

管理番号：SDS-PSC-001

改正No.：0

最終更新年月日 2016年4月22日

東洋鋼鉄株式会社

## 安全データシート(Safety Data Sheet)

〈材料製造会社：POSCO〉

### 1.製品及び会社情報

- ・ 製品の名称：COOL ROOL CARBON STEEL
- ・ 会社名：東洋鋼鉄株式会社
- ・ 住所：浦安市港 72 番地
- ・ 担当部門：技術管理室
- ・ 連絡先：技術管理室 横屋      電話：047-354-5891(代)  
FAX：047-354-5894

「2.」以降の項目については、次ページ以降を参照下さい。

**Material Safety Data Sheet (MSDS)****1. Identification of the Preparation and Company**

- A. Product name **COOL ROLL CARBON STEEL**
- B. Recommended uses for and restrictions on the product
- |                                    |                             |
|------------------------------------|-----------------------------|
| Recommended use of product         | Steel product manufacturing |
| Restrictions on the use of product | Data not available          |
- C. Manufacturer/Importer/Distributor information
- |                          |   |
|--------------------------|---|
| Company name             | POSCO Co., Ltd.   |
| Address                  | (Dongchon-dong) 6261 Donghaean-ro Nam-gu, Pohang-si, Gyeongsangbuk-do, Korea<br>(Geumho-dong) 396 Geumho-ro, Gwangyang-si, Jeollanam-do, Korea              |
| Emergency contact number | Gi-hyeon Cho, Health Improvement Division, Pohang Steel Works (054-220-7044)<br>Mun-hi Seo, Health Improvement Division, wanyang Steel Works (061-790-2635) |

**2. Hazards Identification**

- A. Hazards classification
- |   |             |
|---|-------------|
| Acute toxicity (Oral):                              | Category 4  |
| Skin corrosion / skin irritation:                   | Category 2  |
| Severe eye damage / eye irritation:                 | Category 2  |
| Reproductive toxicity:                              | Category 1B |
| Specific target organ toxicity (single exposure):   | Category 2  |
| Specific target organ toxicity (repeated exposure): | Category 2  |
- B. Warning signs and prevention measure phrases

Signs



- |                            |   |
|----------------------------|---|
| Signal words               | Danger  |
| Hazards phrases            | Harmful if swallowed.   |
|                            | Causes skin irritation.   |
|                            | Causes serious eye irritation.  |
|                            | May cause damage to the fetus or reproductive ability.                                      |
| Prevention measure phrases | Prolonged or repeated exposure can cause damage to body.                                    |
|                            |   |
| Prevention                 | Obtain the instruction manual before use.   |
|                            | Read all prevention measure phrases and do not handle until you understand all the phrases. |
|                            | Do not inhale dust and fumes.   |
|                            | After handling, thoroughly wash the handled areas.  |
|                            | Do not eat, drink, or smoke when using this product.  |
|                            | Wear appropriate personal protective equipment.   |
| Response action            | If it comes in contact with your eyes, carefully rinse with water for several minutes.      |
|                            | If possible, remove contact lenses and continue to rinse.                                   |
|                            | If you are exposed and feel uncomfortable, get medical attention (from a physician).        |

	Wash your mouth out with water.
	If your skin becomes irritated, get medical treatment and consultation.
	If eye irritation persists, get medical treatment and consultation.
	Take contaminated clothing off and wash them before reuse.
Storage	Store in a dry place. Maintain a distance between cargo items.
Disposal	Dispose of the content containers as specified in the relevant legislation.

#### C. Other hazards not included in the hazards category standards (NFPA)

##### Manganese

Hygiene	1
Fire	3
Reactivity	1

##### Iron

Hygiene	1
Fire	3
Reactivity	0

### 3. Name/Content of Ingredients

Ingredient name	Common name (Trivial name)	CAS number	Content (%)
Manganese	Colloidal manganese	7439-96-5	5.0% Max
Iron	Ferrium	7439-89-6	95% or higher

※ May also contain a small amount of other components. (Silicon 0.5% Max, Carbon 0.2% Max, Aluminum 0.1% Max, Copper 0.3% Max, Nickel 0.1% Max, Chrome 0.1% Max, Molybdenum 0.1% Max, phosphorus, sulfur, niobium, vanadium, boron, etc.)

