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Section 1: Identification

Material Identifier:

Material:	Product Form	Intended use in Denovo products
High Performance Stainless Steels: 304 & 305	Solid Metal Alloy	Solid stainless steel used to form bands, crowns, tubes and wires.
Solid Solder:	Solid Brazing Alloy	Solder used to weld the tubing to the band or crown. Less than 5% of the overall surface area.

Denovo Product Material Details

	Stainless Steel 304	Stainless Steel 305	Solid Solder
Space Maintainer System	✓		✓
Matrix Band System	✓		
Strip-T System	✓	✓	
Molar Band System	✓		
SS Molar Crowns	✓		
SS Anterior Crowns		✓	
Instruments	✓		

Country of Origin

Material:	Country or Origin
High Performance Stainless Steels: 304	Manufactured in the United States of America
High Performance Stainless Steels: 305	Manufactured in the United States of America
Solid Solder:	Manufactured in the United States of America

Section 2: Hazards Identification

Classification (GHS-US):

Materials covered by this SDS are articles and, as such, are not considered hazardous under the OSHA hazardous communications standard (29 CFR 1910.1200). Materials resulting from machining, milling, grinding, melting, welding or cutting these materials may be considered hazardous under the OSHA hazardous communications standard (29 CFR 1910.1200).

Label Elements:

Hazard Pictograms, Signal Word, & Hazard Statements (GHS-US):

Symbols	Hazard	Hazard Statements	Applicable?
	Carcinogenicity	May cause cancer	n/a
	Respiratory Sensitizer	May cause allergy, asthma, or breathing difficulties if inhaled.	n/a
	STOT (repeated exposure)	Causes damage to organs through prolonged, repeated exposure.	n/a
	Toxic Reproduction	Suspected of damage to unborn child	n/a
	Acute Oral Toxicity	Harmful if swallowed	n/a
	Skin Sensitizer	May cause allergic skin reaction	Nickel can cause skin sensitization; usually only to a mucous membrane
	STOT (single exposure)	May cause respiratory irritation	n/a
N/A	Eye irritation	Causes eye irritation	n/a

Precautionary Statements (GHS-US):

PREVENTION	FIRST AID RESPONSE
<p>Machine, weld, cut in a well-ventilated area with proper eye protection.</p> <p>Wash thoroughly after handling.</p> <p>Don't eat, drink or smoke while handling this product.</p> <p>Use protective equipment as required.</p> <p>Obtain special instructions before use.</p> <p>Do not handle until all safety precautions have been read and understood.</p>	<p>Eyes: Carefully flush eyes with water for at least 15 minutes. Seek medical attention if eye irritation persists.</p> <p>Skin: If allergic irritation presents, wash effected area. Seek medical attention if skin irritation persists. Seek immediate medical attention.</p> <p>Inhalation: Remove to fresh air. Check for clear airway, breathing and presence of pulse. seek medical attention immediately.</p> <p>Ingestion: Dust or solid may irritate mouth and gastrointestinal tract, if ingested seek medical attention promptly.</p>

Other Hazards

Storage: Store away from acids and incompatible materials. Store in accordance with federal/state or local regulations.

Disposal: Metal scrap should be recycled whenever possible. Dispose of in accordance with federal/state or local regulations.

Hazard not otherwise classified (GHS-US)

n/a

Section 3: Composition/Information on Ingredients

Stainless Steel 304

Ingredient Name	Composition %	CAS Number
Iron	65.0–75.0%	7439-89-9

Chromium	13.0–20.0%	7440-47-3
Nickel	9.0–10.0%	7440-02-2
Manganese	1.5%	7439-96-5
Silicon	0.5%	7440-21-3
Molybdenum	0.5%	7429-98-7
Copper	0.3%	7440-50-8
Cobalt	0.2%	7440-48-4
Carbon	0.05%	7440-44-0
Phosphorus, Titanium, Sulphur, Aluminum, Oxygen	Trace Amounts; ≤ 0.05%	

Stainless Steel 305

Ingredient Name	Composition %	CAS Number
Iron	62.2–72.5%	7439-89-9
Chromium	17.0–22.0%	7440-47-3
Nickel	10.2–14.0%	7440-02-2
Manganese	1.0–3.2%	7439-96-5
Silicon	1.0%	7440-21-3
Carbon	0.12%	7440-44-0
Phosphorus, Titanium, Sulphur, Aluminum, Oxygen	Trace Amounts; ≤ 0.05%	

Solid Solder

Ingredient Name	Composition %	CAS Number
Ingredient Name	Composition %	CAS Number
Copper	20.0–50.0%	7440-50-8
Zinc	20.0–50.0%	7440-66-6
Silver	20.0–50.0%	7440-22-4
Phosphorus, Titanium, Sulphur, Aluminum, Oxygen	Trace Amounts; ≤ 0.15%	

Section 4: First Aid Measures

Inhalation:

As sold/shipped material is in solid form, not a likely form of exposure. However, if processing (welding, grinding, cutting, etc.), if inhaled: Remove to fresh air. Check for clear airway, breathing and presence of pulse. seek medical attention immediately

Eye Contact:

As sold/shipped material is in solid form, not a likely form of exposure. However, if processing (welding, grinding, cutting, etc.), if exposed: Carefully flush eyes with water for at least 15 minutes. Seek medical attention if eye irritation persists.

