



# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product identifier:** Metal cored electrodes for Gas shielded arc welding

**Product name:** Bonarc E70C-6M (AWS A5.18/A5.18M)

**Relevant identified uses of the substance or mixture and uses advised against:**

**Uses advised:** Reference the [7. Handling and storage]

**Details of the supplier of the safety data sheet:**

**Supplier Name:** Vanguard Steel Ltd

**Head Office Address:** 2160 Meadowpine Blvd.

Mississauga, Ontario

L5N6H6

Canada

**Telephone:** 905-821-1100

800-268-2169

## 2. HAZARD IDENTIFICATION

**Classification of the mixture:** The product is placed on the market in solid form.

**Classification in accordance with Directive 1999/45/EC:** Mixture is classified as R43, R42, Xn;R68/20, Xn;R48/20,21,22

**Classification in accordance with Regulation (EC) No 1272/2008:** Skin Sens. 1. H316, Resp. Sens. 1 H334, STOT SE 2 H371, STOT RE 2 H373

**Label elements:**

**Labeling in accordance with Regulation (EC) No 1272/2008:**

**Pictograms:**



GHS08

GHS07

**Description of any hazards not otherwise classified**

**Fumes and Gases :** Fumes & gases can be dangerous to your health. Fumes from the use of product may contain complex metallic oxides as well as calcium, chromium, manganese, silica, nickel. The fumes and gases can also be contributed by the base metal and its coating and preparation. For example, painting, galvanizing, or plating can contribute to fumes and gases. Chlorinated hydrocarbons used in cleaning and degreasing, can cause fumes and gases.

**Arc Rays :** Arc Rays can injure eyes and burn skin

**Electric Shock :** Electric shock can kill



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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	CAS Number	Content (%)
Magnesium Oxide	1309-48-4	<0.5
Alumina	1344-28-1	<0.5
Flourides (as F)	16984-48-8	<0.5
Manganese	7439-96-5	1.5 - 2.5
Manganese Oxide	1344-43-0	<0.5
Zirconium-Aluminum	12004-83-0	<0.5
Aluminum	7429-90-5	<0.5
Magnesium	7439-95-4	<0.5
Silicon	7440-21-3	<1.0
Titanium Dioxide	13463-67-7	<7.0
Iron	7439-89-6	60 - 85
Ferro-Titanium	12719-90-3	<0.5
Nickel	7440-02-0	<2.0
Complex	66402-68-4	<1.0

## 4. FIRST AID MEASURES

**Inhalation** : If breathing is difficult, provide fresh air and contact physician.

**Eye Contact** : Fume or dust from this product should be flushed from the eyes with copious amounts of clean, tepid water until victim is transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once. Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

**Skin Contact** : Remove contaminated clothing and wash the skin with cool water promptly with mild soap. If the skin has thermal burns, obtain medical assistance at once.

**Ingestion** : If breathing is difficult, provide fresh air and avoid eating & drinking. If some symptoms are founded, Obtain medical assistance at once.

**See toxicological information on various ingredients**

in Section 11 of this Safety Data Sheet. See how to protect yourself and your co-workers in Section 8 of this SDS.

## 5. FIREFIGHTING MEASURES

The welding consumables mentioned in this SDS are nonflammable, nonexplosive, nonreactive and are non-hazardous till they are welded. The welding arc is an intense source of energy that can ignite flammable and combustible products. The sparks and spatters can do the same. Even after use, the welding consumables can remain hot for quite some time. The associated tools and fixtures also can remain hot after completion of the welding process. Refer to American National Standard Z49.1 for further safety and handling information.

And refer to the Canadian Standard " Safety in Welding and Cutting, and Allied Processes" CAN /CSAW117.2-M87 for fire prevention and protection information during the use of welding and allied procedures.



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## 6. ACCIDENTAL RELEASE MEASURES

The welding consumables are essentially solid materials that can be picked up and put in any suitable container. Use hand gloves or other PPE equipment while picking up. However, the materials should not be discarded as general trash. Put into only in those containers so marked for disposal as classified waste.

