

# LOW ALLOY BARE STEEL WIRES

## SAFETY DATA SHEET

### 1. IDENTIFICATION

|                    |   |                           |
|--------------------|---|---------------------------|
| Supplier Name:     | Exocor Ltd.   | Telephone: (905) 704-0603 |
| Address:           | 271 Ridley Road, St. Catharines, ON L2S 0B3, Canada   | Emergency: (888) 317-2209 |
| Website:           | www.exocor.com  |                           |
| Product Type:      | EXECUTIVE Low Alloy Steel Bare Wires & Rods   |                           |
| AWS Specification: | AWS A5.28 & AISI 4130 (No AWS Classification)   |                           |
| Recommended Use:   | MIG/TIG Welding of Low Alloy Steels   |                           |
|                    | <b>Read this SDS before product use</b>   |                           |
| Product Type:      | ER70S-A1, ER70S-B2L, ER80S-B3L, ER80S-B6, ER80S-B8, ER80S-D2, ER80SNI-1, ER80SNI-3, ER90S-B3, ER90S-B9, ER90S-D2, ER100S-1, ER110S-1, ER120S-1, AISI 4130 |                           |

### 2. HAZARD(S) IDENTIFICATION

#### Classification of the substance or mixture

##### GHS-US classification

Skin Sens. 1 H317  
 Carc. 1B H350  
 STOT RE 1 H372

##### Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US):



Signal word (GHS-US)          Danger

##### Hazard statements (GHS-US)

H317 - May cause an allergic skin reaction  
 H350 - May cause cancer  
 H372 - Causes damage to organs through prolonged or repeated exposure

##### Precautionary statements (GHS-US)

P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
 P261 - Avoid breathing dust/fume/gas/mist/vapors/spray  
 P264 - Wash thoroughly after handling  
 P270 - Do not eat, drink or smoke when using this product  
 P272 - Contaminated work clothing should not be allowed out of the workplace  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P302+P352 - IF ON SKIN: Wash with plenty of soap and water  
 P308+P313 - IF exposed or concerned: Get medical advice/attention  
 P314 - Get medical advice and attention if you feel unwell  
 P321 - Specific treatment (see label)  
 P333+P313 - If skin irritation or rash occurs: Get medical advice/attention  
 P362+P364 - Take off contaminated clothing and wash it before reuse P405 - Store locked up  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other hazards**                                  No additional information available

**2 Unknown acute toxicity (GHS-US)**                                  No data available

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substances**                                  Not applicable          Full text of H-phrases: see section 16

#### Mixture

| Name                   | Product identifier | %           | GHS-US classification                                   |
|------------------------|--------------------|-------------|---|
| Chromium (Cr)          | (CAS No) 7440-47-3 | <= 10.5     | Not classified  |
| Nickel (Ni)            | (CAS No) 7440-02-0 | 0.2 - 3.75  | Skin Sens. 1, H317<br>Carc. 1B, H350<br>STOT RE 1, H372 |
| Manganese (Mn)         | (CAS No) 7439-96-5 | 0.4 - 2.1   | Not classified  |
| Molybdenum (Mo)        | (CAS No) 7439-98-7 | <= 1.2      | Not classified  |
| Silicon (Si)           | (CAS No) 7440-21-3 | 0.15 - 0.8  | Not classified  |
| Copper (Cu)            | (CAS No) 7440-50-8 | 0.25 - 0.5  | Not classified  |
| Vanadium pentoxide (V) | (CAS No) 1314-62-1 | 0.03 - 0.25 | Not classified  |

**4. FIRST AID MEASURES**

**Inhalation:** If breathing is difficult provide fresh air and contact physician

**Eye/Skin injuries:** For radiation burns, see physician.

Section 11 covers the acute effects of overexposure to the various ingredients within the welding consumable. Section lists exposure limits and covers methods to protect yourself and others.

**5. FIRE AND EXPLOSION HAZARD DATA**

Welding consumable applicable to this sheet as shipped, are nonreactive, nonflammable, nonexplosive and essentially nonhazardous until welded.

Welding arcs and sparks can ignite combustibles and flammable products. Unused welding consumables may remain hot upon completion of the welding process.

See American National Standard (ANSI) Z49.1 for additional safety information on the use and handling of welding consumables and associated procedures.

**6. ACCIDENTIAL RELEASE MEASURES**

In the case of a release of solid welding consumable products, solid objects can be picked up and placed into a disposal container. If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure.

Refer to recommendations in Section 8. Wear proper personal protective equipment while handling. Do not discard as general trash.

**7. HANDLING AND STORAGE**

Handle with care to avoid cuts. Wear gloves when handling welding consumables. Retain all warning and product labels. Avoid breathing welding fumes. Keep your head out of the fumes. Use with enough ventilation or exhaust at the arc, or both, to keep fumes and gases below the occupational exposure limits in your breathing zone and the general area.

