

SSECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: **Stainless Steel Wire, All Grades**
Product name: Kobayashi Tie Hooks
Stainless Steel Orthoflex Tech
TNT Archwires
Bond A Braid

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

1.2.1. Relevant identified uses

Use of the substance/mixture: For professional use only
Lingual retention archwires

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer:

Reliance Orthodontic Products, Inc. 1540 West Thorndale Ave.
Itasca, IL 60143 USA
630-773-4009, during normal business hours
www.relianceorthodontics.com

EC Representative:

Emergo Europe, Prinsessgracht 20
2514 AP The Hague, The Netherlands

Australian Sponsor: Emergo Australia, 201 Sussex St.

Darling Park, Tower II, Level 20
Sydney, NSW 2000 Australia

1.4. Emergency telephone number

Emergency number: CHEMTREC – 24 Hour Hazmat Emergency Communications Center
Domestic: 1-800-424-9300 Outside the US: 1-703-527-3887, collect calls accepted

SECTION 2: Hazards identification

European Union (EU)

Stainless steel is not hazardous according to the criteria specified in European Directives 67/548/EEC and 1999/45/EC.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1. Classification of the substance or mixture

OSHA HCS 2012

This product is generally an article and considered non-hazardous in its solid form, but is regulated under OSHA for the release of dust and fumes during mechanical processing operations.

Skin Sensitization 1B, H317
Carcinogenicity 1B, H350
Specific Target Organ Toxicity Single Exposure 1, H371
Specific Target Organ Toxicity Repeated Exposure 1, H373
Suspected of damaging the unborn child, H361d
Respiratory Sensitization 1B, H334

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP):



GHS02



GHS07

Signal word (CLP):

Danger

Hazard statements (CLP):

There are no health hazards from stainless steel wire in solid form.
Exposure to dust and/or fumes from processing such as burning, welding, sawing, brazing and grinding may cause serious health effects.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.
Causes damage to organs – lungs via inhalation.
Causes damage to organs – lungs through prolonged or repeated exposure via inhalation.
May form combustible dust concentrations in the air.
Prevention • Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dusts, fumes and gasses.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the work place.
Wear protective gloves – work gloves and eye/face protection – safety glasses or goggles.
In case of inadequate ventilation wear respiratory protection.

Precautionary statements (CLP):

Response • If INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF exposed or concerned : Get medical advice/attention.

IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists : Get medical advice/attention.

IF ON SKIN : Wash with plenty of soap and water. If skin irritation or rash occurs : Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage/Disposal •Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

OTHER HAZARDS

OSHA HCS 2012 No Data available

OTHER INFORMATION

NFPA •Health = 1, Flammability = 0, Special Information = None

HMIS •Health = 1*, Flammability = 0, Reactivity = 0, PPE = E

*Chronic Health Hazard

E = Safety glasses, gloves and respirator if above exposure levels

Rinse skin with water/shower

Full text of H-phrases: see section 16

2.3. Other hazards

Adverse physicochemical, human health and environmental effects

No additional information available

SECTION 3: Composition/information on ingredients

Mixtures

Stainless steel in its solid state is not considered hazardous. However, operations such as burning, welding, sawing, brazing or grinding may release dust and/or fumes, which may present health hazards. These elements may appear in some or various combinations in any particular grade of stainless steel.

3.1. Substance

Not applicable

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3.2. Mixture

Composition

Chemical Name	Identifiers	%
Aluminum	CAS: 7429-90-5	0-1%
Chromium*	CAS: 7440-47-3	10.5-30%
Cobalt	CAS: 7440-48-4	0-1%
Copper	CAS: 7440-50-8	0-5%
Iron	CAS: 7439-89-6	45-90%
Manganese	CAS: 7439-96-5	0-15%
Molybdenum	CAS: 7439-98-7	0-5%
Nickel	CAS: 7440-02-0	0-40%
Silicon	CAS: 7440-21-3	0-3%
Tantalum	CAS: 7440-25-7	Trace
Titanium	CAS: 7440-32-6	0-1
Tungsten	CAS: 7440-33-7	Trace
Vanadium	CAS: 1314-62-1	Trace
Lead	CAS: 7439-92-1	Trace

*Stainless steel products as provided contain chromium metal in the zero-valence state. As such, chromium metal does not present in usual health hazard. However, operations such as burning, welding, sawing, brazing or grinding may generate airborne concentrations or hexavalent chromium.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation • IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if systems occur.