## 7. HANDLING AND STORAGE

Handle with care to avoid physical injuries like cuts, abrasions, etc. Use protective gloves. Avoid exposure to dust to prevent allergies. Retain the warning label and product labels. Keep the material away from acids and other reactive chemicals. Keep in proper storage area.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

The OSHA Permissible Exposure Limits of air contaminants for the hazardous ingredients present in consumable materials is indicated in Section 2. The ACGIH threshold limit values for the same is also indicated. It should be noted that welding fumes do not have a specific OSHA PEL or ACGIH TLV. All exposure limits is in mg/m<sup>3</sup>. For a complete analysis of the hazard, an industrial hygienist should be consulted. The exposure can be mitigated to a great extent by resorting to measures indicated below. It is most important that the exposure is below PEL and TLV. Always use exhaust ventilation. Refer to following for additional information: American National Standard (ANSI) Z49.1, Safety in Welding and Cutting published by American Welding Society.

Hazardous Ingredients	CAS Number	OSHA PEL(mg/m <sup>3</sup> )	ACGIH TLV(mg/m <sup>3</sup> )
Magnesium Oxide	1309-48-4	15	10 I*
Aluminum Oxide	1344-28-1	5R*	1R*
Flourides (as F)	16984-48-8	2.5(as F)	2.5(as F)
Manganese	7439-96-5	5CL	0.1 I*, 0.02R*
Manganese Oxide	1344-43-0	5CL	0.1 I*, 0.02R*
Feldspar	68476-25-5	-	-
Zirconium-Aluminum	12004-83-0	5, 10(STEL)	1I*1R*
Zirconium	14940-68-2	5, 10(STEL)	5, 10(STEL)
Aluminum	7429-90-5	5R*	1R*
Chromium	7440-21-3	1(Metal), 0.5(CrII&CrIII), 0.005 (CrVI)	-
Magnesium	7439-95-4	5R*	3R*
Magnesium Oxide	1309-48-4	15	10 I*
Silicon	7440-21-3	5R*	3R*
Barium Carbonate	513-77-9	0.5(as Ba)	-
Lithium Carbonate	554-13-2	5R*	3R*
Titanium Dioxide	13463-67-7	15	10
Nickel	7440-02-0	1	1.5 I*
Iron	7439-89-6	10, 5R*	5R*
Ferro-Titanium	12719-90-3	5R*	3R*
Calcium Flouride	7789-75-5	2.5	2.5
Complex	66402-68-4	-	-

\* The following chemicals are subject to reporting under Superfund Amendments and Reauthorization Act (SARA) of 1986, Title III: Aluminum (fume or dust), Compounds of Barium, Chromium, Copper, Manganese, and Nickel.



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### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION CONTINUED

**Ventilation** : Ask welder to keep his head out of the fumes. Use enough ventilation including local exhaust to keep the fumes and gases below PEL/ TLV Respiratory Protection . Use NIOSH approved or equivalent fume respirator or air when welding in confined space or where there are chances of the fumes being in excess of PEL/TLV limits.

**Eye Protection** : Use helmet or face shield with lens of shade 14 or near about. Provide protective screens or flash goggles to others for shielding against arc rays and arc flash.

**Protective Clothing** : Use hand, head, and body protection to prevent against arc rays, flash, sparks, spatters, and electric shock. Use aprons, hats, shoulder protection, and non-synthetic clothing. See ANSI Z49.1 published by American Welding Society.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

The welding consumables indicated in this Data Sheet, are nonflammable, nonexplosive, nonreactive and are essentially nonhazardous unless welded. They have following characteristics:

**Physical State** : Cored wire in solid state

**Color** : Gray or Dark Gold

**Odor** : N/A

**Form** : Round wire

### 10. STABILITY AND REACTIVITY

**Chemical Stability** : Welding consumables embodied in this sheet , are stable under normal conditions. They are solid, nonvolatile, nonreactive, and nonflammable. The product is designed to be used at certain parameters indicated. Only when the product is subjected to welding, hazardous fumes and gases are created. The fumes and gases can also be contributed by the base metal and its coating and preparation. For example, painting, galvanizing, or plating can contribute to fumes and gases. Chlorinated hydrocarbons used in cleaning and degreasing, can cause fumes and gases. The amount of fume may vary with welding parameters.

