



# MATERIAL SAFETY DATA SHEET

## NICKEL AND NICKEL ALLOY COATED ELECTRODES

### SECTION 1 - MATERIAL IDENTIFICATION

Manufacturers Name J. W. Harris Co., Inc.

Distributor Name (If Applicable) \_\_\_\_\_

Address 10930 Deerfield Road

Address Cincinnati, Ohio 45242

Emergency Telephone (513) 891-2000

MSDS Date November 1985

The following table lists the trade name and composition of products covered by this Material Safety Data Sheet. See section 2 and especially section 6 for important health hazard data.

| Trade Name            | Nominal Chemical Composition |      |      |       |      |      |      |      |      |      |      |      |      |      |
|-----------------------|------------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|------|
|                       | C                            | Mn   | Fe   | S     | Si   | Cu   | Cr   | Cb   | Mo   | Ni   | Al   | Ti   | Co   | W    |
| Harris "A" electrode  | 0.10                         | 2.25 | 9.00 | 0.02  | 0.75 | 0.50 | 15.0 | 2.0  | 1.50 | Rem  |      |      |      |      |
| 1320 Electrode        | 0.08                         | 1.5  | 11.0 | 0.015 | 0.75 | 0.50 | 15.0 | 2.75 |      | 68.0 |      |      |      |      |
| 1350 Electrode        | 0.08                         | 1.88 | Rem  | 0.03  | 0.75 | 1.75 | 28.5 |      | 3.65 | 37.5 |      |      |      |      |
| 1410 Electrode        | 0.10                         | 0.75 | 0.02 | 1.25  | 0.25 |      |      |      |      |      | 1.0  | 2.5  |      |      |
| 1820 Electrode        | 0.10                         | 7.75 | 8.0  | 0.015 | 1.0  | 0.50 | 15.0 | 1.75 |      |      |      | 1.0  | 0.12 |      |
| 1870 Electrode        | 0.05                         | 1.75 | 0.58 | 0.025 | 0.50 | Rem  |      |      |      | 31.0 | 1.0  | 0.50 |      |      |
| 1900 Electrode        | 0.15                         | 4.0  | 2.5  | 0.015 | 1.0  | Rem  |      |      |      | 65.0 | 0.75 | 1.0  | 0.02 |      |
| C-276 Electrode       | 0.02                         | 1.0  | 5    |       | 0.08 |      | 15.5 |      | 16   | 57.0 |      |      | 2.5  | 4    |
| Alloy G Electrode     | 0.05                         | 1.5  | 19.5 |       | 1.0  |      | 22   |      | 6.5  | 43   |      |      | 2.5  | 1.0  |
| Alloy B, B2 Electrode | 0.02                         | 1.0  | 2.0  |       | 0.10 |      | 1.0  |      | 28   | 69   |      |      | 1.0  |      |
| Alloy X Electrode     | 0.10                         | 1.0  | 18.5 |       | 1.0  |      | 22   |      | 9    | 47   |      |      | 1.5  | 0.60 |
| Alloy W Electrode     | 0.12                         | 1.0  | 6    |       | 1.0  |      | 5    |      | 24   | 63   |      |      | 2.5  |      |
| Nickel 55 Electrode   | 1.5                          | 0.3  | 44.5 | 0.005 | 0.5  | 0.1  |      |      |      | 53.0 |      |      |      |      |
| Nickel 99 Electrode   | 1.00                         | 0.3  | 3.00 | 0.005 | 0.5  | 0.1  |      |      |      | 95.0 |      |      |      |      |

### SECTION 2 - HAZARDOUS MATERIALS

These electrodes are a nonhazardous solid at ambient temperature. Hazards (as defined by OSHA 29 CFR 1910.1200, 1919.1200, and 1926.1200) are not associated with these electrodes. See Section 6 for information on potential flame hazard resulting from use of the product.

