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## MATERIAL SAFETY DATA SHEET

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<b>PRODUCT NAME/TRADE NAME</b>	Steel Bushings and Components
<b>CHEMICAL NAME &amp; SYNONYMS</b>	Example AISI Grades 10xx Thru 86xx

### SECTION II INGREDIENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
Base Metal				
Iron (Fe)	7439-89-6	Balance	10 (Fe2 O3 Fume)	5.0 (Fe2 O3 Fume)
Alloying Elements				
Aluminum (Al)	7439-90-5	0-10-1.8	None Listed	5.0 as welding fume
Carbon (C)	7440-44-0	0.01-1.5	None Listed	None Listed
Chromium (Cr)	7440-47-3	0.01 - 12	0.1 Ceiling	0.5 as chrome
Cobalt (Co)	7440-48-4	8 Max	0.1 as cobalt and fume	0.05 as fume
Copper (Cu)	7440-50-8	0.04-0.7	0.2 as copper; 1.0 as dust	0.2 as fume; 1.0 as dust
Lead (Pb)	7439-92-1	0-15-0.35	0.05 as fume & dust	0.15 as dust and fume
Manganese (Mn)	7439-96-5	0.05 - 2.0	5 as manganese	5 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01 - 1.10	15 as insoluble compds	10 as insoluble compds
Nickel (Ni)	7440-02-0	0.01 - 10	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0	0.15 Max	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7440-21-3	0.15 - 2.20	None Listed	10 total dust
Sulfur (S)	7704-34-9	0.001 - .035	13 sulfur dioxide	5 sulfur dioxide
Tungsten 9wO	7440-33-7	0 - 18	None Listed	5 insoluble compds
Vanadium (V)	7440-62-2	0.01- 1.0	0.5 dust; 0.1 fume	0.05 dust and fume
Zinc (Zn) coating	7440-66-6	2 oz/ft <sup>2</sup>	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.

### SECTION III ELECTROLYTIC CHROMIUM PLATED STEEL

<b>COMMON NAME</b>	ChromePlatedCarbonSteel
<b>CHEMICAL NAME</b>	Chrome Plated 1045, 1050
	Cancer Hazard: Contains chromium and nickels. Exposure may create a cancer risk.

### SECTION IV PHYSICAL HAZARD DATA

Boiling Point (°F)	NA	Specific Gravity (H2O = 1)	NA
Vapor Pressure (mmHg.)	NA	Percent volatile by Volume (%)	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water	NA		
Appearance & Odor	Solid with metallic luster and odor		

### SECTION V FIRE & EXPLOSION HAZARD DATA

Flash Point (Method Used)	NA	Flammable Units	LeI NA	Uel NA
Extinguishing Media	NA			
Special Fire fighting Procedure	NA			
Unusual Fire & Explosion Hazards and other Physical Hazards (See below for data on reactivity)	NA			

**SECTION VI REACTIVITY DATA**

Stability	Unstable		
	Stable	x	Conditions to Avoid
Incompatibility (Material to Avoid)	Acids		
Hazardous Decomposition Products	Material fumes (eg ZnO) and certain noxious gases (eg CO) may be produced during welding and burning operations.		
Hazardous	May Occur		Conditions to Avoid
Polymerization	Will Not Occur	x	

**SECTION VII HEALTH HAZARD DATA**

Primary Routes of Entry	Inhalation		
Published Exposure Limits	TLV for welding fumes (total particulate -5mg/M3 (8 hr TWA)		
Listed as a Carcinogen		No	
Symptoms & effects of Overexposure (include any medical conditions that are generally recognized as being aggravated by exposure.)			
	Acute and chronic exposure to metal fumes and vaopor emitted when welding or burning with these materials may cause dizziness, chills, fever, headaches and nausea. These symptoms generally disappear after removal of exposure.		
Emergency & First Aid Procedures			
	If exposed to excessive levels of welding fumes and vapors, remove the individual to fresh air. Seek medical aid immediately.		

**SECTION VIII RECOMMENDED CONTROL MEASURES**

Respiratory Protection (Specify type)	NIOSH approved fume respirator when welding or burning		
Ventilation	Local Exhaust	Recommended when welding or burning	Special None
	Mechanical (general)	Should be sufficient to keep fumes below 5 mg/M3	
Protective Gloves	Welder's protective gloves	Eye Protection	Face shield or goggles
Other Protective Equipment	Use appropriate protective clothing when welding or burning		

**SECTION IX SPECIAL PRECAUTIONS**

Precautions to be taken in Handling & Storing	**For additional information see American National Standard Safety in Welding and Cutting Z49.1-1967 (American Welding Society Publication Z49.1-1967)
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**SECTION X SPECIAL PRECAUTIONS**

<p><b>WARNING! PARTICULATES MAY BE HARMFUL IF INHALED OR INGESTED.</b></p> <p><b>AVOID BREATHING FUMES OR DUST. ADEQUATE VENTILATION REQUIRED IN WELDING, BURNING, SAWING, BRAZING, GRINDING OR MACHINING OPERATIONS.</b></p> <p><b>FIRST AID: FOR OVEREXPOSURE TO AIRBORNE DUST AND FUMES, REMOVE EXPOSED PERSON TO FRESH AIR. IF BREATHING IS DIFFICULT OR HAS STOPPED., ADMINISTER ARTIFICIAL RESPIRATION OR OXYGEN AS INDICATED. SEEK MEDICAL ATTENTION PROMPTLY.</b></p>
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