

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 1 (8)

1. COMPANY AND PRODUCT INFORMATION

- 1.1 **Product Identifier**
GRANSHOT 2
- 1.2 **Relevant identified uses of the substance or mixture and uses advised against**
Melting stock for foundries
- 1.3 **Details of the supplier of the safety data sheet**

Manufacturer
UDDEHOLMS AB S-683 85 HAGFORS Sweden Tel.: +46 563 170 00 Fax: +46 563 174 61 web: www.uddeholm.com

Contact: Ulrika Svensson, E-mail: ulrika.svensson@uddeholm.se

- 1.4 **Emergency telephone Number**
Emergency telephone number: 112

2. HAZARDS IDENTIFICATION

- 2.1. **Classification of the substance or mixture**
Alloys in granular form containing nickel are classified for skin sensitisation only when the release rate is minimum 0.5µg Ni/cm²/week. The alloys that this MSDS concerns are not classified as hazardous to health and environment according to present regulation.
- 2.2. **Label elements**
Alloys in granular form, as in massive form, do not require labelling under current chemical product classification and labelling regulations, if they are not classified as hazardous to health and environment
- 2.3. **Other hazards**
Processes which generate particulates from the working of alloys in granular form can cause hazards to health or environmental effects. May cause an allergic reaction on contact with skin or by inhalation. The Alloys in granular form do not meet the criteria for PBT or vPvB in accordance with Annex XIII.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Alloys in granular form are considered as special preparations only when they are remelted, otherwise they are classified as articles. For information on each substance in the alloys in granular form, see text below.

3.2 Mixture

The substances in the special mixture are as follows:

Ingredient	EINICS-number CAS-number Index-number	Symbols (CLP)	Hazard statements* (CLP)	Symbols (EG-class.)	Risk Phrases (EG-class.)*	Concentration (weight %)
Iron (Fe)	231-096-4 7439-89-6 -	GHS02 Danger	H242	O	R7	0.5-99.9 %

UDDEHOLMS AB SAFETY DATA SHEET**Granshot 2 delivered from UDDEHOLM**

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 2 (8)

Copper (Cu)	231-159-6 7440-50-8 -	GHS09 Warning	H410	Xn, N	R20-50/53	0-97 %
Nickel (Ni)	231-111-4 7440-02-0 028-002-00-7	GHS06 GHS08 Danger	H317 H331 H351	T	R40-43- 48/23	0-73%
Cobalt (Co)	231-158-0 7440-48-4 027-001-00-9	GHS08 Danger	H317 H334 H413	Xn	R42/43-53	0-70 %
Chromium (Cr)	231-157-5 7440-47-3 -	GHS06 GHS09 Danger	H300 H310 H332 H410	N, F	R27/28 20 50 53	0-58%
Zinc (Zn)	231-175-3 7440-66-6 030-001-00-1	GHS02 GHS09 Danger Warning	H250 H410	F, N	R15-17- 50/53	0-16%
Manganese (Mn)	231-105-1 7439-96-5 -	GHS07 GHS09 Warning	H332 H410	Xn, N, F	R11-20- 50/53	0-15 %
Vanadium (V)	231-171-1 7440-62-2 -	GHS07 GHS09 Warning	H315 H319 H335 H400	Xi, N	R36/37/38- 50	0-14 %
Tin (Sn)	231-141-8 7440-31-5 -	GHS07 GHS09 Danger	H315 H319 H335 H410	F, Xi, N	R11- 36/37/38- 50/53	0-11 %
Molybdenum (Mo)	231-107-2 7439-98-7 -	GHS02 GHS09 Danger Warning	H225 H400	F, N	R11-50	0-10 %
Silicon (Si)	231-130-8 7440-21-3 -	GHS02 Danger	H224	-	R10	0-4.5%
Aluminium (Al)	231-072-3 7429-90-5 013-001-00-6	GHS02 Warning	H226	F	R11-15	0-2 %

*For complete wording of R-phrases and hazard statements see section 16.

4. FIRST-AID MEASURES**4.1 Description of first aid measures**

Show this safety data sheet to the doctor on duty.

4.1.1. Relevant routes of exposure**Inhalation**

If dust, fumes or mist inhaled, remove patient to fresh air, allow to rest and keep warm.

