Safety Data Sheet

acc. to OSHA HCS

Printing date 01/13/2016 *Reviewed on 01/12/2016*

1 Identification

· **Product identifier**

· **Trade name: RADNOR 316L-16**
· **CAS Number:** -
· **EINECS Number:** -
· **Application of the substance / the mixture** Shielded Metal Arc Welding Electrode

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**

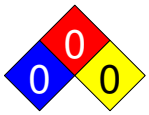
voestalpine Bohler Welding USA Inc.
1601 Gillingham Lane #110
Sugar Land TX 77478
Phone: (281) 499 - 1212

· **Emergency telephone number:** (281) 499 - 1212

2 Hazard(s) identification

· **Classification of the substance or mixture**
The product is not classified according to the Globally Harmonized System (GHS).

· **Label elements** -
· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **NFPA ratings (scale 0 - 4)**



Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 0
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

CAS: 7440-47-3 EINECS: 231-157-5	chromium	12.5-25%

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CAS: 7440-02-0 EINECS: 231-111-4	nickel	5-12.5%
CAS: 471-34-1 EINECS: 207-439-9	calcium carbonate	2.5-5%
CAS: 7439-96-5 EINECS: 231-105-1	manganese	0.1-2.5%
CAS: 7789-75-5 EINECS: 232-188-7	calcium fluoride	0.1-2.5%
CAS: 7439-98-7 EINECS: 231-107-2	molybdenum	0.1-2.5%

· **nonhazardous components:**

CAS: 7439-89-6 EINECS: 231-096-4	iron	50-100%
CAS: 1317-80-2 EINECS: 215-282-2	Rutil	5-12.5%

4 First-aid measures

· **Description of first aid measures**
· **General information:** No special measures required.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Generally the product does not irritate the skin.
· **After eye contact:** Rinse opened eye for several minutes under running water.
· **After swallowing:** Seek medical treatment.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Suitable to surrounding conditions
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters** -
· **Protective equipment:** No special measures required.

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6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Use respiratory protective device against the effects of fumes/dust/aerosol.
· **Environmental precautions:** No special measures required.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling:**
· **Precautions for safe handling** Ensure that suitable extractors are available on processing machines

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· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

7440-47-3 chromium	
PEL	Long-term value: 1* 0.5** mg/m³ *metal;**inorganic compds., as Cr
REL	Long-term value: 0.5* mg/m³ *metal+inorg.compds.as Cr;See Pocket Guide App. C
TLV	Long-term value: 0.5 mg/m³
7440-02-0 nickel	
PEL	Long-term value: 1 mg/m³
REL	Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A
TLV	Long-term value: 1.5* mg/m³ elemental, *inhalable fraction
471-34-1 calcium carbonate	
PEL	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV	TLV withdrawn
7439-96-5 manganese	
PEL	Ceiling limit value: 5 mg/m³ as Mn
REL	Short-term value: 3 mg/m³ Long-term value: 1 mg/m³ fume, as Mn
TLV	Long-term value: 0.02* 0.1* mg/m³ as Mn; *respirable **inhalable fraction
7789-75-5 calcium fluoride	
PEL	Long-term value: 2.5 mg/m³ as F
REL	Long-term value: 2.5 mg/m³ as F
TLV	Long-term value: 2.5 mg/m³ as F, BEI
7439-98-7 molybdenum	
PEL	Long-term value: 15* mg/m³ *Total dust
TLV	Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction

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· **Ingredients with biological limit values:**

7789-75-5 calcium fluoride

BEI 2 mg/L
Medium: urine
Time: prior to shift
Parameter: Fluoride (background, nonspecific)

3 mg/L
Medium: urine
Time: end of shift
Parameter: Fluoride (background, nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:** Wash hands before breaks and at the end of work.
· **Breathing equipment:** Filter P2
· **Protection of hands:**
Heat protection gloves (non-combustible)
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Safety glasses
· **Body protection:**
Protective work clothing
Wear hand, head, and body protection which help to prevent injury from radiation, sparks, 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, and well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Solid
Color:	According to product specification
· **Odor:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
Relative density	Not determined.

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Vapor density	Not applicable.
Evaporation rate	Not applicable.
Water:	Insoluble.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Dynamic:**	Not applicable.
· **Kinematic:**	Not applicable.
· **Organic solvents:**	0.0 %
· **Other information**	No further relevant information available.

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10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
Chromoxide.
The present OSHA PEL (Permissible Exposure Limit) - published in the U.S. Federal Register 71, pages: 10099-10385 - for hexavalent Chromium (Cr +6) is 0.005 mg/m3 which will result in a significant reduction from the 5 mg/m3 general welding fume (NOC) level. It applies to soluble chromates of the types found in covered stainless electrode fumes.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
Workers exposed to hexavalent chrome (CrVI) are at an increased risk of developing lung cancer. It is also possible that occupational exposure to (CrVI) may result in asthma, and damage to the nasal epithelia and skin. To avoid any risk follow the requirements of the OSHA rule for hexavalent chromium published on February 28, 2006 in the U.S. Federal Register, pages:10099-10385 which established an 8-hour time-weighted average (TWA) exposure limit of 5 micrograms of hexavalent chrome per cubic meter of air (5 µg/m³). This is a considerable reduction from the previous PEL of 1 milligram per 10 cubic meters of air (1 mg/10 m³, or 100 µg/m³) reported as Probably Chromium(VI)oxide, which is equivalent to a limit of 52 µg/m³ as (Cr+6)). This rule also contains ancillary provisions for worker protection such as requirements for exposure determination, preferred exposure control methods, including a compliance alternative for a small sector for which the new PEL is infeasible, respiratory protection, protective clothing and equipment, hygiene areas and practices, medical surveillance, recordkeeping, and start-up dates that include four years for the implementation of engineering controls to meet the PEL.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-47-3	chromium	3
7440-02-0	nickel	1
7789-75-5	calcium fluoride	3

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· **NTP (National Toxicology Program)**		
7440-02-0	nickel	R

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:** Generally not hazardous for water
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Must be specially treated adhering to official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **Transport hazard class(es)**	
· **Class**	-
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.
· **Sara**

· **Section 355 (extremely hazardous substances):**	
7440-47-3	chromium
7723-14-0	phosphorus

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· **Section 313 (Specific toxic chemical listings):**

7440-47-3	chromium
7440-02-0	nickel
7439-96-5	manganese
7723-14-0	phosphorus

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-02-0	nickel

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7440-47-3	chromium	D
7439-96-5	manganese	D
7723-14-0	phosphorus	D

· **TLV (Threshold Limit Value established by ACGIH)**

7440-47-3	chromium	A4
7440-02-0	nickel	A5
7789-75-5	calcium fluoride	A4
7439-98-7	molybdenum	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

7440-02-0	nickel

· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Additional information:**
Detailed information can be found on our webpage www.voestalpine.com (Environment, REACH at voestalpine).

· **Department issuing SDS:** R&D
· **Contact:** (281) 499 - 1212
· **Date of preparation / last revision** 01/13/2016 / -
· **Abbreviations and acronyms:**
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
TRGS: Technische Regeln für Gefahrstoffe (Technical Rules for Dangerous Substances, BAuA, Germany)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative

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NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit

· **** Data compared to the previous version altered.***