

AUG -17' 00 (THU) 13:28 HARRIS WELCO CUSTSRV

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P. 002

**** MATERIAL SAFETY DATA SHEET ****

Version Date.....12/01/99
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ER70S2, ER70S3, ER70S6

SECTION 1PRODUCT IDENTIFICATION

COMPANY NAME WHO SENT MSDS... HARRIS WELCO
 COMPANY ADDRESS..... 1051 YORK ROAD KINGE MOUNTAIN, NC 28086 (704 739-6421)
 EMERGENCY PHONE NUMBER..... (800) 424-9300
 MSDS VERSION NUMBER.....
 TRADE NAME..... ER70S2, ER70S3, ER70S6
 HAZARD RATING (HMIS)..... NA
 HMIS DESIGNATION KEY..... NA

SECTION 2HAZARDOUS COMPONENTS

| <u>MATERIAL</u> | <u>% BY WEIGHT</u> | <u>CAS NUMBER</u> | <u>OSHA PEL</u> | <u>ACGIH TLV (MG/M3)</u> | <u>SEQ 313</u> |
|-----------------|--------------------|-------------------|-----------------|--------------------------|----------------|
| CARBON | <.50 | 1333-86-4 | | 3.5MG/M3 CARBON | NA |
| MANGANESE | <2.50 | 7439-96-5 | | 0.5MG/M3 Mn& Co | YES |
| SILICON | <1.50 | 7440-21-3 | | 10 MG/M3 TOTAL | NA |
| COPPER | <.50 | 7440-50-8 | | .2 MG/M3 | YES |
| MOLYBDENUM | <.75 | 7439-96-7 | | 5 MG/M3 | NA |
| ALUMINUM | <.50 | 7429-90-5 | | 15MG/M3 AS WELD | YES |
| TITANIUM | <.50 | 7440-22-6 | | 10MG/M3 TiO AS | NA |
| ZIRCONIUM | <.50 | 7440-67-7 | | 5 MG/M3 AS Zr | NA |
| IRON | BAL. | 7439-89-6 | | 5MG/M3 Fe3O3 Fe | NA |

SECTION 3PHYSICAL PROPERTIES

BOILING POINT..... NA
 MELTING POINT..... NA
 VAPOR PRESSURE..... NA
 VAPOR DENSITY (AIR = 1).... NA
 SOLUBILITY IN WATER..... NA
 SPECIFIC GRAVITY..... NA
 EVAPORATION RATE..... NA
 APPEARANCE AND ODOR..... SOLID WIRE OR ROD.

SECTION 4FIRE AND EXPLOSION DATA

FLASH POINT..... NA
 EXTINGUISHING MEDIA... NA
 SPECIAL PROCEDURES... WELDING ARC AND SPARKS CAN IGNITE COMBUSTIBLES AND FLAMMABLES. REFER TO AM. NATIONAL STANDARD Z49.1 FOR FIRE PREVENTION DURING THE USE OF WELDING AND ALLIED PROCEDURES.
 UNUSUAL HAZARDS..... NA

SECTION 5REACTIVITY DATA

STABILITY..... STABLE
 CONDITIONS TO AVOID..... NONE
 HAZARDOUS POLYMERIZATION..... NA
 INCOMPATIBILITY..... NONE
 HAZARDOUS DECOMPOSITION PRODUCTS... THE COMPOSITION AND QUALITY OF WELDING FUMES AND GASES ARE DEPENDENT UPON METAL BEING WELDED, PROCESS, AND ELECTRODE BEING USED. OTHER FACTORS INCLUDE COATINGS ON THE METAL BEING WELDED (PAINT, PLATING OR GALVANIZING), NUMBER OF WELDERS AND VOLUME OF WORK AREA AS PRESENCE OF CONTAMINANTS IN ATMOSPHERE. WHEN ELECTRODE IS CONSUMED FUME AND GAS DECOMPOSITION PRODUCTS GENERATED ARE DIFFERENT IN PERCENT AND FORM FROM INGREDIENTS

