

Section 1. Identification

Product identifier : Straight Length Wire Triple Flex
Product code : Not available.
Other means of identification : Not available.
Product type : Solid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Dental product: Orthodontic Appliance
This product, under the normal conditions of use, meets the definition of an "ARTICLE".
Area of application : Professional applications.

Manufacturer : **Ormco Corporation**
1332 S. Lone Hill Avenue
Glendora, CA 91740-5339
Telephone no.: 1-800-854-1741

e-mail address of person responsible for this SDS : OrmcoCustCare@sybrondental.com

Emergency telephone number (with hours of operation) : CHEMTREC® (24 hours) U.S. : 1-800-424-9300 International: +1-703-527-3887

Section 2. Hazard identification

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.
Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.
Response : Not applicable.
Storage : Not applicable.
Disposal : Not applicable.
Supplemental label elements : Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 45.5%

Other hazards which do not result in classification : If dust or fumes are generated during processing (e.g., brazing, cutting, grinding, sawing, and welding) hazardous chemicals could be released.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification : Not available.

Section 3. Composition/information on ingredients

Ingredient name	% (w/w)	CAS number
nickel	35	7440-02-0
cobalt	30	7440-48-4
molybdenum	18	7439-98-7
manganese	10	7439-96-5
tungsten	6.5	7440-33-7
silicon	4.5	7440-21-3
aluminium powder (stabilised)	3.5	7429-90-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye contact** : No special measures are required. Get medical attention if symptoms occur.
- Inhalation** : No special measures required. Get medical attention if symptoms occur.
- Skin contact** : No special measures required. Get medical attention if symptoms occur.
- Ingestion** : If swallowed then seek immediate medical assistance.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : In case of major fire and large quantities: No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : Do not use water jet.

Specific hazards arising from the chemical : Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
metal oxide/oxides

Special protective actions for fire-fighters : In case of major fire and large quantities: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Low release. For professional use only. Handling of product in very small amounts or in situations where release is highly unlikely

For emergency responders : Low release. See also the information in "For non-emergency personnel".

Environmental precautions : No special measures are required.

Methods and materials for containment and cleaning up

Small spill : No special measures required.

Large spill : No special measures required.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : No special measures are required.

Advice on general occupational hygiene : No special measures are required.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Nickel	<p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 3 mg/m³ 15 minutes. Form: Inhalable fraction TWA: 1.5 mg/m³ 8 hours. Form: Inhalable fraction</p> <p>CA Ontario Provincial (Canada, 7/2015). TWA: 1 mg/m³ 8 hours. Form: Inhalable fraction.</p> <p>CA Alberta Provincial (Canada, 4/2009). 8 hrs OEL: 1.5 mg/m³ 8 hours.</p> <p>CA British Columbia Provincial (Canada, 5/2015). TWA: 0.05 mg/m³, (as Ni) 8 hours.</p> <p>CA Quebec Provincial (Canada, 1/2014). TWAEV: 1 mg/m³ 8 hours.</p>

Section 8. Exposure controls/personal protection

cobalt

CA Alberta Provincial (Canada, 4/2009).
8 hrs OEL: 0.02 mg/m³, (as Co) 8 hours.
CA British Columbia Provincial (Canada, 5/2015).
TWA: 0.02 mg/m³, (as Co) 8 hours.
CA Ontario Provincial (Canada, 7/2015).
TWA: 0.02 mg/m³, (as Co) 8 hours. Form: Inorganic
CA Quebec Provincial (Canada, 1/2014).
Skin sensitizer.
TWAEV: 0.02 mg/m³, (as Co) 8 hours.
CA Saskatchewan Provincial (Canada, 7/2013).
STEL: 0.06 mg/m³, (measured as Co) 15 minutes.
TWA: 0.02 mg/m³, (measured as Co) 8 hours.

