

MATERIAL SAFETY DATA SHEET

AISI 316/AISI 316L AUSTENITIC STAINLESS STEEL BALLS

1. PRODUCT AND COMPANY IDENTIFICATION

Commercial name:	AISI 316 / AISI 316L
Type of product:	Not hardened austenitic stainless steel balls
Applications :	Special bearings, pumps and valves, aerosol and dispenser sprayers. Used in the foodstuff, paper, chemical, rubber, military, textile industry. Applications in photographic devices, medical instruments, quick couplings, recirculating balls, ink cartridges, jewels.
Company:	Marteau Lemarié 3 rue de l'artisanat ZI moul'n du gillier 42290 Sorbiers France TEL. : 0033 4 77 90 51 29 Web site: www.marteau-lemarie.fr E-MAIL : m.l@marteau-lemarie.fr
Contact:	Mrs. Véronique Clavelloux

2. HAZARDS IDENTIFICATION

- No critical hazards for man and environment in case of normal storing, handling and usage.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Type	Chemical element	%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Mo
	CAS Number	7439-44-0	7440-21-3	7439-96-5	7723-14-0	7704-34-9	7440-47-3	7440-02-0	7439-98-7
AISI 316L	% Content	0,030 max	1,00 max	2,00 max	0,045 max	0,030 max	16,0–18,0	10,0–14,0	2,0–3,0
AISI 316	% Content	0,080 max	1,00 max	2,00 max	0,045 max	0,030 max	16,0–18,0	10,0–14,0	2,0–3,0

- Hazardous components:** No toxic effects in case of exposure to the material in the solid state. Possible further processes that generate powders or fumes could cause toxic effects for the human health.

4. FIRST AID MEASURES

- **Eye Contact:** In case of accidental contact, do not rub and cool rapidly with cold water. Seek medical attention.
- **Inhalation:** Solid and inert product, no special measures are needed. In case of exposure to powders or fumes leave the room. Seek medical attention.
- **Ingestion:** Seek medical attention in case of accidental ingestion of the balls.
- **Skin Contact:** In case of contact with balls at high temperature, cool rapidly with cold water. Seek medical attention.

5. FIRE-FIGHTING & ACCIDENTAL RELEASE MEASURES

- **General Fire Hazards:** Stainless steels in the solid state are not flammable materials and then no special fire-fighting measures are needed. A critical fire hazard may occur when fine turnings or chips are produced. Even dry alloy powder can be ignited by a small spark.
- **Extinguishing Media:** Use water mist, dry chemical, carbon dioxide, or chemical foam. Avoid the use of a stream of water to control fire since dusting can occur.
- **Unsuitable Extinguishing Media :** Do not use water for fires involving molten metal.
- **Fire Fighting Equipment:** Wear full protective clothing, including helmet, breathing apparatus and facemask.

6. ACCIDENTAL RELEASE MEASURES

To remove this product in the solid state, the usual cleaning equipment (brush, shovel) is recommended. In storage, handling and working areas, avoid spilling as this will make floors very slippery. If dust occurs, use an appropriate vacuum cleaner. Collect scrap for recycling.

7. HANDLING AND STORAGE

- **Handling:** Handling of stainless steel products does not require any particular safety measure usually applicable to dangerous substances. The use of gloves is recommended during the handling of the boxes.
- **Storage:** Protect the balls against heat and wet. Keep the product in closed boxes.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- **Eyes:** Tightly sealed goggles are recommended to prevent accidental entering in eyes.
- **Skin:** Thermal insulated gloves are required when handling hot balls. It is recommended to wash the hands after the handling of the balls.
- **Hygiene measures:** Use normal personal hygiene and good housekeeping. Food beverages should not be consumed in work areas. Keep work areas free of waste.
- **Ventilation:** Local exhaust ventilation is required when handling this product at high temperatures to avoid accumulation of dust or fumes in the air.

9. PHYSICAL AND CHEMICAL PROPERTIES

• Appearance:	Spherical
• Colour:	Metallic - reflecting grey
• Smell:	Odourless
• Density (δ):	7,95 [g/cm ³]
• Young's Modulus (E):	200 [GPa]
• Specific Heat (c):	500 [J/kg·K]
• Coefficient of linear thermal expansion (a):	17,0 [10 ⁻⁶ /°C]
• Thermal conductivity (λ):	15,0 [W/(m·K)]
• Ultimate tensile strength (Rm):	550 – 1250 MPa
• Hardness:	approx. 100 – 250 [HV] / 10 – 39 [HRC]
• Electric resistivity (ρ):	730 [$\Omega \cdot m \cdot 10^{-9}$]
• Relative magnetic permeability (μ):	1,020
• Service temperatures (suggested):	From -196 °C to 600 °C

9. STABILITY AND REACTIVITY

- **Stability:** Stable at room temperature under normal storage, handling, use and transportation conditions.
- **Materials to avoid:** Very good corrosion resistance with respect to organic substances, good resistance to several strong acids (acetic, phosphoric, sulphuric acid) and on sea water. They are subjected to pitting and crevice corrosion in presence of hot chloride solutions and to stress corrosion when temperature exceeds 60°C. They do not resist in contact with hydrochloric and hydrofluoric acids, aqua regia, iron and magnesium chlorides.
- **Condition to avoid:** Violent explosion can occur when water comes in contact with molten metal.
- **Hazardous decomposition products:** Thermal decomposition products can include CO, CO₂, organometallic compounds and smoke.

10. TOXICOLOGICAL INFORMATION

According to our current knowledge and information, this product is not considered toxic if handled and used properly.

11. ECOLOGICAL INFORMATION

If released, stainless steel may persist in the environment for long periods thanks to its good corrosion resistance, insolubility in water and non-biodegradable properties.

12. DISPOSAL CONSIDERATION

Stainless steel scrap is considered a valuable raw material easily recyclable. Do not dump into any sewer, on the ground or into any body of water. All disposal practices must be in compliance with all local laws and regulations.

13. TRANSPORT INFORMATION

- The material it is not subject to special transport regulations.

14. REGULATORY INFORMATION

Labelling according to EU Directives:

This product in the solid state is not subject to obligation labelling.

Hazard Labelling:

Not Applicable.

15. OTHER INFORMATION

The information above is believed to be accurate and they refers to the product 'as supplied '. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to have a benefit from these information for their particular purposes.