※ As this is a finished product that has been solidified, there is no danger of the contained chemical substances being exposed. However, if it is cut, fused, or melted, some exposure might occur.

### 4. First Aid Measures

- A. Eye contact      If it comes in contact with the eyes, carefully rinse for several minutes with water.  
If possible, remove contact lenses and continue to rinse.  
If irritation persists, get medical treatment and consultation.
- B. Skin contact      If skin is irritated, get medical treatment and consultation.  
Take contaminated clothing off. Wash them before reuse.  
In the case of a hot substance, to remove heat, immerse the affected area in a large amount of cold water or rinse with water.  
Remove contaminated clothing and shoes and isolate the contaminated area.
- C. Inhalation        If you are exposed or feel uncomfortable, get medical attention.  
Move to an area with lots of fresh air.
- D. Ingestion         If you feel uncomfortable, get medical attention.  
Rinse your mouth out with water.
- E. Misc. notes from physician      When exposed, contact medical staff and take special first aid measures, such as a follow-up investigation.  
The medical staff should become aware of the ingredients concerned and take protective measures.

### 5. Explosion and Fire Fighting

#### A. Appropriate (Inappropriate) extinguishing agents

When extinguishing a fire associated with this substance, please use a water spray.

When extinguishing by smothering, use dry sand or soil.

**B. Specific hazards arising from chemical substances**

While burning, pungent or toxic gases may be produced due to pyrolysis or combustion.

Containers may explode when heated.

While some parts of it can burn, it does not ignite easily.

Nonflammable substances themselves do not burn but can produce corrosive / toxic fumes through pyrolysis when heated.

**C. Safety equipment worn while putting out fires and preventive measures**

Firefighters should wear appropriate protective equipment.

Keep a safe distance when putting out fires.

If it is deemed not dangerous, move the containers from the fire area.

**6. Accidental Release Measures****A. Corrective measures and protective equipment required to protect human lives**

Do not inhale dust and fumes.

People who don't need to enter or those without protective equipment should not enter.

Remove all sources of ignition.

Do not touch damaged containers or leaked substance without wearing appropriate protective gear.

Be careful of substances and conditions that need to be avoided.

**B. Measures required to protect the environment**

Prevent inflow into waterways, sewers, basements and confined areas.

**C. Decontamination or removal method**

Gather the leaked substance.

**7. Handling and Storage****A. Safe handling know-how**

Read all prevention measure phrases and do not handle until you understand all the phrases.

After handling, thoroughly wash the handled areas.

Do not eat, drink, or smoke when using this product.

Be careful when handling/storing and use carefully.

Prevent prolonged or continuous skin contact.

Pay attention to substances and conditions to avoid.

**B. Safe storage method**

Store in a dry place.

Maintain a distance between cargo items.

**8. Exposure Prevention and Personal Protection Equipment****A. Exposure criteria of chemical substances, biological substances, etc.**

## Domestic regulations

Manganese TWA - 1mg/m<sup>3</sup> manganese and inorganic compounds

Iron Data not available

## ACGIH regulations

Manganese TWA 0.2 mg/m<sup>3</sup>

Iron Data not available

## Biological exposure limits

Manganese Data not available

Iron Data not available

**B. Proper engineering management**

When dust and fumes are generated, use local ventilation system and maintain below the exposure guideline.

### C. Personal protection equipment

Respiratory protection	Wear respiratory protection equipment (dust mask) that has attained the certification of the Korea Occupational Safety and Health Agency.
Eye protection	Wear safety glasses to protect eyes from dust and arsenic substances.
Hand protection	Wear work gloves suited for the job.
Body protection	Wear work clothes suited for the job.