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 3 (8)

Skin contact

Immediately remove any metal fragments or pieces that get under the skin. Wash well with plenty of soap and water following any contact with metal particles. Remove any contaminated clothing and launder before reuse. Seek medical attention if irritation develops.

Eye contact

Avoid getting finely divided particles in the eyes. Flush immediately with plenty of luke-warm water, keeping eyelids open. Seek medical attention if symptoms persist.

Ingestion

Alloys in granular form are not hazardous, but should be kept out of the mouth. Finely divided particles may be easily ingested along with food, drink or smoking. If large quantities ingested, seek medical advice.

4.2. Most important symptoms and effects

The alloys in granular form in themselves or particles from the alloy are not judged as acute toxic. From the medical point of view, there is no evidence to indicate an absolute or a sharp distinction between harmful and non harmful content. An average content in the air of a single substance at the level of the limit considered, with current knowledge, generally not present any risk of injury or discomfort. It is nevertheless important to strive to keep all air pollutants as low as possible during the exposure limit. A particularly important situation is that if someone is exposed to multiple air pollutants simultaneously or exposed to air pollution related to heavy work. Keep dust levels below the limits mentioned in section 8.1.

4.3. Indication of any immediate medical attention and special treatment needed

There is no indication of immediate medical attention or special treatment documented for the alloys in granular form.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Where metal dust or powder is involved, cover with dry sand, chemical powder, or other dry inert material to minimise the risk of explosion. DO NOT use water.

5.2. Special hazards arising from the substance or mixture

Finely divided iron can explode in contact with air. Solid iron will react with oxidising materials, fluorine, chlorine, chlorine trifluoride, hydrogen peroxide, etc. Nickel reacts violently with F₂, NH₄NO₃, hydrazine, performic acid, phosphorus and sulfur, etc. Finely divided chromium can explode in contact with air. Solid will react with bromine pentafluoride. Finely divided chromium will react with carbon dioxide, nitrogen oxides, sulphur dioxide. Finely divided molybdenum will react with bromine trifluoride, fluorine, bromine pentafluoride, chlorine trioxide. Finely divided manganese will react with aluminium powder, sulphur dioxide, carbon dioxide, fluorine, chlorine, hydrogen peroxide and nitric acid.

5.3. Advice for fire-fighter

Use ordinary safety equipment.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Not applicable to solid metal/alloys in granular form in granular form. In particulate form, wear personal protective equipment as specified in Section 8. Avoid contact with the skin. Do not inhale dust.

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 4 (8)

6.2. Environmental precautions

Collect powder using a vacuum cleaner or by gentle sweeping to keep dust away from drains, surface and ground water. Prevent particulates from entering watercourses or drains. Avoid formation of dust clouds.

6.3. Methods and material for containment and cleaning up

Collect powder using a vacuum cleaner or by gentle sweeping.

6.4. Reference to other sections

See also section 8.2.7.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

No special precautions necessary for alloys in granular form other than normal physical handling techniques. Extraction should be used when working with particulate material (dust, fumes, mist). Avoid prolonged inhalation of dust. Wear gloves to avoid contact with skin (see Section 8). Working areas should be provided with extraction. Factories should be kept clean to avoid any unnecessary contamination.

Do not to eat, drink and smoke in work areas and wash hands/shower when leaving the working areas.

7.2. Conditions for safe storage, including any incompatibilities

Store in a dry environment.

7.3. Specific end use(s)

See section 13.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

All over 8 hour period unless otherwise stated. Monitoring procedures are not required.

Cobalt	UK	WEL	0.1mg/m ³	8hr TWA
	Sweden	NGV	0.05mg/m ³	total
Manganese	UK	WEL	0.5mg/m ³	total
	Sweden	NGV	0.2mg/m ³	total
Chromium	UK	WEL	0.1mg/m ³	respirable
	Sweden	NGV	0.5mg/m ³	total
Nickel	UK	WEL	0.5mg/m ³	total
	Sweden	NGV	0.5mg/m ³	total
Copper	UK	WEL	0.5mg/m ³	total
	Sweden	NGV	0.2mg/m ³	fume
Molybdenum	UK	WEL	1mg/m ³	dusts and mist
	Sweden	NGV	1mg/m ³	total
	Sweden	NGV	10mg/m ³	total
Aluminium	UK	WEL	5mg/m ³	respirable
	Sweden	NGV	10mg/m ³	8hr TWA
	Sweden	NGV	4mg/m ³	15min
	Sweden	NGV	5mg/m ³	total
			2mg/m ³	respirable

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 5 (8)

8.2 Exposure control

Always check the applicability of any protective equipment with your supplier.