**Reactivity** : The product is nonreactive. It can be reactive in contact with acids or strong bases.

### 11. TOXICOLOGICAL INFORMATION

#### Short Term (Acute) Overexposure Effects

**Welding Fumes** : May result in discomfort such as dizziness, nausea or dryness or irritation of the nose, throat, or eyes.

**Aluminum Oxide** : Irritation of the respiratory system.

**Antimony Compounds** : Irritation of nose, throat, eyes, and skin.

**Barium** : May cause aching eyes, rhinitis, headache, wheezing, laryngeal spasms, salivation or anorexia.

**Chromium** : Inhalation of fume with Cr VI compounds, can cause irritation of the respiratory system, lung damage, and asthma-like symptoms. Swallowing Chromium VI salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by Chromium VI compounds. Allergic reactions may happen in some people.

**Fluorides** : Fluoride compounds evolved may cause skin and eye burns, pulmonary edema, and bronchitis.

**Iron and Iron Oxides** : Can be treated as nuisance dust.

**Lithium Compounds** : Overexposure may cause tremor and nausea.

**Magnesium and Magnesium Oxide** : Overexposure may cause metal fume fever, characterized by metallic taste, tightness of chest and fever.



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## 11. TOXICOLOGICAL INFORMATION CONTINUED

**Manganese and Manganese Oxide** : May cause metal fume fever with chills, fever, upset stomach, vomiting, irritation of throat, and body ache. Recovery may take up to 48 hours after the overexposure.

**Nickel and Nickel Compounds** : Overexposure may cause metal fume fever, metallic taste, tightness in chest, nausea, and allergic reaction.

**Silica (amorphous)** : Dust and fumes may cause irritation of respiratory system, skin, and eyes.

**Titanium Dioxide** : May cause irritation of respiratory system.

**Zirconium** : May cause irritation of eyes, nose, and throat.

### Long Term (Chronic) Overexposure Effects

**Welding Fumes** : Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or siderosis

**Aluminum Oxide** : May cause pulmonary fibrosis and emphysema.

**Antimony Compounds**: May cause metal fume fever, dermatitis, keratitis, conjunctivitis, and ulceration and perforation of nasal septum. Guard against Hydrogen coming in contact with antimony; this can form stibine which is extremely toxic.

**Barium** : Long term exposure in soluble barium compounds can affect nervous system and also may affect heart, muscles and circulation.

**Chromium** : Inhalation of fume with Cr VI compounds, can cause irritation of the respiratory system, lung damage, and asthma-like symptoms. Swallowing Chromium VI salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by Chromium VI compounds. Chromium III can add to the harmful effects of other chromium compounds. Ulceration and perforation of septum is also possible on long exposure to chromium compounds.

**Fluorides** : Long term overexposure to fluorides may lead to bone erosion, osteoporosis and mottling of teeth.

**Iron and Iron Oxides** : Long term exposure can cause siderosis that affects pulmonary function. This is , however, reversible.

**Lithium Compounds** : Overexposure may cause malformations in the body.

**Magnesium and Magnesium Oxide** : No long term effect is known.

**Manganese and Manganese Oxide** : Long term exposure may affect central nervous system. The symptoms could be muscle spasm, slowness, tremors, change in behavioral patterns, etc. Overexposure to manganese and manganese compounds can cause irreversible damage to central nervous system and neurological damages with slurred speech, lethargy, tremor, and muscular weaknesses.

**Nickel and Nickel Compounds** : Long term exposure can cause lung fibrosis or pneumoconiosis and lung and nasal cancers.

**Silica (amorphous)** : Amorphous silica present in welding fumes can cause pneumoconiosis.

**Titanium Dioxide** : May cause pulmonary irritation and fibrosis.

**Zirconium** : May cause pneumoconiosis and pulmonary fibrosis.

**Medical Conditions Aggravated by Exposure** : Persons with impaired lung and heart functions such as with asthmatic conditions, heart with pacemaker, or other heart conditions should take precautions in going near to a welding operation. They should consult a doctor before doing so. Respirators and other personal protective devices should be used as much as possible.