AUG. -17' 00 (THU) 13:29 HARRIS WELCO CUSTSRV

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P.003

ER70S2, ER70S3, ER70S6SECTION 5REACTIVITY DATA

CONT'D

LISTED IN SECTION II. FUME AND GAS DECOMP. PRODUCTS, AND NOT INGREDIENTS IN ELECTRODE, ARE IMPORTANT. THE CONCENTRATION OF GIVEN FUME OR GAS COMPONENT MAY DECREASE OR INCREASE BY MANY TIMES ORIGINAL CONCENTRATION IN ELECTRODE. NEW COMPOUNDS NOT IN ELECTRODE MAY FORM. DECOMP. PRODUCTS OF NORMAL OPERATION INCLUDE THOSE ORIGINATING FROM VOLATILIZATION, REACTION, OXIDATION OF MATERIALS IN SECTION II, PLUS THOSE FROM BASE METAL AND COATING. REASONABLY EXPECTED FUME CONSTITUENTS OF PRODUCT COULD INCLUDE PRIMARILY OXIDES OF IRON; SECONDARILY COMPLEX OXIDES OF MANGANESE & SILICON & ALUMINUM. GASEOUS REACTION PRODUCTS-CARBON MONOXIDE, CARBON DIOXIDE. OZONE AND NITROGEN OXIDES MAY BE FORMED BY RADIATION FROM ARC, AND SHIELDING GASES WHEN EMPLOYED. ONE RECOMMENDED WAY TO DETERMINE COMPOSITION AND QUANTITY OF FUMES AND GASES TO WHICH WORKERS ARE EXPOSED IS TO TAKE AIR SAMPLE FROM INSIDE WELDERS HELMET OR IN WORKING ZONE. SEE AWS F1.1 AND AWS F1.2-1983. AVAILABLE FROM AM. WELDING SOCIETY. SEE AWS PUBLICATION: "FUMES AND GASES IN THE WELDING ENVIRONMENT".

SECTION 6HEALTH HAZARD DATA

ROUTES OF ENTRY..... SEE BELOW
 HEALTH HAZARDS..... ELECTRIC ARC WELDING MAY CREATE THE FOLLOWING: FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH. ARC RAYS CAN INJURE EYES AND BURN SKIN. ELECTRIC SHOCK CAN KILL.
 CARCINOGENICITY..... NA
 SIGNS & SYMPTOMS OF EXPOSURE..... SHORT TERM-DIZZINESS, NAUSEA, DRYNESS & IRRITATION OF NOSE, THROAT, EYES, CHEST TIGHTNESS, FEVER, ALLERGIC REACTION; OVEREXPOSURE TO FUMES-SIDEROSIS POSSIBLE. MAY AFFECT PULMONARY FUNCTION.
 MEDICAL CONDITIONS FROM EXPOSURE... SEE ABOVE
 EMERGENCY & FIRST AID..... REMOVE TO FRESH AIR, OBTAIN MEDICAL ATTENTION. EMPLOY FIRST AID TECHNIQUES RECOMMENDED BY AM. RED CROSS.
 ADDITIONAL INFORMATION..... NA

SECTION 7PRECAUTIONS FOR SAFE HANDLING AND USE

SPILL AND LEAK PROCEDURES..... NA
 WASTE AND DISPOSAL METHOD..... PREVENT WASTE FROM CONTAMINATING SURROUNDING ENVIRONMENT. DISCARD PRODUCT RESIDUE, DISPOSABLE CONTAINER OR LINER IN AN ENVIRONMENTALLY ACCEPTABLE MANNER, IN FULL COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
 HANDLING AND STORING PRECAUTIONS... NA
 OTHER PRECAUTIONS..... NA

SECTION 8CONTROL MEASURES

RESPIRATORY MEASURES..... MAKE SURE INHALED AIR DOES NOT CONTAIN FUME CONSTITUENTS ABOVE PERMISSIBLE EXPOSURE LEVELS.
 VENTILATION..... SEE ABOVE
 PROTECTIVE GLOVES..... SEE OTHER PROTECTIVE EQUIPMENT SECTION
 EYE PROTECTION..... SEE OTHER PROTECTIVE EQUIPMENT SECTION
 OTHER PROTECTIVE EQUIPMENT... OTHER PRECAUTIONS FOR ADDITIONAL SAFETY INFORMATION ON WELDING AND CUTTING. SEE AM. STANDARD 249.1-1983, SAFETY IN WELDING AND CUTTING. WELDING HANDBOOK, VOL. 1. SAFE PRACTICES IN WELDING AND CUTTING.
 WORK/HYGIENIC PRACTICES..... FOR MAXIMUM SAFETY, BE CERTIFIED FOR, AND WEAR A RESPIRATOR AT ALL TIMES WHEN WELDING OR BRAZING.

SECTION 9DISCLAIMER

THIS DATA IS BELIEVED TO BE ACCURATE. HARRIS WEL

SECTION 10ADDITIONAL INFORMATION

NA - NOT AVAILABLE