8.2.1 Eye/face protection

Always wear eye protection when handling dusts and other particulates, eg safety glasses with side protection, safety goggles or visor.

8.2.2 Skin protection

Always wear protective clothing when handling dusts and other particulates.

8.2.3 Hand protection

Wear hand protection, eg leather gloves when handling alloys in granular form with sharp edges to avoid cuts. Always wear disposable nitrile or vinyl gloves when handling particulate material to avoid skin contact. Where necessary wear the disposable gloves under work gloves to protect against both types of hazard.

8.2.4 Respiratory protection

Alloys in granular form in delivered in solid form give no health risk through inhalation. Extraction should be used when working with particulate material (dust, fumes, mist). In case of prolonged or frequent exposure to particulates, wear particle filter mask (P3).

8.2.5 General hygiene measures

Wash hands well with soap and water after handling dusty materials. Wash contaminated clothing to avoid secondary contamination or contamination of other personnel.

8.2.6 Thermal hazards

Ensure adequate ventilation to keep levels of air-borne particles below occupational exposure limits given above. Working areas should be provided with extraction. Factories should be kept clean to avoid any unnecessary contamination.

8.2.3 Environmental exposure control

Avoid letting dust and fumes entering the outside air.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance: Metallic, alloy in granular, massive form

Odour: Odourless

Melting point / freezing point: 800 -1500°C

Vapour density: 7-10 kg/dm³

Note: These are typical values and do not constitute a specification.

9.2. Other information

No other physical or chemical parameters are necessary for the Alloys in granular form.

10. STABILITY AND REACTIVITY

10.1. Reactivity

Alloys in granular form are stable. Any reaction should not take place under normal circumstances.

10.2. Chemical stability

Alloys in granular form are stable. Corrosion should not take place under normal circumstances.

10.3. Possibility of hazardous reactions

See section 5.2.

10.4. Conditions to avoid

No special conditions need to be avoided for the alloys in granular form, however keep dust and fumes from entering the environment.

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 6 (8)

10.5. Incompatible materials

Contact with acids can generate explosive gasses, eg hydrogen.

10.6. Hazardous decomposition products

The alloys in granular form are stable.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Alloys in granular form contain nickel and cobalt which carry a risk of producing an allergic reaction following prolonged contact or in already sensitised persons. No further toxicological data available for the Alloys in granular form. See below for LD50 or LC50 for the individual substances, since no LC50 or LD50 has been established for the mixture as a whole.

Chromium - Oral LD ₅₀ Rat	19.8 mg/kg bodyweight	(highly toxic)
Nickel- Oral LD ₅₀ rat	1500 mg/kg bodyweight	
Zinc - Oral LD ₅₀ Rat	2000mg/kg bodyweight	
Silicone - Oral LD ₅₀ Rat	3160mg/kg bodyweight	
Manganese - Oral LD ₅₀ Rat	9000 mg/kg bodyweight	
Iron - Oral LD ₅₀ Rat	30000 mg/kg bodyweight	(not harmful)
Copper - LC ₅₀ Fish 96h	0,017 mg/l, species: Oncorhynchus mykiss (copper ion)	
Vanadium - LC ₅₀ Fish 96h	0,17 mg/l	
Tin - LC ₅₀ Fish 96h	0,42 mg/l	
Aluminium - LC ₅₀ Fish 96h	>100 mg/l	
Molybdenum - LC ₅₀ Fish 96h	2600 mg/l (molybdat)	

12. ECOLOGICAL INFORMATION

Alloys in granular form contain metals which are considered to be very toxic towards aquatic organisms. Finely divided alloys in granular form are therefore considered harmful to aquatic organisms.

12.2. Persistence and degradability

The Alloys in granular form consist of elements that can not degrade any further in the environment.

12.3. Bioaccumulative potential

Alloys in granular form contain heavy metals which bioaccumulate in the food chain. The following figures are the bioconcentration factor (BCF) for the substances on their own (molybdenum do not have a BCF):

Tin, BCF: 800 000
Iron, BCF: 140000
Manganese, BCF: 59052
Cobalt, BCF: 4000
Chromium, BCF: 200
Zinc, BCF: 92
Aluminium, BCF: 18
Nickel, BCF: 16
Copper, BCF: 29
Vanadium, BCF: 2

12.4. Mobility in soil

Metal Alloys in granular form are not soluble in water or soil. Particles formed by working alloys in granular form can be transported in the air.

