



## 2) COMPOSITION-IDENTIFICATION OF INGREDIENTS

### EXPOSURE LIMITS

COMPONENT ALLOY ELEMENTS	GAS N <sup>o</sup>	FORM	% WEIGHT	ACGIH TLV(mg/m <sup>3</sup> )	OSHA PEL (mg/m <sup>3</sup> )
Aluminium (Al)	7429-90-5	Total dust, fume Respirable	80.0 99.7	15.5 ----	15 5
Beryllium (Be)	7440-41-7	All compounds as Be	0.00 0.01	0.002	0.002, 0.005 (ceiling) 0.025 (30 min. peak/8 hr shift)
Copper (Cu)	7440-50-8	Fume Dust/mist	0.00 0.50	0.2 1	0.1 1
Iron (Fe)	7439-89-6	Oxide dust & fume (as Fe)	0.00 1.00	5	10
Lead (Pb) (non volatile)	7439-92-1	Elementar and inorganic compounds	0.00 0.05	0.05 Pb	0.05 as Pb
Magnesium (Mg)	7439-95-4	Oxide fume	0.00 6.00	10	15 Total particulate
Manganese (Mn)	7439-96-5	Dust fume	0.00 2.00	0.2	Dust (ceiling)
Nickel (Ni)	7440-02-0	Metal & insoluble compounds Soluble compounds	0.00 0.05	1 as Ni  0.1 as Ni	1 as Ni  1 as Ni
Silicon (Si)	7440-02-0	Total dust Respirable	0.00 14.0	10	15 5
Titanium (Ti)	7440-32-6	Oxide dust	0.00 0.50	10	15 (total particulate)
Vanadium (V)	7440-62-2	Respirable dust Respirable fume	0.00 0.50	0.05 as V <sub>2</sub> O <sub>5</sub>	0.5(ceiling) as V <sub>2</sub> O <sub>5</sub> 0.1(ceiling) as V <sub>2</sub> O <sub>5</sub>
Zinc (Zn)	7440-66-6	Oxide fume Total oxide dust Respirable oxide dust	0.00 0.50	5, 10 (STEL) 10 -	5 15 5
Chromium (Cr)	7440-47-3	Metals Cr II compounds Cr III compounds Cr VI compounds (water uble) Cr VI Compounds	0.00 0.50	0.5 ---- 0.5 as Cr 0.05 as Cr  0.01 as Cr	1.0 0.5 as Cr 0.5 as Cr 0.1(ceiling) as CrO <sub>3</sub>  0.1 (ceiling) as CrO <sub>3</sub>

Note: The above listing is a summary of elements used in alloying aluminium. Various grades of aluminium will contain different combinations of these elements. Trace elements may also be present in minute amounts.

### 3) HAZARDS IDENTIFICATION

Aluminum products in the natural state do not present an inhalation, ingestion, or contact health hazard. Small chips, fine turnings and dust from processing may ignite readily.

Explosion/fire hazards may be present when:

Dust or fines are dispersed in the air

- Fines or dust are in contact with other metal oxides (e.g.rust)
- Chips fines or dust are in contact with water
- Molten aluminium is in contact with water/moisture or other metal oxides.

Dust or fume from processing can cause eye, skin or upper respiratory tract irritation; metal fume fever; lung diseases and other systematic effects.

### POTENTIAL HEALTH EFFECTS

EYES: Fume can cause irritation. Ultraviolet radiation from welding can cause flash burns

SKIN: Can cause irritation. Ultraviolet radiation from welding can cause flash burns

INHALATION: Can cause respiratory tract irritation, metal fume fever and other health effects listed below

Aluminum is welded in protective, inert atmosphere such as argon or helium.

Welding process generate welding fumes and ultraviolet radiation that result in the formation of ozone and oxides of nitrogen

Ultraviolet radiation from welding can also cause flash burns to the eyes and skin

Welding fumes are carcinogenic and listed as an IARC Group 2B

Ozone	Low level exposure; can cause irritation of eyes, nose and throat, chest tightness, headache, shortness of breath, cough, wheeze,nausea, and narrowing of airways High level exposure: can cause acute respiratory distress with, shortness of breath, pulmonary changes, hemorrhage and pulmonary edeme(fluid in the lungs)
Oxides of nitrogen	Can cause irritation of the eyes, skin and respiratory tract, high level exposure: can cause delayed pulmonary edeme. Nitric oxide can cause formation of methemoglobin, which decrease the bloods ability to carry oxygen. Chronic overexposure can cause pulonary fibrosis
Aluminium dust/fume	Are a low health risk by inhalation. For standard operations aluminium dust should be treated as a nuisance dust
Magnesium oxide	Overexposure can cause respiratory tract irritation and fever, shortness of breath and metal fume fever. Cronic exposure to high levels of manganese fume or dust can cause nervous system disorders, pneumonitis and may cause fibrosis
Silicon dust	Cronic exposure can cause increased airway resistance and contribute to chronic bronchitis
Zinc oxide	Exposure subseqent to burning, welding, and molten metal work can result in fever, chills, shortness of breath, metal fume fever and upper respiratory tract irritation
Hexavalent Chromium	Can cause asthma, kidney damage, primary irritant dermatitis, sensitizations dermatitis, skin ulceration and pulmonari edema Overexposure or chronic inhalation as been associated with lung, nasal and gastrointestinal cancer Hexavalent Chromium is known to be carcinogenic to humans by IARC (Group 1) Compounds may be generated during welding operations with alloys containing chromium

Note: The above listing is a summary of elements used in alloying aluminium. Various grades of aluminium will contain different combinations of these elements. Trace elements may also be present in minute amounts.