molybdenum

CA British Columbia Provincial (Canada, 5/2015).
TWA: 10 mg/m³ 8 hours. Form: Inhalable
TWA: 3 mg/m³ 8 hours. Form: Respirable
CA Saskatchewan Provincial (Canada, 7/2013).
STEL: 20 mg/m³, (measured as Mo) 15 minutes. Form: Inhalable fraction
TWA: 10 mg/m³, (measured as Mo) 8 hours. Form: Inhalable fraction
STEL: 6 mg/m³, (measured as Mo) 15 minutes. Form: respirable fraction
TWA: 3 mg/m³, (measured as Mo) 8 hours. Form: respirable fraction
CA Ontario Provincial (Canada, 7/2015).
TWA: 10 mg/m³, (as Mo) 8 hours. Form: Inhalable fraction.
TWA: 3 mg/m³, (as Mo) 8 hours. Form: Respirable fraction.
CA Alberta Provincial (Canada, 4/2009).
8 hrs OEL: 3 mg/m³, (as Mo) 8 hours. Form: Respirable
8 hrs OEL: 10 mg/m³, (as Mo) 8 hours.

manganese

CA British Columbia Provincial (Canada, 5/2015).
TWA: 0.2 mg/m³, (as Mn) 8 hours.
CA Alberta Provincial (Canada, 4/2009).
8 hrs OEL: 0.2 mg/m³, (as Mn) 8 hours.
CA Ontario Provincial (Canada, 7/2015).
TWA: 0.2 mg/m³, (as Mn) 8 hours.
CA Quebec Provincial (Canada, 1/2014).
TWAEV: 0.2 mg/m³, (as Mn) 8 hours. Form: Total dust.
CA Saskatchewan Provincial (Canada, 7/2013).
STEL: 0.6 mg/m³, (measured as Mn) 15 minutes.
TWA: 0.2 mg/m³, (measured as Mn) 8 hours.

tungsten

CA Alberta Provincial (Canada, 4/2009).
8 hrs OEL: 5 mg/m³, (as W) 8 hours.
15 min OEL: 10 mg/m³, (as W) 15 minutes.

Section 8. Exposure controls/personal protection

silicon	<p>CA British Columbia Provincial (Canada, 5/2015). TWA: 5 mg/m³ 8 hours. STEL: 10 mg/m³ 15 minutes.</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 10 mg/m³, (measured as W) 15 minutes. TWA: 5 mg/m³, (measured as W) 8 hours.</p> <p>CA Ontario Provincial (Canada, 7/2015). STEL: 10 mg/m³, (as W) 15 minutes. TWA: 5 mg/m³, (as W) 8 hours.</p>
Aluminium powder (stabilized)	<p>CA British Columbia Provincial (Canada, 5/2015). TWA: 3 mg/m³ 8 hours. Form: Respirable dust TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>CA Quebec Provincial (Canada, 1/2014). TWAEV: 10 mg/m³ 8 hours. Form: Total dust.</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. TWA: 10 mg/m³ 8 hours.</p> <p>CA Alberta Provincial (Canada, 4/2009). Skin sensitizer. 8 hrs OEL: 10 mg/m³ 8 hours. Form: Metal Dust</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³, (measured as Al) 15 minutes. Form: Metal dust TWA: 10 mg/m³, (measured as Al) 8 hours. Form: Metal dust STEL: 10 mg/m³, (measured as Al) 15 minutes. Form: Pyro powder TWA: 5 mg/m³, (measured as Al) 8 hours. Form: Pyro powder STEL: 4 mg/m³, (measured as Al) 15 minutes. TWA: 2 mg/m³, (measured as Al) 8 hours.</p> <p>CA British Columbia Provincial (Canada, 5/2015). TWA: 1 mg/m³ 8 hours. Form: Respirable</p> <p>CA Ontario Provincial (Canada, 7/2015). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction.</p> <p>CA Quebec Provincial (Canada, 1/2014). TWAEV: 10 mg/m³, (as Al) 8 hours.</p>

Appropriate engineering controls : No special measures are required for small quantities under normal and intended conditions of product use.

Environmental exposure controls : No special measures are required for small quantities under normal and intended conditions of product use.

Individual protection measures

Hygiene measures : No special measures are required for small quantities under normal and intended conditions of product use.

