MATERIAL SAFETY DATA SHEET

Common Name:	Hardened & Tempered Carbon Steel
Trade Name(s):	**Product Code:**
Blue Temper Shim	23
Feeler Gage (Steel only)	09 & 19
Shoulder Screw Shims	26
Die Button Shims	26

Manufacturer	Phone number (for information)
Precision Brand Products, Inc.	(630) 969-7200
2250 Curtiss Street Downers Grove IL 60515 USA	Emergency Phone Number **Chemtrec 800-424-9300 USA & Canada** **202-483-7616 International**
Date prepared: January 1, 2001	Date Reviewed: August 24, 2010

1. INGREDIENTS

Material or Component	% Weight	Exposure Limits	
		OSHA PEL (mg/m³)	ACGIH TLV (mg/m³)
Base Metal			
Iron (Fe)	Balance	10 (Fe_2O_3 Fume)	5.0 (Fe_2O_3 Fume)
Alloying Elements			
Aluminum (Al)	0.10 – 1.8	None listed	5.0 as welding fume
Carbon (C)	0.01-1.5	None listed	None Listed
Chromium (Cr)	0.01-1.2	1.0 as chrome	0.5 as chrome
Cobalt (Cb)	8 Max.	0.1 as cobalt & fume	0.05 as fume
Copper (Cu)	0.04-0.7	0.02 as copper, 1.0 as dust	0.2 as fume & 1.0 as dust
Lead (Pb)	0.15-0.35	0.05 as fume & dust	0.15 as dust & fume
Manganese (Mn)	0.05-2.0	5 as manganese	5 as dust & 1 as fume
Molybdenum (Mb)	0.01-1.10	15 as insoluble compounds	1.0 as insoluble compounds
Nickel (Ni)	0.01-1.0	1.0 as nickel	1.0 as nickel
Phosphorous (P)	0.15 Max.	0.1 as phosphorous	0.1 as phosphorous
Silicon (Si)	0.15-2.20	None listed	10 total dust
Sulfur (S)	0.001-0.35	13 sulfur dioxide	5 sulfur dioxide
Tungsten (W)	0-18	None listed	5 insoluble compounds
Vanadium (V)	0.01-10	0.5 dust & 0.1 fume	0.05 dust & fume
Zinc (Zn) coating	10 Max.	5.0 as fume	5.0 as fume

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

2. PHYSICAL DATA

Material is (at normal conditions):		Appearance and Odor:	
□ Liquid x Solid □ Gas □Other		Gray-Black with Metallic Luster - Odorless	
Acidity/Alkalinity:	pH = NA	Specific Gravity (H_20=1):	7
Melting Point:	Approx. 2750˚F	Solubility in Water (% by wt):	NA
Boiling Point:	NA	Vapor Pressure (mm Hg @ 20˚C)	NA

3. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection:	NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is executed.
Eyes & Face:	Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.
Hands, Arms & Body:	Use appropriate protective clothing such as welder's aprons & gloves when welding or burning.
Other Clothing and Equipment:	As Required

4. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air. If condition continues, consult physician.
Eye Contact:	Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

5. HEALTH/SAFETY INFORMATION

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulate may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of Overexposure

Acute:	Excessive inhalation of all metallic fumes and dusts may result in irritation of the eyes, nose, and throat. Also, high concentrations of fumes and dusts of iron-oxide, manganese, copper, and selenium may result in metal fume fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, usually lasting from 12 to 48 hours.
Chronic:	Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:
Iron (Iron-oxide):	Pulmonary effects, siderosis.
Manganese:	Bronchitis, pneumonitis, lack of coordination.
Chromium:	Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tracts, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.
Nickel:	Same as Chromium
Selenium:	Nasal and bronchial irritation, gastro-intestinal disturbances, garlic odor of breath.
Copper:	Pulmonary effects
Vanadium:	No reported cases of exposure to vanadium.
Molybdenum:	Pain in joints, hands and feet.
Occupational Exposure Limits	See section 1.

FIRE AND EXPLOSION

Flash Point:	NA	Flammable Limits in Air:	Lower: NA
Autoignition Temperature	NA		Upper: NA
Fire & Explosion Hazards	None	Extinguishing Media	NA
		Extinguishing Media Not to be used	NA

REACTIVITY

Stability:	Stable	Incompatibility (Materials to avoid)	Reacts with strong acids to form hydrogen gas
Conditions to Avoid:	Non-ventilated areas when cutting, welding, burning, or brazing. Avoid generation of airborne dusts and fumes.		
Hazardous Decomposition Products	Metallic Oxides.		

6. ENVIRONMENTAL	
Spill or Leak Procedures:	NA
Special Precautions:	Use good housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum.
Waste Disposal Method	Dust, etc. – follow federal, state, and local regulations regarding disposal.