



MATERIAL SAFETY DATA SHEET

IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION HAZARD COMMUNICATION STANDARD #29 C.F.R. 1910.1200

SECTION I – PRODUCT DESCRIPTION – Alloy 617 COMMON NAME / GRADE - Inco 617

SECTION II – HAZARDOUS INGREDIENTS

| BASE METAL, ALLOYING ELEMENTS, METALLIC COATING | % COMPOSITION BY WEIGHT (a) | CAS # | ACGIH TLV (mg/m ³) (b) |
|---|-----------------------------|-----------|---|
| BASE METAL | | | |
| Nickel (Ni) | 52 | 7440-02-0 | Metal, Inhale 1.55 , Insoluble compounds as Ni: 0.25 Soluble compounds as Ni :0.15 |
| ALLOYING ELEMENTS | | | |
| Aluminum (Al) | 1.2 | 7429-90-5 | Welding fume as Al:5 |
| Baron (B) | 0.006 Max | 7440-42-8 | Metal: None; Oxide Dust Total: 10 |
| Columbium (Cb)+Niobium(Nb) | 0.08 | 7440-03-1 | Nne |
| Cobalt (Co) | 12.5 | 7440-48-4 | Elemental and Inorganic compounds as Co 0.02 |
| Copper (Cu) | 0.5 Max | 7440-50-8 | Dust and Mist as Cu:1; Fume:0.2 |
| Chromium (Cr) | 22 | 7440-47-3 | Metal and Cr III compounds as Cr:0.5; Water soluble Cr VI compounds as Cr: 0.05; Insoluble Cr VI compounds as Cr 0.01 |
| IRON (Fe) | 2 Max | 7439-89-6 | Oxide dust and fume as Fe: 5 |
| SILICON (Si) | 1.2 Max | 7440-21-3 | 10 |
| Molybdenum (Mo) | 9 | 7439-98-7 | Insoluble compound as Mo: 35 Soluble compound as Mo:0.55 |
| MANGANESE (Mn) | 0.5 Max | 7439-96-5 | Elemental and Inorganic compounds as Mn :0.2 |
| Titanium (Ti) | 0.3 | 7440-32-6 | Total Oxide:10 |

(a) % of alloying materials varies with grade of material – (b) 1965-1966 ACGIH threshold limit value.

SECTION III – PHYSICAL DATA

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| Material is (at normal conditions) – Solid | Appearance and Odor – Appearance : varies - Odorless |
| Melting Point– ~2430 | Specific Gravity - 0.302 |

SECTION IV – FIRE AND EXPLOSION DATA

Extinguishing media – Dry chemical powders, salt or inert gas – Do not use water or liquid explosion hazard could result
 Special fire fighting procedure – If ignitable waste is generated. Special precautions and firefighting procedures should be followed ; Keep work areas free of the waste, store wet and keep away from heat and open flame – maintain humidity above 50% to prevent an electrostatic build-up. No smoking in area, use non-sparkling metal equipment.

SECTION V – HEALTH HAZARD DATA

Steel products in the natural state do not represent an inhalation, ingestion, or contact hazard. However, operations such as burning, welding, sawing, brazing, and grinding may release fumes and/or dust, which may present health hazard.

SECTION VI – REACTIVITY DATA

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| Stability – Stable | Incompatibility (Material to avoid) - None |
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SECTION VII – SPILL, LEAK OR DISPOSAL PROCEDURE

SECTION VIII – SPECIAL PROTECTION INFORMATION

Local exhaust ventilation should be utilized when welding, burning, grinding, or machining, NIOSH/MSHA approved dust and fume respirator should be used to avoid excessive inhalation of particulates, when exposure exceeds TLV's. Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards. Our materials have not come in contact with Mercury, while at our facility.