**Emergency and First Aid Procedures**: Call for medical aid. Employ first aid techniques recommended by American Red Cross. If irritation or flash burns develop on the skin, consult a physician.

**Carcinogenicity** : Hexavalent Chromium compounds (Cr VI), nickel compounds, and crystalline silica are classified as IARC Group 1 and NTP Group K carcinogens. Titanium dioxide, antimony trioxide, and cobalt compounds are classified as IARC Group 2B carcinogens. Chromium VI, cobalt compounds, nickel compounds, and crystalline silica(quartz) and welding fumes must be considered as carcinogens under OSHA(29CFR 1910.1200).

**California Proposition 65** : These products contain or produce chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health and Safety Code Section 25249.5 et.seq.)

**Warning** : This product, when used for welding or cutting, produces fumes and gases that contain chemicals known to the State of California to cause birth defects, and cancer ( California Health and Safety Code Section 25249.5 et. Seq.)



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### 12. ECOLOGICAL INFORMATION

It should be understood that the welding process releases fume and gases directly to the environment. The welding materials are susceptible to degradation when left unprotected. Welding consumables as well as their residues can degrade and accumulate in the soil and ground water.

### 13. DISPOSAL CONSIDERATIONS

Prevent waste from contaminating the surrounding environment. Use recycling whenever possible. Discard any product, packaging, liner, residue, or disposable container in an environmentally acceptable manner in full compliance with federal, state, and local regulations.

### 14. TRANSPORT INFORMATION

These products being nonexplosive, nonflammable, nonreactive and nonhazardous in nature until welded, no special precautions are necessary in transportation. No international regulations or restrictions are applicable.

### 15. REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices, and precautionary label on the product. See material safety data sheet and American National Safety Standard Z49.1, "Safety in welding and cutting" published by the American Welding, P.O.Box 351040, Miami, FL 33135 and OSHA Publication 2206(29 CFR 1910), U.S. Govt. Printing Office, Washington, D.C. 20402. Observe all federal, state, and local rules and regulations. Take all necessary precautions to save yourself and others.

**CERCLA/SARA TITLE III Toxic chemicals** : The following metallic components are listed as "Toxic Chemicals" in SARA 313. They are potentially subject to annual SARA 312 reporting as Antimony compounds, Cobalt, Copper, Lithium carbonate, Manganese and Nickel. Some of the safety measures that should be looked into deeply

**Ventilation** : Use enough ventilation to keep fumes and gases below TLVs in workers' breathing zone. Worker must be trained to keep his head out of fume.

**Respiratory Protection** : Use NIOSH approved or equivalent respirator as and when necessary, such as in confined space.

**Eye Protection** : Begin with shade number 14 and adjust to lower or higher shades as necessary. Use protective screens, face shields, etc., to protect others.

**Protective Clothing** : Wear hand, head, and body protection from radiation, sparks, and electric shock. See ANSI Z49.1. Welders must use welder's gloves, face shields as minimum and may use arm protectors, aprons, hats, shoulder protection, and use non-synthetic clothing. They should be trained not to touch live electrical parts and insulate himself from work and ground.



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### 16. OTHER INFORMATION

**For additional information, refer to following**

- ANSI American National Standard Z49.1- " Safety in welding and cutting"
- ANSI/American Welding Society (AWS) F1.5- Methods of sampling and analyzing gases from welding and allied processes.
- ANSI/AWS F1.1- Method for sampling airborne particles generated by by welding and allied processes.
- AWS F3.2M/F3.2- Ventilation guide for welding fume.
- American Welding Society, 8669 Doral Blvd, Suite 130, Doral, FL 33166.
- OSHA Publication 2206 (29 CFR 1910), U.S. Govt. Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954
- Threshold Limit Values and Biological Exposure Indices: Published by ACGIH, American Conference of Government Hygienists, 6500 Glenway Ave., Cincinnati, OH 45211.
- NFPA 51B- "Standard for fire prevention during welding, cutting, and other hot work"- published by National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169
- CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting and Allied Processes".