



SAFETY DATA SHEET

Complies with OSHA Standard 29 CFR 910.1200

Stainless Steel
Mesh Base
Material

1. Product and Company Identification

Product Name: Stainless Steel Mesh Diffusion-Bonded Woven Wire Mesh and Metal Foil Laminate base material for Optimal 2X Brackets and Tubes, Jet Brackets, Buttons, Eyelets

Product Use: Dental Applications

Chemical Family: Metals

Product Form: Sheets and Strips (0.008-0.031" thick x ass'd with 24" lengths)

Manufacturer Name: Phoenix Orthodontics

Manufacturer Address: 3250 Palladian Village Drive
Marietta, GA 30066

Business Phone: 770-643-8896

Emergency Phone: 770-643-8896

2. Hazardous Ingredients

Phoenix Orthodontics' mesh pads are produced in AISI types 304L and 316L stainless steel. Therefore, the hazards, chemical and physical properties, and exposure limits as listed herein are the same as those of basic austenitic (nickel-bearing AISI 300 Series) stainless steels. The typical composition of these alloys is as follows:

ELEMENT	SYMBOL	CAS #	304L CONTENT	316L CONTENT
Carbon	C	7440-44-0	0.03% max	0.03% max
Chromium	Cr	7440-47-3	18-20% max	16-18%
Iron	Fe	7439-89-5	Balance	Balance
Manganese	Mn	7439-96-5	2% max	2% max
Molybdenum	Mo	7439-98-7	0.25% max	2-3%
Nickel	Ni	7440-02-0	8-10.5%	10-14%
Phosphorus	P	7723-14-0	0.045% max	0.045% max
Silicon	Si	7440-23-3	1% max	1% max
Sulfur	S	7704-34-9	0.03% max	0.03% max

Phoenix Orthodontics' mesh base material is composed of 316L stainless steel.

Exposure limits for the above elements, listed below in milligrams per cubic meter, are typically given for the respective elements in pure form, or in particular chemical compounds (cf. "form listed" in table below). Therefore, such exposure limits may not necessarily be applicable to stainless steel products in alloy form. (Note: "N/L" indicates that exposure limits for the element are not listed in the applicable regulations.)

ELEMENT	OSHA PEL	FORM LISTED	ACGIH TLF	FORM LISTED
Carbon	N/L	N/L	N/L	N/L
Chromium	1.0	As Cr	0.5	As Salts
Iron	10	As Fumes	5	As Fumes
Manganese	5	As Mn	5 & 1	Dust & Fumes
Molybdenum	15	Insol. Compounds	10	Insol. Cmpds
Nickel	1.0	As Ni	1.0	As Ni
Phosphorus	0.2	As P	0.01	As P
Silicon	N/L	N/L	N/L	N/L
Sulfur	13	As SO ₂	5	As SO ₂

3. Physical Data

Product is provided in solid state stainless steel. The material is insoluble in water and will not evaporate or sublime at room temperature

Melting range (solidus/liquidus, °F) is 2550/2650 for 316L stainless. Melting range is approximate and varies from heat to heat. Density 0.29 pounds per cubic inch. Appearance bright silvery color.

4. Fire, Explosion, and Reactivity Information

Stainless steel products in solid state do not present a fire or explosion hazard.

5. Health Hazard Information

Stainless steel mesh in its original state does not normally present health hazards by inhalation or contact. There is some medical evidence that certain individuals suffer allergic reactions such as contact dermatitis to nickel and its alloys. Ingestion is hazardous due to the potential for internal tissue damage; in the event of ingestion, seek medical attention immediately.

Operations such as welding, burning, and brazing may produce hazardous metal fumes, and therefore proper safety precautions are required. Operations such as sawing, grinding, stamping, milling, or machining may produce fine metal grit or dust which may pose respiratory risks.

Typical effects of acute overexposure to metallic dusts and fumes include irritation of the eyes, nose, and throat. In addition, exposure to high concentrations of iron oxide dusts, manganese, copper, zinc, or lead fumes can result in "metal fume fever" with symptoms including metallic taste in the mouth, chills and fever, dryness and irritation in the throat. Symptoms usually last 12 to 48 hours. (Metal fume fever is most serious in cases of lead, cadmium, and zinc fumes, none of which is present in stainless steel).

Chronic overexposure to inhalation of high concentrations of metal fumes or dust of the following elements may lead to the condition indicated:

Cr or Ni: dermatitis, inflammation/ulceration of upper respiratory tract, possible cancer of nasal passages and lungs.

Fe or its oxides: pulmonary effect, siderosis.

Manganese: bronchitis, pneumonitis, loss of coordination.

Molybdenum: pain in joints, hands, knees and feet; morphological changes in liver, kidneys, and spleen; anemia, diarrhea, coma, deformity.

Phosphorus: necrosis of the mandible.

Sulfur (as dioxide): edema of the lungs.

6. Emergency and First Aid Procedures

In case of inhalation of airborne fumes and particulates, remove to fresh air, get medical attention. In case of eye contact with metal dusts, flush immediately with running water; get medical attention. In case of skin contact, if irritation develops, wash well with soap and water. If skin condition persists, get medical attention.

7. Industrial Hygiene Control and Precautionary Measures

Respiratory: NIOSH approved respirators should be used to avoid excessive inhalation of fumes and particulates in any situation where such exposure might occur. Ventilation should be provided during welding, brazing, burning, sawing, or grinding if fumes are likely to be released.

Eye: Safety glasses should be used when sawing, burning, welding, grinding, or machining. Additional clothing and protective equipment may be needed, depending on the operations being performed on the material. Gloves should be worn when handling the material due to the possibility of sharp edges.

8. Environmental Protection Information

Not applicable to stainless steel in the solid state.

9. Special Precautions

Foil mesh is provided in a visually clean condition. However, dust, particulate, oils, or other foreign contaminants may be present in macroscopic or microscopic form. If the foil mesh is to be used in any critical application, including dentistry or orthodonture, medicine, or food and drug processing, the material may require additional cleaning procedures such as ultrasonic cleaning, chemical cleaning, electropolishing, washing, etc.

10. D.O.T. Shipping Requirements

None applicable.

11. Disclaimer

Although the information and recommendations in this data sheet are to the best of our knowledge correct, it is recommended that you make your own determination of the material's suitability for your purpose before you use it. The information contained in this data sheet has been reproduced from the manufacturer's data; the accuracy of this information is the responsibility of the manufacturer. Phoenix Orthodontics accepts no responsibility for damage of any nature resulting from the use of, or the reliance upon, this data sheet.

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

PHOENIX
ORTHODONTICS