Use air sampling to determine the need for corrective action. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Fumes from welding and oxygen depletion can alter the air quality causing injury or death. Take appropriate precautions to prevent fires and explosion.

Read and understand the manufacturer's instructions and the precautionary label on the product. Assure compliance with the OSHA Standard on Chromium (VI), 29CFR 1910.1026.

Store in a dry area and protect from contamination with other materials.

FOR WELDING CONSUMABLES AND RELATED PRODUCTS

**8. EXPOSURE CONTROL AND PERSONAL PROTECTION**

**Control parameters**

| <b>Nickel (7440-02-0)</b> |                                     |                       |
|---------------------------|-------------------------------------|-----------------------|
| USA ACGIH                 | ACGIH TWA (mg/m <sup>3</sup> )      | 1.5 mg/m <sup>3</sup> |
| USA OSHA                  | OSHA PEL (TWA) (mg/m <sup>3</sup> ) | 1 mg/m <sup>3</sup>   |

| <b>Chromium (7440-47-3)</b> |                                     |                       |
|-----------------------------|-------------------------------------|-----------------------|
| USA ACGIH                   | ACGIH TWA (mg/m <sup>3</sup> )      | 0.5 mg/m <sup>3</sup> |
| USA OSHA                    | OSHA PEL (TWA) (mg/m <sup>3</sup> ) | 1 mg/m <sup>3</sup>   |

| <b>Copper (7440-50-8)</b> |                                     |                       |
|---------------------------|-------------------------------------|-----------------------|
| USA ACGIH                 | ACGIH TWA (mg/m <sup>3</sup> )      | 0.2 mg/m <sup>3</sup> |
| USA OSHA                  | OSHA PEL (TWA) (mg/m <sup>3</sup> ) | 1 mg/m <sup>3</sup>   |

| <b>Manganese (7439-96-5)</b> |   |                       |
|------------------------------|---|-----------------------|
| USA ACGIH                    | ACGIH TWA (mg/m <sup>3</sup> )          | 0.1 mg/m <sup>3</sup> |
| USA OSHA                     | OSHA PEL (Ceiling) (mg/m <sup>3</sup> ) | 5 mg/m <sup>3</sup>   |

| <b>Molybdenum (7439-98-7)</b> |                                |                     |
|-------------------------------|--------------------------------|---------------------|
| USA ACGIH                     | ACGIH TWA (mg/m <sup>3</sup> ) | 3 mg/m <sup>3</sup> |

| <b>Silicon (7440-21-3)</b> |                                     |                     |
|----------------------------|-------------------------------------|---------------------|
| USA OSHA                   | OSHA PEL (TWA) (mg/m <sup>3</sup> ) | 5 mg/m <sup>3</sup> |

| <b>Vanadium pentoxide (1314-62-1)</b> |                                |                        |
|---------------------------------------|--------------------------------|------------------------|
| USA ACGIH                             | ACGIH TWA (mg/m <sup>3</sup> ) | 0.05 mg/m <sup>3</sup> |

## Exposure controls

- Appropriate engineering controls: Local exhaust and general ventilation must be adequate to meet exposure standards.
- Hand protection : Wear welding gloves.
- Eye protection : Wear helmet or face shield with filter lens of appropriate shade number. See ANSI/ASC Z49.1 Section 4.2. Provide protective screens and flash goggles, if necessary, to shield others.
- Skin and body protection : Wear head and body protection, which help to prevent injury from radiation, sparks, flame and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the employee not to touch live electrical parts and to insulate him/herself from work and ground. Welders should not wear short sleeve shirts or short pants.
- Respiratory protection : If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

|   |                                     |
|---|-------------------------------------|
| Physical state                              | Solid                               |
| Appearance                                  | Rods or wire                        |
| Color                                       | Metallic                            |
| Odor  | No data available                   |
| Odor threshold                              | No data available                   |
| pH  | No data available                   |
| Relative evaporation rate (butyl acetate=1) | No data available                   |
| Melting point                               | No data available                   |
| Freezing point                              | No data available                   |
| Boiling point                               | No data available                   |
| Flash point                                 | No data available                   |
| Self-ignition temperature                   | No data available                   |
| Decomposition temperature                   | No data available                   |
| Flammability (solid, gas)                   | No data available                   |
| Vapor pressure                              | No data available                   |
| Relative vapor density at 20 °C             | No data available                   |
| Relative density                            | No data available                   |
| Solubility                                  | No data available                   |
| Log Pow                                     | No data available                   |
| Log Kow                                     | No data available                   |
| Viscosity, kinematic                        | No data available                   |
| Viscosity, dynamic                          | No data available                   |
| Explosive properties                        | No data available                   |
| Oxidizing properties                        | No data available                   |
| Explosive limits                            | No data available                   |
| <b>Other information</b>                    | No additional information available |

## 10. STABILITY AND REACTIVITY

|   |  |
|---|--|
| <b>Reactivity</b>                         | No additional information available                              |
| <b>Chemical stability</b>                 | The product is stable at normal handling and storage conditions. |
| <b>Possibility of hazardous reactions</b> | Will not occur.  |
| <b>Conditions to avoid</b>                | None.  |
| <b>Incompatible materials</b>             | None.  |
| <b>Hazardous decomposition products</b>   |  |

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and welding consumables used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coating on the metal being welded (i.e. paint, painting, galvanizing), the number of welders, the volume of the work area, the quality and the amount of ventilation, the position of the welders head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from the cleaning and degreasing activities).