## 9. Physical and Chemical Properties

### A. Appearance

Phase	Solid
Color	Metallic grey

### B. Odor

None

### C. Odor threshold

Data not available

### D. pH

Data not available

### E. Melting point / Freezing point

Data not available

### F. Initial boiling point and boiling point range

Data not available

### G. Flash point

Data not available

### H. Evaporation rate

Data not available

### I. Flammability (solid, gas)

Data not available

### J. Upper / lower limits of flammability or explosive limits

Data not available

### K. Vapor pressure

Data not available

### L. Solubility

Data not available

### M. Vapor density

Data not available

### N. Specific gravity

Data not available

### O. n-octanol / water partition coefficient

Data not available

### P. Spontaneous ignition temperature

Data not available

### Q. Decomposition temperature

Data not available

### R. Viscosity

Data not available

### S. Molecular weight

Data not available

## Iron

### A. Appearance

Phase	Solid
Color	White or grey

### B. Odor

None

### C. Odor threshold

Data not available

### D. pH

(Not applicable)

### E. Melting point / Freezing point

1535 °C

### F. Initial boiling point and boiling point range

2750 °C

### G. Flash point

Data not available

### H. Evaporation rate

Data not available

### I. Flammability (solid, gas)

Data not available

### J. Upper / lower limits of flammability or explosive range

- / -

### K. Vapor pressure

1 mm Hg (at 1787 °C)

### L. Solubility

(Water Solubility: Insolubility. Solvent solubility: Availability: Acid insolubility: alkali, alcohol, ether)

M. Vapor density	Data not available
N. Specific gravity	7.86 ((water=1))
O. n-octanol / water partition coefficient	(None)
P. Spontaneous ignition temperature	Data not available
Q. Decomposition temperature	Data not available
R. Viscosity	Data not available
S. Molecular weight	55.85

## 10. Stability and Reactivity

### A. Chemical stability and adverse reaction probability

Manganese	<p>Flammable solid.</p> <p>Can decompose and generate toxic gases at high temperatures.</p> <p>By vigorously polymerizing, it can cause a fire and an explosion.</p> <p>When heated, containers may explode.</p> <p>Can be ignited by friction, heat, sparks, and flames.</p> <p>Can reignite even after the fire is extinguished.</p> <p>Reacts violently and explosively with water.</p> <p>Some substances burn with intense heat.</p> <p>Dust and fumes can form an explosive mixture with air.</p> <p>Inhalation of and skin contact with vapor, substances, and decomposition products can cause serious injury or death.</p> <p>During a metal fire, the oxide can pose serious health hazards.</p>
Iron	<p>When heated, containers may explode.</p> <p>Can be ignited by friction, heat, sparks, and flames.</p> <p>Can reignite even after the fire is extinguished.</p> <p>Reacts violently and explosively with water.</p> <p>Some substances burn with intense heat.</p> <p>Dust and fumes can form an explosive mixture with air.</p> <p>During a fire, irritating, corrosive and toxic gases may be generated.</p> <p>Inhalation of and contact with vapor, substance and decomposition products can result in a serious injury or death.</p> <p>In a metal fire, the oxide can pose serious health hazards.</p>

### B. Conditions to avoid

Manganese	Keep away from heat, sparks, flame, high heat, and no smoking.
Iron	Friction, heat, sparks, flame

### C. Substances to avoid

Manganese	Water
Iron	Water

### D. Hazardous substances produced during decomposition

Manganese	Irritating, corrosive and toxic gas
Iron	While burning, pungent and very toxic gases may be produced due to pyrolysis or combustion.

## 11. Toxicological Information

### A. Information on exposure routes with high probabilities

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Manganese	Can cause irritation, low body temperature, fever, nausea, vomiting, diarrhea and/or headaches.
Iron	Data not available

## B. Health hazard information

## Acute toxicity

## Oral

Manganese	LD50 9000 mg/kg Rat
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Iron	LD50 984 mg/kg Rat
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## Percutaneous

Manganese	Data not available
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Iron	LD50 20000 mg/kg Guinea pig
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## Inhalation

Manganese	Data not available
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Iron	Data not available
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## Skin corrosion or irritation

Manganese	Showed a moderate stimulation in Rabbit skin irritation test (3)
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Iron	Test species: Rabbit>Showed irritation
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## Serious eye injury or irritation