Skin • If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye • IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion • Low hazard for usual industrial or commercial handling. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed

*Stainless steel products as provided contain chromium metal in the zero-valence state. As such, chromium metal does not present in usual health hazard. However, operations such as burning, welding, sawing, brazing or grinding may generate airborne concentrations or hexavalent chromium.

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

Notes to physician: May cause sensitization by skin contact or inhalation. Treat symptomatically.

SECTION 5: Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media • For solid formed alloys, as appropriate for surrounding fire. A fire involving finely divided alloy should be treated as a Class D metal fire. Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, G-1 or MET-I-X powder.

Unsuitable Extinguishing Media • Do not use halogenated extinguishing agents or foam.

5.2. Special hazards arising from the substance or mixture

Hazardous Combustion Products:

May produce hazardous metal fumes.

Unusual Fire and Explosion Hazards:

Stainless steel products in its as-shipped form are not considered combustible. During subsequent processing (cutting, welding grinding, etc.), the generation of dust in high concentrations may present fire and explosion hazards.

5.3. Advice for firefighters

- Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

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SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions

No data available

General measures:

Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

6.1.1. For non-emergency personnel

No additional information available.

6.1.2. For emergency responders

No additional information available.

Solid form: Not Applicable. In dusty environment, ELIMINATE all ignition sources (no smoking, flares, sparks and flames in immediate area). Clean up using methods which avoid dust generation. Compressed air should not be used. During cleanup avoid inhalation and skin eye contact. Provide local exhaust or dilution ventilation as required.

6.2. Environmental precautions

Not applicable to stainless steel in solid state.

6.3. Methods and material for containment and cleaning up

Containment/Clean-up

Use appropriate Personal Protective Equipment (PPE)

Measures

Clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., cleaning with compressed air).

6.4. Reference to other sections

No additional information available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling:

No specific requirements for solid formed steel product. Do not breathe (dust or fumes). Do not use in areas without adequate ventilation. Do not use sparking tools. Keep away from heat and ignition sources – No Smoking. Use good safety and industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions:

Do not store and transport with oxidizers, acids, etc.

None for solid stainless steel product.

Special Packaging Materials

Incompatible materials or Ignition Sources

Oxidizers. Reacts with strong acids to form explosive hydrogen gas and oxides of nitrogen.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits/Guidelines * No data available on product. Individual elements may be emitted during processing.

Component	CAS #		OSHA PEL-TWA	ACGIH TLV-TWA
Iron [Iron oxide] Alloying Elements	(Fe)	7439-89-6	10.0 mg/m ³ [fume]	5.0 mg/m ³ ; A4 ² [dust & fume]
Chromium (Metal)	(Cr)	7440-47-3	1.0 mg/m ³ [metal & insoluble salt] 0.5 mg/m ³ [Cr (III)] 5.0 µg/m ³ [Cr (VI)] 2.5 µg/m ³ [Cr (VI)] Action Level	0.5 mg/m ³ ; A4 [metal & Cr (III)] 0.05 mg/m ³ ; A1; BEI [Water-Soluble Cr (VI) compounds] 0.01 mg/m ³ ; A1 [Insoluble Cr (VI) compounds]

Section 8: Exposure controls/personal protection (continued)