When an electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and gas decomposition, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section 3, plus those from the base metal coating, etc., as noted above.

Reasonable expected fume constituents of this product would include: Complex oxides of aluminum, iron, manganese, silicon, titanium, chromium, nickel, calcium, columbium, molybdenum and copper. Fluorides will also be present. Some products will also contain antimony, barium, molybdenum, aluminum, columbium, magnesium, strontium, tungsten, and or zirconium. Fume limit for chromium, nickel and or manganese may be reached before limit of 5 mg/m<sup>3</sup> of general welding fumes is reached.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

## 11. TOXICOLOGICAL INFORMATION

### Information on toxicological effects

|  |  |
|--|--|
| Acute toxicity                                     | : Not classified   |
| <b>Nickel (7440-02-0)</b>                          |  |
| LD50 oral rat                                      | > 9000 mg/kg   |
| <b>Manganese (7439-96-5)</b>                       |  |
| ATE (oral)   | 9000000.000 mg/kg  |
| <b>Silicon (7440-21-3)</b>                         |  |
| ATE (oral)   | 3160.000 mg/kg   |
| <b>Vanadium pentoxide (1314-62-1)</b>              |  |
| LD50 oral rat                                      | 221.1 - 715.7 mg/kg  |
| LD50 dermal rabbit                                 | 50 mg/kg   |
| LC50 inhalation rat (mg/l)                         | 2.21 mg/l/4h   |
| Skin corrosion/irritation                          | Not classified   |
| Serious eye damage/irritation                      | Not classified   |
| Respiratory or skin sensitization                  | May cause an allergic skin reaction.                           |
| Germ cell mutagenicity                             | Not classified   |
| Carcinogenicity                                    | May cause cancer.  |
| <b>Nickel (7440-02-0)</b>                          |  |
| IARC group   | 2B   |
| National Toxicity Program (NTP) Status             | 3  |
| <b>Chromium (7440-47-3)</b>                        |  |
| IARC group   | 3  |
| <b>Vanadium pentoxide (1314-62-1)</b>              |  |
| IARC group   | 2B   |
| National Toxicity Program (NTP) Status             | 1  |
| Reproductive toxicity                              | Not classified   |
| Specific target organ toxicity (single exposure)   | Not classified   |
| Specific target organ toxicity (repeated exposure) | Causes damage to organs through prolonged or repeated exposure |
| Aspiration hazard                                  | Not classified   |

## 12. ECOLOGICAL INFORMATION

**Toxicity** Ecology - general : Not classified

|                                |  |
|--------------------------------|--|
| <b>Nickel (7440-02-0)</b>      |  |
| LC50 fishes 1                  | > 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)                                  |
| EC50 Daphnia 1                 | > 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)                                      |
| EC50 other aquatic organisms 1 | 0.18 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata)                     |
| LC50 fish 2                    | 1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])                        |
| EC50 Daphnia 2                 | 1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])                                 |
| EC50 other aquatic organisms 2 | 0.174 - 0.311 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])   |
| <b>Copper (7440-50-8)</b>      |  |
| LC50 fishes 1                  | 0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)                      |
| EC50 Daphnia 1                 | 0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])                              |
| EC50 other aquatic organisms 1 | 0.0426 - 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static]) |
| LC50 fish 2                    | < 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])                       |
| EC50 other aquatic organisms 2 | 0.031 - 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])   |

|                                      |                                     |
|--------------------------------------|-------------------------------------|
| <b>Persistence and degradability</b> | No additional information available |
| <b>Bio accumulative potential</b>    | No additional information available |
| <b>Mobility in soil</b>              | No additional information available |
| <b>Other adverse effects</b>         | No additional information available |

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

Waste disposal recommendations: Dispose of contents/container in accordance with local/regional/national/international regulations.