Section 1 lists composition of the stainless steel wire or electrode. The chart below lists those constituents, defined as hazardous, which are likely to be present in the welding fume.

| Core Wire                                         |            |                           |                                                                         |
|---------------------------------------------------|------------|---------------------------|-------------------------------------------------------------------------|
| Element                                           | CASH       | PEL mg/m <sup>3</sup> (1) | TLV mg/m <sup>3</sup> (2)                                               |
| Manganese (fume)                                  | 7439-96-5  | 5.0 (ceiling)             | 1.0                                                                     |
| Iron (oxide fume) Fe <sub>2</sub> O <sub>3</sub>  | 1309-37-1  | 10.0                      | 5.0                                                                     |
| Silicon (SiO <sub>2</sub> amorphous - respirable) | 60676-86-0 | Not Listed                | 5mg/m <sup>3</sup> - Respirable dust<br>10mg/m <sup>3</sup> total dust  |
| Copper (fume)                                     | 7440-50-8  | 0.1                       | 0.2                                                                     |
| Chromium (VI)                                     | 7440-47-3  | 0.1                       | 0.05                                                                    |
| Molybdenum (soluble)                              | 7439-98-7  | 5.0                       | 5.0                                                                     |
| Nickel (soluble)                                  | 7440-02-0  | 1.0                       | 0.1                                                                     |
| Aluminum (welding fume)                           | 7429-90-5  | Not Listed                | 5.0                                                                     |
| Titanium (dioxide)                                | 13463-67-7 | 15.0                      | 10mg/m <sup>3</sup> total dust<br>or 5mg/m <sup>3</sup> respirable dust |
| Cobalt (dust & fume)                              | 7440-48-4  | 0.1                       | 0.05                                                                    |
| Tungsten                                          | 7440-33-7  | Not Listed                | 5.0                                                                     |

| Flux Coating        |            |              |              |
|---------------------|------------|--------------|--------------|
| Element             | CASH       | PEL          | TLV          |
| Titanium Dioxide    | 13463-67-7 | 15.0         | 10.0         |
| Calcium Carbonate   | 1317-65-3  | 5.0 (CaO)    | 10.0         |
| Calcium Fluoride    | 14542-23-5 | 2.5 (F)      | 2.5 (F)      |
| Cryolite            | 15096-52-3 | 2.5 (F)      | 2.5 (F)      |
| Feldspar            | 68476-25-5 | Not Listed   | 2.0          |
| Chromium Oxide      | 1308-38-9  | 0.05 (CR VI) | 0.05 (CR VI) |
| Potassium Silicate  | 1312-76-1  | Not Listed   | 5.0          |
| Sodium Silicate     | 1344-09-8  | Not Listed   | 5.0          |
| Potassium Hydroxide | 1310-58-3  | Not Listed   | 2.0          |

(1) Permissible exposure limit OSHA 1910 Subpart Z.

(2) Threshold limit value American Conference of Government Industrial Hygienists.

Gaseous reaction products such as carbon monoxide and carbon dioxide, ozone and nitrogen oxides may be formed by the radiation from the arc during electric arc welding.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, Florida 33135.

## SECTION 7 - SPILL OR LEAK PROCEDURES

Not Applicable

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## SECTION 8 AND 9 - SPECIAL PROTECTION INFORMATION AND PRECAUTIONS

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Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, *Safety in Welding and Cutting* published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.

### **Ventilation**

Use enough ventilation, local exhaust at the arc to keep the fumes and gases below TLV's in the worker's breathing zone and the general area. Train the employee to keep his head out of the fumes. See ANSI/ASC Z49.1 Section 5.

### **Respiratory Protection**

Use respirable fume respirator or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below TLV.

### **Eye Protection**

Wear helmet or use face shield with filter lens of appropriate shade number (see ANSI/ASC Z49.1 -Section 4.2). Provide protection screens and flash goggles, if necessary, to shield others.

### **Protective Clothing**

Wear head and body protection which help to prevent injury from radiation, sparks, flame, and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the employee not to touch live electrical parts and to insulate himself from work and ground.

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