



## The Presence of **COBALT** in Tool Steels

### Cobalt has been designated as a health and safety hazard globally

Several tool steels contain **COBALT** to enhance desirable properties for specific tooling applications. Cobalt is a heavy metal that has been shown to be hazardous to humans. Additionally, mining practices surrounding cobalt are controversial and its requirement in electronic technologies, such as lithium ion batteries, creates price volatility.

Summarized findings on Cobalt's human health impact are shown below:

#### **COBALT METAL & SOLUBLE SALTS**

- **Long term - Anticipated Human Carcinogen**
  - European Chemicals Agency (2019)
  - U.S. National Institute of Health (2017)

#### **COBALT FINES - DUST AND POWDERS**

- **Short term - Intoxication (poisoning)**
  - U.S. Agency for Toxic Substances & Disease (2004)
  - World Health Organization (2006)
- **Long Term - Anticipated Human Carcinogen**
  - OSHA (September 1978)
  - U.S. National Toxicology Program (2005)

#### **COBALT FUMES - COAL & OIL BURNING**

- **Short term - Skin, nose & throat irritation**
  - OSHA (September 1978)
  - U.S. Office of Environmental Health Hazards Assessment (March 2019)
- **Long term - Acute/Chronic Respiratory Disease**
  - World Health Organization (2006)
  - U.S. Environmental Protection Agency (2000)

### **COBALT CONTENT IN ADDITIVE MANUFACTURING POWDERS USED FOR TOOLING**

Several powders and wires used in Additive Manufacturing contain the heavy metal **COBALT**, among them are Maraging Steels, which are used in tool steel applications.

Cobalt has been shown to be hazardous to humans and a known carcinogen.

The mining of Cobalt is also controversial and has raised human rights concerns.

#### **FORMETRIX L-40**

**Contains NO COBALT** or any other elements that are deemed to be hazardous to humans or the environment.

#### **MARAGING STEELS**

Contain a **significant amount of COBALT** at a level of 8 - 12% by weight.

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