

## MATERIAL SAFETY DATA SHEET

PRODUCT: CARBON AND ALLOY FORGINGS

### HAZARDOUS INGREDIENTS

MATERIAL	%WEIGHT (MAX)	EXPOSURE LIMITS	
		OSHA PEL (MG/ME)	ACGIH TLV (MG/ME)
ALUMINUM	2.0	NONE LISTED	5.0 AS WELDING FUME
CARBON	1.0	NONE LISTED	NONE LISTED
CHROMIUM	15.0	1.0 AS CHROME	0.5 AS CHROME
COPPER	1.5	0.1 AS FUME 1.0 AS DUST	0.2 as FUME 1.0 AS DUST
MANGANESE	2.5	5 AS MANGANESE	5 AS DUST 1 AS FUME
MOLYBDENUM	1.5	15 AS INSOLUBLE COMPOUNDS	10 AS INSOLUBLE COMPOUNDS
NICKEL	5.0	1.0 AS NICKEL	11.0 AS NICKEL
NITROGEN	.05	9.0 NITROGEN DIOXIDE	---
PHOSPHOROUS	0.1	0.1 AS PHOSPHOROUS	0.1 AS PHOSPHOROUS
SILICON	1.5	NONE LISTED	10 TOTAL DUST
SULFUR	0.1	13 SULFUR DIOXIDE	5 SULFUR DIOXIDE
VANADIUM	0.5	0.5 DUST: 0.1 FUME	0.05 DUST AND FUME
ZINC COATING	10.0	5.0 AS ZINC OXIDE FUME	5.0 AS FUME
IRON	BALANCE	10 AS IRON OXIDE FUME	5.0 AS IRON OXIDE FUME

THE ABOVE LISTING IS A SUMMARY OF ELEMENTS USED IN ALLOYING STEELS. VARIOUS GRADES OF STEEL CONTAIN DIFFERENT COMBINATIONS OF THESE ELEMENTS. TRACE ELEMENTS MAY ALSO BE PRESENT IN MINUTE QUANTITIES.

### PHYSICAL DATA

NORMAL STATE - SOLID

APPEARANCE AND ODOR - GRAY/BLACK WITH METALLIC LUSTRE AND ODORLESS.

MELTING POINT - APPROXIMATELY 2750 F

### REACTIVITY DATA

STABILITY - STABLE UNDER NORMAL CONDITIONS

SOLUBILITY - INSOLUBLE IN WATER. WILL REACT WITH ACIDS TO PRODUCE VARIOUS GASES.

### AWARENESS

BY PRODUCTS - INHALATION OF HIGH CONCENTRATION OF OXIDE FUMES OR DUSTS MAY LEAD TO BENIGN PNEUMOCONIOSIS, LUNG CANCER OR OTHER INFLUENZA LIKE ILLNESSES.

EMERGENCY AND FIRST AID PROCEDURE - INHALATION OF FUMES, REMOVE EXPOSED PERSON TO FRESH AIR. EYE AND SKIN CONTACT, FLUSH WELL WITH RUNNING WATER, IF IRRITATION DEVELOPS.

IF ANY OF THESE CONDITIONS CONTINUE, CONSULT A PHYSICIAN.

### SAFE HANDLING PRECAUTIONS

RESPIRATORY PROTECTION - USE APPROVED DUST/FUME RESPIRATOR WHEN WELDING OR BURNING IF OSHA PEL OR TLV IS EXCEEDED.

EYES AND FACE - SAFETY GLASSES SHOULD BE WORN WHEN GRINDING OR CUTTING; FACE SHIELDS SHOULD BE WORN WHEN WELDING OR BURNING.

HANDS, ARMS, AND BODY - USE APPROPRIATE PROTECTIVE CLOTHING/EQUIPMENT SUCH AS WELDERS APRONS AND GLOVES WHEN WELDING OR BURNING.