</b>	SDS updated
<b>Key/Legend</b>	<p>&lt; Less Than &gt; Greater Than  <b>AICS</b> Australian Inventory of Chemical Substances  <b>atm</b> Atmosphere  <b>CAS</b> Chemical Abstracts Service (Registry Number)  <b>cm<sup>2</sup></b> Square Centimetres  <b>CO<sub>2</sub></b> Carbon Dioxide  <b>COD</b> Chemical Oxygen Demand  <b>deg C (°C)</b> Degrees Celcius  <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand  <b>deg F (°F)</b> Degrees Farenheit  <b>g</b> Grams  <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre  <b>g/l</b> Grams per Litre  <b>HSNO</b> Hazardous Substance and New Organism  <b>IDLH</b> Immediately Dangerous to Life and Health  <b>immiscible</b> Liquids are insoluable in each other.  <b>inHg</b> Inch of Mercury  <b>inH<sub>2</sub>O</b> Inch of Water  <b>K</b> Kelvin  <b>kg</b> Kilogram  <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre  <b>lb</b> Pound  <b>LC50</b> LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.  <b>LD50</b> LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.  <b>ltr</b> or <b>L</b> Litre  <b>m<sup>3</sup></b> Cubic Metre  <b>mbar</b> Millibar  <b>mg</b> Milligram  <b>mg/24H</b> Milligrams per 24 Hours  <b>mg/kg</b> Milligrams per Kilogram  <b>mg/m<sup>3</sup></b> Milligrams per Cubic Metre  <b>Misc</b> or <b>Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present.  <b>mm</b> Millimetre  <b>mmH<sub>2</sub>O</b> Millimetres of Water</p>



**mPa.s** Millipascals per Second  
**N/A** Not Applicable  
**NIOSH** National Institute for Occupational Safety and Health  
**NOHSC** National Occupational Health and Safety Commission  
**OECD** Organisation for Economic Co-operation and Development  
**Oz** Ounce  
**PEL** Permissible Exposure Limit  
**Pa** Pascal  
**ppb** Parts per Billion  
**ppm** Parts per Million  
**ppm/2h** Parts per Million per 2 Hours  
**ppm/6h** Parts per Million per 6 Hours  
**psi** Pounds per Square Inch  
**R** Rankine  
**RCP** Reciprocal Calculation Procedure  
**STEL** Short Term Exposure Limit  
**TLV** Threshold Limit Value  
**tne** Tonne  
**TWA** Time Weighted Average  
**ug/24H** Micrograms per 24 Hours  
**UN** United Nations  
**wt** Weight

