MATERIAL SAFETY DATA SHEET

| SECTION I IDENTIFICATION | | | |
|---|---------------------------------|--|--|
| SUPPLIER NAME: | PRODUCT TYPE: COVERED ELECTRODE | | |
| VANGUARD STEEL LTD. | FOR STAINLESS STEEL | | |
| ADDRESS: | TRADE NAME: | | |
| 2160 MEADOWPINE BLVD., MISSISSAUGA ONTARIO CANADA | BONARC E316L-16 | | |
| TELEPHONE NUMBER: | SIZE: | | |
| 905-821-1100 | ALL SIZES | | |
| DATE PREPARED: | CLASSIFICATION | | |
| MARCH 6, 2012 | AWS E316L-16 | | |

| SECTION II HAZARDOUS MATERIALS | | | |
|------------------------------------|-------|-----------------------|------------------------------|
| COVERING AND FLUX INGREDIENTS | WT. % | TLV mg/m ³ | SUPPLEMENTAL INFORMATION |
| TITANIUM OXIDE | 13.00 | 10 | (*) NOT LISTED |
| LIMESTONE and/or CALCIUM CARBONATE | 1.00 | 10 | NUISANCE VALUE |
| MANGANESE and MANGANESE ALLOYS | 1.00 | 5 | MAXIMUM 10 mg/m ³ |
| SILICON and SILICON OXIDE | 3.00 | 10 (*) | |
| CHROMIUM and CHROMIUM ALLOYS | 5.00 | 0.5 | |
| TOTAL-Fe | 1.00 | 10 (*) | |
| NICKEL OXIDE | 12.00 | | |
| SILICATE BINDER | 4.50 | 10 (*) | |
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| | | | |
| OTHERS | WT. % | TLV mg/m ³ | |
| STAINLESS STEEL CORE WIRE | 59.50 | | |
| | | | |
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| | | | |
| | | | |

SECTION III -- FIRE AND EXPLOSION HAZARD DATA

NON-FLAMMABLE:

WELDING ARC AND SPARKS CAN IGNITE COMBUSTABLES AND FLAMMABLE PRODUCTS SEE Z49.1 REFERENCED IN SECTION VI

MATERIAL SAFETY DATA SHEET

| SECTION IV HEALTH HAZARD DATA | | |
|---|---|--|
| THRESHOLD LIMIT VALUE: | MAXIMUM FUME EXPOSURE 5.0 mg/m ³ | |
| EFFECT OF OVEREXPOSURE: | WELDING FUME MAY RESULT IN DISCOMFORT SUCH AS DIZZINESS, | |
| NAUSEA OR IRRITATION OF NOSE, THROAT OR EYES | | |
| ARC RAYS CAN INJURE EYES AND BURN SKIN, ELECTRIC SHOCK CAN KILL | | |
| EMERGENCY AND FIRST AID PF | OCEDURES: CALL FOR MEDICAL AID. IF BREATHING IS DIFFICULT | |
| | GIVE OXYGEN. IN ALL CASES CALL A PHYSICIAN | |

| SECTION V REACTIVITY DATA | | | | | |
|---|----------------|---|---------------------|--|--|
| STABILITY | UNSTABLE | | CONDITIONS TO AVOID | | |
| STABILITY | STABLE | • | NOT NECESSARY | | |
| INCOMPATABILITY (MATERIALS TO AVOID): NOT NECESSARY | | | | | |
| HAZARDOUS DECOMPOSITION PRODUCTS: WELDING FUMES AND GASES CANNOT BE CLASSIFIED SIMPLY | | | | | |
| THE COMPOSITION AND QUANTITY OF BOTH ARE DEPENDANT ON THE METAL BEING WELDING, THE PROCESS, | | | | | |
| ELECTRODES USED AND PROCEDURE | | | | | |
| HAZARDOUS POLYMERIZATION | MAY OCCUR | | CONDITIONS TO AVOID | | |
| | WILL NOT OCCUR | ٠ | NOT NECESSARY | | |

| SECTION VI SPILL OR LEAK PROCEDURES | | | |
|-------------------------------------|-------------------------------------|--------------------------|--|
| STEPS TO BE TAKEN IN CASE | ATERIALS ARE RELEASED OR SPILLED: | NOT NECESSARY | |
| WASTE DISPOSAL METHOD: | USE SCRAP DISPOSAL IN AN ENVIRONMEI | NTALLY ACCEPTALBE MANNER | |
| | ACCORDING TO LOCAL REGULATIONS UN | LESS OTHERWISE NOTED. | |

SECTION VII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: USE RESPIRABLE FUME RESPIRATOR WHEN WELDING IN CONFINED SPACE

USE ENOUGH VENTILATION: EXHAUST AT THE ARC, OR BOTH, TO KEEP FUMES AND GASES AWAY FROM YOUR BREATHING ZONE AND THE GENERAL AREA.

PROTECTIVE GLOVES: YES, WHEN WELDING EYE PROTECTION: SHIELD NECESSARY WHEN WELDING

OTHER PROTECTIVE EQUIPMENT: MAY INCLUDE ARM PROTECTORS, APRONS, SHOULDER PROTECTION, HATS,

AND DARK SUBSTANTIAL CLOTHING. DO NOT ALLOW LIVE ELECTRODES TO CONTACT SKIN.

SECTION VIII -- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HAULING AND STORING:

KEEP DRY

OTHER PRECAUTIONS: READ AND UNDERSTAND THE MANUFACTURER'S INTSRUCTION AND THE PRECAUTIONARY LABEL ON THE PRODUCT