Skin Contact:

If skin or mouth shows signs of irritation: Wash effected area. Seek medical attention if skin irritation persists.

Ingestion:

If ingested: Dust or solid may irritate mouth and gastrointestinal tract, if ingested seek medical attention promptly.

Most important symptoms/effects, acute and delayed (chronic):

Symptoms: May cause allergic skin reaction. May cause acute gastrointestinal effects if swallowed.

Note to Physicians: Treat symptomatically

Section 5: Fire-Fighting Measures

Materials are non-flammable.

Section 6: Accidental Release Measures

Not applicable for stainless steel in a solid state.

Section 7: Handling and Storage

Precautions for Safe Handling

Not applicable for stainless steel in a solid state. Operations with the potential for generating high concentrations of airborne particles should be evaluated and controlled as necessary. Practice good housekeeping. Avoid breathing metal fumes/dust.

Conditions for Safe Storage, Including Any Incompatibilities

No special storage conditions for stainless steel in a solid state.

Incompatible Products

Store away from acids, areas with high moisture or humidity, and incompatible materials

Section 8: Exposure Controls/Personal Protection

Control Parameters

There are no exposure limits for stainless steel. The exposure limit for iron containing fumes has been established at 5mg/m³ with ACGIH's TWA.

Exposure Controls

Appropriate Engineering Controls: Local or general exhaust ventilation during welding, brazing, grinding, machining, and other processes which may generate airborne contaminants.

Individual protective measures: Dependent upon process being performed on material. Each process must be addresses for suitable equipment.

Section 9: Physical & Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Solid	Appearance	Solid sliver-gray metallic
Odor	Odorless	Odor threshold	n/a
pH	n/a	Melting point	2500 – 2800 degrees F
Boiling Point	n/a	Flash Point	n/a
Evaporation Rate	n/a	Flammability	Not flammable
Upper Flammable Limit	n/a	Lower Flammable Limit	n/a
Vapor Pressure	n/a	Vapor Density	n/a
Relative Density	n/a	Specific Gravity	7.65-7.94
Solubility	n/a	Partition Coefficient	n/a
Auto-ignition Temp	n/a	Decomposition Temp.	n/a
Viscosity	n/a		

Section 10: Stability and Reactivity

Reactivity:

Not determined for stainless steel in a solid state.

Chemical Stability:

Stable under normal conditions for solid formed product

Possibility of Hazardous Reactions:

Hazardous polymerization will not occur

Conditions to Avoid:

Non-ventilated areas when machining. Contact with strong mineral acids.

Incompatible Materials:

Oxidizers: Reacts with strong acids.

Hazardous Decomposition Products:

Metallic oxides. During machining, metal fumes may be generated.

Section 11: Toxicological Information

Toxicity

COMPONENT	LD 50 ORAL	LD 50 DERMAL	LD 50 INHALATION	Other
Iron	30,000 mg/kg Oral - Rat	n/a	n/a	n/a
Chromium	>9,000 mg/kg Oral – Rat	n/a	n/a	n/a
Nickel	9,000 to >11,000 mg/kg	n/a	n/a	n/a
Manganese	9,000 mg/kg Oral – Rat	n/a	n/a	n/a
Silicon	No measurable	n/a	n/a	n/a
Molybdenum	No measurable	n/a	n/a	n/a
Copper	3,160 mg/kg	n/a	n/a	n/a
Cobalt	No measurable	n/a	n/a	n/a
Carbon	6,171 mg/kg Oral – Rat	n/a	n/a	n/a
Zinc	No measurable	n/a	n/a	n/a
Silver	No measurable	n/a	n/a	n/a

Likely routes of entry

None for stainless steel in its natural state.

Symptoms related to the physical, chemical and toxicological characteristics

None for stainless steel in its solid state.

Effects of acute and/or chronic exposure to material:

Nickel: May cause skin irritation to persons with nickel sensitivities.

Section 13: Disposal Considerations

Waste Disposal Methods: Metal scrap should be recycled whenever possible.

Container Cleaning and Disposable: Dispose of in accordance with federal/state or local regulations Section 14: Regulatory Information

Section 14: General Shipping Information

Stainless steel in its solid state is not regulated for shipping

Section 15: Regulations

The following listing of regulation relating to product covered in this document may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

The components of this material are subject to the reporting requirements of sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA=OCT 2006) – SARA 313 (40 CFR 372.65).

Sara Threshold planning quantity: There are no specific threshold planning quantities for the components of the material.

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 environmental response, compensation, and liability act apply

California (prop 65): some components in these materials are thought to potentially cause cancer by the state of California

Other Federal regulations: some components in these materials are included on the Pennsylvania R-T-K List, and the New Jersey R-T-K List.




This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

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.

I Amendment History Table:

Revision Date		Description of Change	Made by (initials)
1	2019.09.09	Creation of safety data sheet	CH
2	2020.08.04	Simplified version created – n/a’s removed to make a shorter, more directly applicable document.	CH
2	2021.03.01	Reviewed, no changes	CH
3	2024.02.14	Some small composition updates	CH

II Management Approval:

Approved by:	 Joseph Parker, <i>President</i>
Approved by:	 Phil Horton, <i>Service Manager</i>
Approved by:	 Chaz Hanna, <i>Regulatory Manager</i>