Component	CAS #		OSHA PEL-TWA	ACGIH TLV-TWA
Nickel (Metal)	(Ni)	7440-02-0	1 mg/m ³ [metal], [insoluble], and [insoluble] compounds]	1.5 mg/m ³ ; A5 [elemental] 0.2 mg/m ³ ; A1 [Insoluble compounds] 0.1 mg/m ³ ; A1 [Nickel sub sulfide]
Manganese	(Mn)	7439-96-5	5 mg/m ³ (ceiling)	0.2 mg/m ³
Molybdenum	(Mo)	7439-98-7	5 mg/m ³ [soluble compounds as MO] 15 mg/m ³ [total dust]	5 mg/m ³ [soluble compound as MO] 10 mg/m ³ [insoluble compound as MO]
Copper	(Cu)	7440-50-8	0.1 mg/m ³ [fume] 1.0 mg/m ³ [dust & mist]	0.2 mg/m ³ [fume] 1.0 mg/m ³ [dust & mist]
Titanium	(Ti)	7440-32-6	15.0 mg/m ³ [total dust]	10 mg/m ³ ; A4 [total dust]
Silicon	(Si)	7440-21-3	15.0 mg/m ³ [total dust] 5.0 mg/m ³ [respirable dust]	10.0 mg/m ³ [total dust]
Tantalum	(Ta)	74440-25-7	5.0 mg/m ³ [metal & oxide dust] 10 mg/m ³ STEL	5.0 mg/m ³ [metal & oxide dust]
Cobalt	(Co)	7440-48-4	0.1 mg/m ³ [metal, dust & fume]	0.02 mg/m ³ ; A3 ⁵ [metal, dust & fume]
Lead	(Pb)	7439-92	0.05 mg/m ³	0.05 mg/m ³
Aluminum	(Al)	7429-90-5	15.0 mg/m ³ [metal & dust] 5.0 mg/m ³ [respirable dust]	1.0 mg/m ³ [Respirable dust] 5.0 mg/m ³ [Welding fume]
Tungsten	(Ti)	7440-32-6	15.0 mg/m ³ [Total dust] 5.0 mg/m ³ [respirable dust]	1.0 mg/m ³ , 3 mg/m ³ STEL [soluble] 5.0 mg/m ³ , 10 mg/m ³ STEL [insoluble]
Vanadium	(V)	1314-62-1	0.5 mg/m ³ [ceiling] 0.1 mg/m ³ [ceiling]	0.05 mg/m ³

8.2. Exposure controls

Engineering Measures/Controls •Adequate ventilation system as needed to control concentrations of airborne contaminants below applicable threshold limit values. Use only appropriately classified electrical equipment.

Personal Protective Equipment

Respiratory •Use of NIOSH/MSHA approved dust respirator is recommended where airborne dust levels excel appropriate PELs and TLVs.

Gloves •Wear protective gloves – suitable for protection against physical injury and skin contact during handling and processing.

Eyes •Wear protective glasses or goggles should be worn when there is probability of flying particles or elevated levels of dust or fume.

General Industrial Hygiene Considerations •Practice good housekeeping and avoid creating/breathing dust. Do not allow dust to collect. Maintain, clean, and fit test respirators in accordance with OSHA regulations. Provide readily accessible eyewash stations.

Environmental Exposure Controls •No data available.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical Form	Solid	Appearance/Description	Solid wire of various grades.
pH	Not applicable	Melting Point	2500 to 2800°F
Odor	Odorless	Odor Threshold	Not applicable
Boiling Point	Not applicable	Flash Point	Not applicable
Evaporation Rate	Not applicable	Flammability (solid, gas)	Not flammable
Upper Flammable Limit%	Not applicable	Lower Flammable Limit	Not applicable
Vapor Pressure	Not applicable	Vapor Density	Not applicable
Relative Density	Not applicable	Specific gravity	7.65 - 7.94 g/cm ³
Solubility	Not applicable	Partition Coefficient	No data
Auto-ignition Temp	Not applicable	Decomposition Temperature	No data

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

- No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

- Stable under normal conditions of transport, storage and use for solid formed product.

10.3. Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4. Conditions to avoid

- Contact with mineral acids will release flammable hydrogen gas. Dust formation.

10.5. Incompatible materials

- Oxidizers; reacts with strong acids to form explosive hydrogen gas.

10.6. Hazardous decomposition products

- Hazardous decomposition may occur during certain operations such as welding, burning, melting or hot rolling, generating hazardous metal fumes. Hexavalent chromium which is a suspect carcinogen may result from pickling of stainless steel.

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SECTION 11: Toxicological Information

Other Material Information • Toxicological impacts expected to be minimal for products in purchased form. Individual component information is provided below if available.