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 7 (8)

12.5. Results of PBT and vPvB assessment

No chemical safety report is required for the alloys in granular form, however neither the alloys in granular form in itself or the substances that it consist of, meet the criteria for PBT or vPvB in accordance with REACH, Annex XIII.

12.6. Other adverse effects

Alloys in granular form present no hazards to the aquatic environment. Particles and ions can, never the less, enter the aquatic compartment by means of dusts or smoke, or by liberation due to erosion thereby introducing iron or heavy metals into the ground or water.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Non-contaminated waste from the production and pure-grade- Alloys in granular form are recyclable. The unused product (massive alloy) is not classified as hazardous waste. Dispose in accordance with appropriate government regulations. Any residues of finely divided product (particles, dust, fumes) are regarded as Hazardous Waste. Contact your local entrepreneur for advice.

14. TRANSPORT INFORMATION

14.1. UN number

Alloys in granular form are not classified as dangerous goods for transport and has no UN number.

14.2. UN proper shipping name

Alloys in granular form are not classified as dangerous goods for transport and has no UN proper shipping name.

14.3. Transport hazard class(es)

Alloys in granular form are not classified as dangerous goods for transport.

14.4. Packing group

There are not any special precautions with which a user should or must comply or be aware of in connection with transport or conveyance either within or outside his premises.

14.5. Environmental hazards

The alloys in granular form are not environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID and ADN) and/or a marine pollutant according to the IMDG Code.

14.6. Special precautions for user

There are not any special precautions which a user should or must comply or be aware of in connection with transport or conveyance either within or outside his premises of the Alloys in granular form.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Alloys in granular form do not subject under MARPOL73/78 and the IBC Code.

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Prepared according to EU Directives 1907/2006 (REACH) & 1272/2008 (CLP). Classifications mentioned in table 3.2 concerns substances in their crushed form. Alloys in granular form do not require labelling under current chemical product classification and labelling regulations, if they are not classified as hazardous to health and environment. Contains nickel and cobalt. Alloys in particulate form eg dust, fumes, mist may cause an allergic reaction on contact with skin or if inhaled.

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out for the product.

UDDEHOLMS AB SAFETY DATA SHEET

Granshot 2 delivered from UDDEHOLM

Issued: 2008-04-09 (1)

Revised: 2010-08-08

Version: 3

Page: 8 (8)

16. OTHER INFORMATION

16.1 Modifications since previous version

Version 3: name change of company

The information has been updated in sections.

Key literature references and sources for data

Study overview made for the first edition of the individual safety data sheets were constructed by Amasis Konsult AB. For this version has <http://kemi.prevent.se/> (a chemical substances database which is a compilation of data from numerous sources) been used for information on individual substances.

Full text of R-phrases used in Section 3

R7	May cause fire
R10	Flammable
R11	Highly flammable
R15	Contact with water liberates extremely flammable gases
R17	Spontaneously flammable in air
R20	Harmful by inhalation
R27/28	Very toxic in contact with skin and if swallowed
R36/37	Irritating to eyes and respiratory system
R36/37/38	Irritating to eyes, respiratory system and skin
R40	Limited evidence of a carcinogenic effect
R42/43	May cause sensitisation by inhalation and skin contact
R43	May cause sensitisation by skin contact
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation
R50	Very toxic to aquatic organisms
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R53	May cause long-term adverse effects in the aquatic environment

Full text of Hazard statements used in Section 3

H224	Extremely flammable liquid and vapour
H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
H242	Heating may cause a fire
H250	Catches fire spontaneously if exposed to air
H300	Fatal if swallowed
H310	Fatal in contact with skin
H315	Causes skin irritation
H316	Causes mild skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H331	Toxic if inhaled
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

Granshot ® is a registered trademark of Uddeholms AB. This information is in addition to any existing information. Users must ensure that the information is adequate for their purposes. For any further information, please contact:

UDDEHOLMS AB	Tel.: +46 563 170 00
S-683 85 HAGFORS	Fax: +46 563 174 61
Sweden	Web: www.uddeholm.com