### 14. TRANSPORTATION INFORMATION

In accordance with DOT / ADR / RID / ADNR / IMDG / ICAO / IATA

**UN number** Not a dangerous good in sense of transport regulations

**UN proper shipping name** Not applicable

### 15. REGULATORY INFORMATION

#### US Federal regulations

|  |        |
|--|--------|
| <b>Nickel (7440-02-0)</b>  |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on SARA Section 313 (Specific toxic chemical listings) |        |
| SARA Section 313 - Emission Reporting  | 0.1 %  |
| <b>Chromium (7440-47-3)</b>  |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on SARA Section 313 (Specific toxic chemical listings) |        |
| SARA Section 313 - Emission Reporting  | 1.0 %  |
| <b>Copper (7440-50-8)</b>  |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on SARA Section 313 (Specific toxic chemical listings) |        |
| SARA Section 313 - Emission Reporting  | 1.0 %  |
| <b>Manganese (7439-96-5)</b>   |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on SARA Section 313 (Specific toxic chemical listings) |        |
| SARA Section 313 - Emission Reporting  | 1.0 %  |
| <b>Molybdenum (7439-98-7)</b>  |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory  |        |
| <b>Silicon (7440-21-3)</b>   |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory  |        |
| <b>Vanadium pentoxide (1314-62-1)</b>  |        |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on SARA Section 302 (Specific toxic chemical listings) |        |
| SARA Section 302 Threshold Planning<br>Quantity (TPQ)  | ≤10000 |

#### US State regulations

|   |   |   |   |                                   |
|---|---|---|---|-----------------------------------|
| <b>Nickel (7440-02-0)</b>                             |   |   |   |                                   |
| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significance risk level (NSRL) |
| Yes   |   |   |   |                                   |
| <b>Vanadium pentoxide (1314-62-1)</b>                 |   |   |   |                                   |
| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significance risk level (NSRL) |
| Yes   |   |   |   |                                   |

#### Nickel (7440-02-0)

- U.S. - Massachusetts - Right To Know List
- U.S. - Minnesota - Hazardous Substance List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

#### Chromium (7440-47-3)

- U.S. - Massachusetts - Right To Know List
- U.S. - Minnesota - Hazardous Substance List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

#### Copper (7440-50-8)

- U.S. - Massachusetts - Right To Know List
- U.S. - Minnesota - Hazardous Substance List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

**Manganese (7439-96-5)**

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

**Molybdenum (7439-98-7)**

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

**Silicon (7440-21-3)**

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

**Vanadium pentoxide (1314-62-1)**

U.S. - Massachusetts - Right To Know List  
 U.S. - Minnesota - Hazardous Substance List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) List

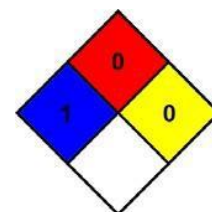
**16. OTHER INFORMATION****Other information:**

We believe that the information contained herein is current as of the date of this SDS. As the condition or methods of use are beyond Exocor's control. Exocor does not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without any warranty, expressed or implied, regarding the accuracy of the information, the hazard connected with the use of this material or the results to be obtained for use thereof. It is the user's obligation to determine the conditions of safe use of these products.

Full text of H-phrases:

|              |  |
|--------------|--|
| Carc. 1B     | Carcinogenicity, Category 1B                                   |
| Skin Sens. 1 | Sensitization — Skin, category 1                               |
| STOT RE 1    | Specific target organ toxicity — Repeated exposure, Category 1 |
| H317         | May cause an allergic skin reaction                            |
| H350         | May cause cancer   |
| H372         | Causes damage to organs through prolonged or repeated          |

|                    |   |
|--------------------|---|
| NFPA health hazard | 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given. |
| NFPA fire hazard   | 0 - Materials that will not burn  |
| NFPA reactivity    | 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.        |

**HMIS III Rating**

|              |   |
|--------------|---|
| Health       | 2 Moderate Hazard - Temporary or minor injury may occur |
| Flammability | : 0 Minimal Hazard                                      |
| Physical     | : 0 Minimal Hazard                                      |

For additional information please refer to the following sources:

USA: American National Standard (ANSI) Z49.1 "Safety in Welding and Cutting", ANSI/American Welding Society (AWS) F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", American Welding Society, 550 North Le Jeune Road, Miami, Florida, 33135. Safety and Health Fact Sheets available from AWS at [www.aws.org](http://www.aws.org). OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Threshold Limit Values and Biological Exposure indices, American Conference of Governmental Hygienists (ACGIH), 6500 Glenway Ave., Cincinnati, Ohio 45211, USA. NFPA 51 B "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, "Hazards from Welding Fume", "The arc welder at work, some general aspects of health and safety".

Canada: CSA Standard CAN/CSA-W112.2-01 "Safety in Welding. Cutting and Allied Processes".

**LIABILITY-DISCLAIMER:**

*Exocor does not assume liability whatsoever for the accuracy or completeness of the information contained in this SDS. The information contained is accurate to the best of our knowledge. The final suitability of any material is the responsibility of the user. Materials may present unknown hazards and are intended for use by qualified individuals experienced and trained in welding safety.*