Components	Toxicity information	LD ₅₀ Oral
Aluminum (0-1%)	No data available.	No data available.
Chromium (10.5-30%)	Effects of chronic exposure to material: IARC lists certain hexavalent chromium compounds under its Group 1 category "confirmed carcinogenicity to humans." And metallic chromium under its group 3 category – "not classifiable as to their carcinogenicity to humans." Chromium metal is classified as a carcinogenic by NTP. Dermatitis may result from exposure to chromium fumes.	No data available.
Copper (0-5%)	Effects of acute exposure to material: Inhalation overexposure to manganese or copper (or zinc coated products) may cause metal fume fever characterized by fever and chills (flue like symptoms) which appear 4-6 hours after exposure with no long-term effects. Effects of chronic exposure to material: Copper fumes may result in Wilson's Disease (characterized by hepatic cirrhosis, brain damage, demyelination, renal disease, and copper deposition in the cornea).	No data available.
Manganese (0-15%)	Effects of acute exposure to material: Inhalation overexposure to manganese or copper (or zinc coated products) may cause metal fume fever characterized by fever and chills (flue like symptoms) which appear 4-6 hours after exposure with no long-term effects. Effects of chronic exposure to material: Existing studies are inadequate to assess its carcinogenicity. Susceptible to Parkinson's disease, metal fume fever and kidney damage.	9,000 mg/kg Oral-Rat
Molybdenum (0-5%)	No data available.	No data available.
Nickel (0-40%)	Effects of chronic exposure to material: IARC lists metallic nickel under its Group 2B category – "possibly carcinogenic to humans." Nickel may cause skin sensitivity.	>9,000 mg/kg Oral-Rat
Silicon (0-3%)	No data available.	3,160 mg/kg
Tantalum (Trace)	No data available.	No data available.
Tungsten (Trace)	No data available.	No data available.
Cobalt (0-1%)	Effects of chronic exposure to material: Cobalt dust may result in an asthma-like condition (cough, shortness of breath). IARC lists metallic cobalt under its Group 2B category – "possibly carcinogenic to humans."	6,171 mg/kg Oral-Rat
Iron (45-90%)	Effects of chronic exposure to material: Inhalation overexposures may cause a benign pneumoconiosis (siderosis) with few or no symptoms. Iron containing welding fume has an exposure limit of 5mg/m ³ (ACGIH-TLV'S 2011), WELDING FUME MAY ALSO CONTAIN CONTAMINANTS FROM FLUES OR WELDING CONSUMABLES. Prolonged skin contact may cause reddening and drying of skin or dermatitis in sensitive individuals due to nickel and/or chromium content in steel.	30,000 mg/kg Oral-Rat

IARC – International Agency for Research on Cancer Summaries & Evaluation (2008)

NTP – National Toxicology Program

Likely routes of entry: None for stainless steel in its natural state.

Eyes: High concentration of dust may cause irritation to the eyes.

Skin: Prolonged skin contact with dust may cause skin irritation to sensitive individuals.

Inhalation: Inhalation of metal particulate or elemental oxide fumes generated during welding, burning or grinding machining may pose acute or chronic health effects.

11.1. Information on toxicological effects

GHS Properties	Classification
Reproductive effects	N/A
Teratogenicity of material	N/A
Carcinogenicity	CHROMIUM: IARC lists certain hexavalent chromium compounds under its Group 1 category "confirmed carcinogenicity to humans." And metallic chromium under its group 3 category – "not classifiable as to their carcinogenicity to humans." Chromium metal is classified as a carcinogenic by NTP. NICKEL: IARC lists metallic nickel under its Group 2B category – "possibly carcinogenic to humans." COBALT: IARC lists metallic cobalt under its Group 2B category – "possibly carcinogenic to humans."
Mutagenicity of material	N/A
Synergistic materials	N/A
Aspiration Hazard	No data
STOT-RE (Repeated exposure)	Respiratory system. Allergic skin reactions.
STOT-SE (Single exposure)	No data.
Sensitization of material	N/A
LD ₅₀ (of material)	Not established

STOT – Specific Target Organ Toxicity

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Ecotoxicity:

No data available in the stainless steel in its natural solid state. However, individual components of the material have been found to be toxic to be the environment.