Manganese	Showed a moderate stimulation in Rabbit's eyes irritation test (3)
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Iron	Data not available
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## Hypersensitive respiratory system

Manganese	Data not available
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Iron	Data not available
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## Hypersensitive skin

Manganese	Data not available
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Iron	Data not available
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## Carcinogenicity

## Occupational Safety and Healthy Act

Manganese, Iron	Data not available
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## Ministry of Labor Notice

Manganese, Iron	Data not available
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## IARC

Manganese, Iron	Data not available
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## OSHA

Manganese, Iron	Data not available
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## ACGIH

Manganese, Iron	Data not available
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## NTP

Manganese, Iron	Data not available
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## EU CLP

Manganese, Iron	Data not available
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## Germ cell mutagenicity

Manganese	Data not available
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Iron	Data not available
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## Reproductive toxicity

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Manganese	Showed embryonic lethality and fetal deformity (herniation of brain) in the results of the teratogenic test in mice (4)
Iron	Data not available
Specific target organ toxicity (single exposure)	
Manganese	Can cause pneumonia (4)
Iron	Data not available
Specific target organ toxicity (repeated exposure)	
Manganese	Affects the respiratory and nervous systems (4)
Iron	Data not available
Aspiration hazards	
Manganese	Data not available
Iron	Data not available

## 12. Ecological Information

### A. Ecotoxicity

#### Fish

Manganese	LC50 > 50 mg/l 96 hr
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Iron	LC50 13.6 mg/l 96 hr
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#### Shellfish

Manganese	Data not available
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Iron	Data not available
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#### Birds

Manganese	Data not available
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Iron	Data not available
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### B. Persistence and degradability

#### Persistence

Manganese	Data not available
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Iron	(None)
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#### Degradability

Manganese	Data not available
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Iron	Data not available
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### C. Bioaccumulation

#### Accumulation

Manganese	Data not available
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Iron	Data not available
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#### Biodegradability

Manganese	Data not available
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Iron	Data not available
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### D. Mobility in soil

Manganese	Data not available
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Iron	Data not available
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### E. Other adverse effects

Manganese	Data not available
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Iron	Data not available
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Iron	Not applicable
U.S. managed info (EPCRA 302 regulations)	
Manganese	Not applicable
Iron	Not applicable
U.S. managed info (EPCRA 304 regulations)	
Manganese	Not applicable
Iron	Not applicable
U.S. managed info (EPCRA 313 regulations)	
Manganese	Applicable
Iron	Not applicable
U.S. managed info (Rotterdam Convention Substances)	
Manganese	Not applicable
Iron	Not applicable
U.S. managed info (Stockholm Convention Substances)	
Manganese	Not applicable
Iron	Not applicable
U.S. managed info (Montreal Protocol Substances)	
Manganese	Not applicable
Iron	Not applicable
EU Classification info (Confirmed Classification Results)	
Manganese	Not applicable
Iron	Not applicable
EU Classification info (Hazards Phrases)	
Manganese	Not applicable
Iron	Not applicable
EU Classification info (Safety Phrases)	
Manganese	Not applicable
Iron	Not applicable

## 16. Other Information

### A. Data source

#### Manganese

- 1(E. Melting point / Freezing point)
- 1(F. Initial boiling point and boiling point range)
- 2(K. Vapor pressure)
- 1(N. Specific gravity)
- 3(Oral)
- (1) ISCS(2) HSDB(3) RTECS(4) CICAD

#### Iron

- IUCLID(Oral)
- IUCLID(Skin corrosiveness or irritation)
- IUCLID(fish)

B. First prepared 2013-05-30

C. Number of revisions and final revision date

Number of revisions 1

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Final revision date                      2015-03-11

D. Others

- Prepared by: Health Promotion Division, Safety Disaster Prevention Division,  
POSCO Co., Ltd. Pohang Steel Works (Tae-chil Ha, Ki-hyeon Cho)  
Health Promotion Division, Safety Disaster Prevention Division,  
POSCO Co., Ltd. Gwangyang Steel Works (Geon-jung Kim, Mun-hui Seo)
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