Section 8. Exposure controls/personal protection

- Eye/face protection** : No special measures are required for small quantities under normal and intended conditions of product use.
- Skin protection**
- Hand protection** : No special protection is required.
- Body protection** : No special measures are required for small quantities under normal and intended conditions of product use.
- Other skin protection** : No special measures are required for small quantities under normal and intended conditions of product use.
- Respiratory protection** : No special measures are required for small quantities under normal and intended conditions of product use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Solid. [Formed wire]
- Color** : Metallic./Gray.
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH** : Not applicable.
- Melting point** : Not applicable.
- Boiling point** : Not applicable.
- Flash point** : Not applicable.
- Evaporation rate** : Not applicable.
- Flammability (solid, gas)** : Not applicable.
- Lower and upper explosive (flammable) limits** : Not applicable.
- Vapor pressure** : Not applicable.
- Vapor density** : Not applicable.
- Relative density** : Not applicable.
- Solubility** : Insoluble in the following materials: cold water and hot water.
- Partition coefficient: n-octanol/water** : Not applicable.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not applicable.
- Viscosity** : Not applicable.
- Flow time (ISO 2431)** : Not applicable.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : No specific data.

Section 10. Stability and reactivity

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
cobalt	LC50 Inhalation Dusts and mists	Rat - Male, Female	<0.05 mg/l	4 hours
molybdenum	LD50 Oral	Rat	550 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	>5.84 mg/l	4 hours
manganese	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	5.14 mg/l	4 hours
silicon	LD50 Oral	Rat	9 g/kg	-
	LD50 Oral	Rat	3160 mg/kg	-

Conclusion/Summary : Non-cytotoxic.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
manganese	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
tungsten	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
silicon	Eyes - Mild irritant	Rabbit	-	3 milligrams	-

Conclusion/Summary

Skin : Not available.

Eyes : Not available.

Respiratory : Not available.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
Straight Length Wire Triple Flex	skin	Guinea pig	Not sensitizing

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Section 11. Toxicological information

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
molybdenum	Category 3	Not applicable.	Respiratory tract irritation
Aluminium powder (stabilized)	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Nickel manganese	Category 1 Category 2	Inhalation Not determined	respiratory tract central nervous system (CNS) and lungs
Aluminium powder (stabilized)	Category 2	Not determined	lungs

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary : Not available.
General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Nickel	Acute EC50 2 ppm Marine water	Algae - <i>Macrocystis pyrifera</i> - Young	4 days
	Acute EC50 450 µg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute IC50 0.31 mg/l Marine water	Crustaceans - <i>Americamysis bahia</i> - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
cobalt	Acute LC50 47.5 ng/L Fresh water	Fish - <i>Heteropneustes fossilis</i>	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - <i>Glenodinium halli</i>	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - <i>Cyprinus carpio</i>	4 weeks
molybdenum	Acute LC50 4400 µg/l	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 3.4 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
manganese	Acute LC50 >200000 µg/l	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 800 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
	Chronic NOEC 500 mg/l Marine water	Algae - <i>Glenodinium halli</i>	72 hours
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	4 days
Aluminium powder (stabilized)	Acute LC50 29000 µg/l	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Chronic NOEC 1.7 mg/l Fresh water	Daphnia - Water Flea- <i>Ceriodaphnia dubia</i>	8 days
	Acute LC50 38000 µg/l	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 120 µg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i> - Embryo	96 hours
	Chronic NOEC 9 mg/l Fresh water	Aquatic plants - <i>Ceratophyllum demersum</i>	3 days

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
cobalt	-	15600	high
silicon	57 to 77	-	high

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Section 14. Transport information

	TDG Classification	DOT Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: Nickel (and its compounds); Manganese (and its compounds); Copper (and its compounds); Cobalt (and its compounds); Chromium (and its compounds); Aluminum (fume or dust only)

CEPA Toxic substances : None of the components are listed.

Canada inventory : All components are listed or exempted.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

History

Date of issue/Date of revision : 22/11/2016

Date of previous issue : No previous validation

Version : 1

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations
- HPR = Hazardous Products Regulations

Procedure used to derive the classification

Classification	Justification
Not classified.	

References : HPR = Hazardous Products Regulations

✔ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.