COMPONENT	TOXICITY TO FISH	TOXICITY TO ALGAE	TOXICITY TO MICROORGANISMS
Chromium	LD ₅₀ Common Carp 96hr. 0.56mg/l	-	-
Iron	LD ₅₀ Fathead minnow 96 hr. 10-100 mg/l	-	-
Nickel	LD ₅₀ Common Carp 96 hr. 1.3mg/l	EC ₅₀ Freshwater Algae 72 hr. 0.18 mg/l	EC ₅₀ Freshwater Algae 48 hr. 1.0 mg/l

SECTION 12: Ecological information

12.1. Toxicity

Persistence and degradability

- No data available

Bioaccumulative potential

- No data available

Mobility in the Soil

- No data available for stainless steel in its natural solid state. Individual metal dusts may migrate into soil and groundwater and be absorbed by plants.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal methods Steel scrap should be recycled whenever possible.

Container cleaning and disposal Dispose of content and/or container in accordance with local, regional, national and or international regulations.

SECTION 14: Transportation information

General shipping information: Stainless steel is not regulated for shipping.

Shipping name and description: N/A

UN Number: N/A

Hazard class: N/A

Packaging group/risk group: N/A

Note: Stainless steel transported in coiled form is under tension and represents a significant source of potential energy due to the tension induced by coiling. It will uncoil to try to lay flat in a long strip when banding is cut or other forces are released. Uncoiling can be sudden and catastrophic and measures should be taken to ensure that uncoiling will not occur.

Transport regulations:

Canadian Transportation of Dangerous Goods Regulations (TDG) March 2011.

US Department of Transportation (Dot) Hazardous Materials shipping information (Title 49 – Transportation March 2011)

SECTION 15: Regulatory information

Regulatory Information •The following regulatory information relating to a Reliance Orthodontic Products, Inc., product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

OSHA Regulations •Air Contaminant (29 CFR 1910.1000 Table Z-1, Z-2, Z-3). The product, stainless steel as a whole is not listed. However, individual components of the product are listed.

Additional Canadian regulations:

WHIMS CLASSIFICATION: Class D2A/D28: Materials causing other toxic effects.

Domestic substances list: The components of this material are on the federal DSL inventory.

Additional US regulations: The components of this material are subject to the reporting requirements of Section 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA = Oct 2006) as follows:

Inventory				
Component	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR 302.4)	SARA 313 (40 CFR 372.65)	CERLA Reportable quantities
Aluminum	No	No	Yes	None listed
Chromium	No	No	Yes	5,000
Cobalt	No	No	Yes	None listed
Copper	No	No	Yes	5,000 lb.
Manganese	No	No	Yes	None listed
Nickel	No	No	Yes	100lb.

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SARA threshold planning quantity: There are no specific Threshold Planning Quantities for the components of the material. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4.540kg) therefore applies, per 40 CFR 370.20.

TSCA inventory status: The components for this material are listed on the Toxic Substances Control Act Inventory.

CERCLA reportable quantity (RQ): RQ's for Hazardous Substances in the Comprehensive Environment Response, Compensation, and Liability Act are: Chromium = 5,000 lbs. (2270 kg); Copper = 5,000 lbs. (2270 kg); Nickel = 500 lbs. (45 kg).

California (Proposition 65): The Chromium (VI) component of this material is known in the State of California to cause cancer.
The Nickel component of this material is known in the State of California to cause cancer.
The Cobalt component of this material is known in the State of California to cause cancer.
Arsenic (inorganic), Cadmium and Lead are possible trace elements known in the State of California to cause cancer.

Other federal regulations: Pennsylvania R-T-K list: Aluminum, Manganese, Molybdenum, Nickel, Silicon, Chromium, Cobalt, Copper, and Tantalum.
New Jersey, R-T-K list: Aluminum, Chromium, Cobalt, Copper, and Manganese, and Nickel.

SECTION 16: Other information

Stainless Steel

HMIS: Hazardous Materials Identification System:

HMIS Code: H=1*, F=0, R=0, PPE: See Section 8

*Denotes possible chronic hazard if airborne dusts or fumes are generated.

Health	1*
Flammability	0
Reactivity	0

Last Revision Data

•December 21, 2017

Preparation Date

•April 18, 2019

Disclaimer/Statement of Liability

•This information is taken from sources or based upon data believed to be reliable. however, Reliance Orthodontic Products, Inc. makes no warranty as to the absolute correctness or sufficiency of any of the foregoing information or that additional or other measures may not be required under particular conditions.

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.