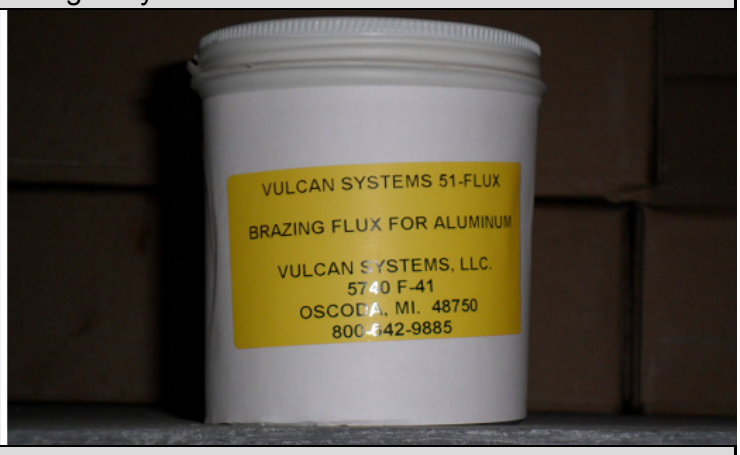
ALUMINUM

Vulcan G-51; G-51 Flux	Low Heat Brazing Alloy and flux for all Weldable Aluminum.
Picture:	 
Type of Wire:	High Silicon Aluminum
Description:	Specifically alloyed for use with torch or tig on all known weldable and brazable aluminums. It is not necessary to melt the base metal when using this product because it works similar to silver brazing alloys that are very fluid. Deposits have good color match to aluminum, high strength, and good electrical conductivity.
Typical Applications:	Joining thin wall tubing, sheets, and extrusions; manufacturing and repair of furniture, truck bodies, window frames, instruments, and appliances.
Procedures:	Clean joint area, preferably by mechanical means. For best results, a maximum of .010" joint clearance should be maintained. Large sections should be preheated to 600 to 900 degrees F. Use a carburizing flame to heat part broadly. Heat end of rod, dip into Vulcan G-51 flux and transfer to a joint area. Continue heating until flux liquifies. Melt a small amount of rod onto the joint and continue heating until it flows through the entire joint. Add sufficient alloy to completely fill the joint but use ample flux at all times to prevent contamin-ation from the atmosphere. Allow to coool slowly and then remove all flux residue with hot water and stiff brush.
Specs:	**Tensile Strength** up to 35,000 PSI **Yield Strength** up to 24,000 PSI **Hardness** up to 50 RC **Elongation Factor** 7% to 15%
Current/ Amperage for Each Size:	**3/32" Dia.** AC/DCEN (electrode -) **1/8" Dia.** AC/DCEN (electrode -) Adjust amperage to metal thickness.
Warnings:	**Fumes and gases can be dangerous to your health. Arc rays can injure eyes and burn skin. Electric shock can kill. See "American National Standard Z49.1 Safety to Welding and Cutting.**
Manufactured by:	Vulcan Systems, LLC 5740 F-41 Oscoda, MI 48750 1-800-642-9885 FAX: 1-888-750-8482 info@vulcan-systems.com

MATERIAL SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Revised: Mar. 2011

Trade Name: Vulcan G-51
Emergency Telephone. No: (989)739-8050

Manufacturer: Vulcan Systems, LLC
5740 F-41, Oscoda, MI 48750

SECTION 2 – HAZARDOUS INGREDIENTS

This section covers the material from which this product is manufactured. The term "hazardous ingredients" should be interpreted as a term required and defined in OSHA hazard communication standard. This product contains toxic chemicals subject to the reporting requirements of section 313 of title III of SARA and CFR part 372.

INGREDIENT	CASE NO.	Time-Weighted Average Exposure Value (TWAEV)	%
SILICON	7440-21-3	10 as total dust	4.5-6
IRON	7439-89-6	5 as oxide fume	.80 max.
COPPER	7440-50-8	.2 as fume	.30 max.
MAGNESIUM	1309-48-4	10 as fume oxide	.05 max.
MANGANESE	7439-95-5	1 as fume (max)	.05 max.
ZINC	1314-13-2	5 as oxide fume	.10 max.
TITANIUM	7440-32-6	10	.20 max.
ALUMINUM	7429-90-5	10 as metal and oxide 5 as welding fume	Balance

SECTION 3 – PHYSICAL AND CHEMICAL CHARACTERISTICS

PHYSICAL FORM:	SOLID
MET TEMPERATURE:	521-657 C (970-1215 F)
SPECIDIC GRAVITY:	2.5-2.9
COLOR:	SILVER
ODOR:	NONE

SECTION 4 – FIRE AND CHEMICAL CHARACTERISTICS

Non-flammable. Welding arc and sparks can ignite combustible and flammable products. Refer to the Canadian standard "Safety in Welding and Cutting and Allied Procedures" for fire prevention and protection information during the use of welding and allied procedure. **Extinguishing Media** – Co2 or Dry Chemical Extinguisher.

SECTION 5 – HAZARDOUS DECOMPOSITION PRODUCTS

Welding fumes cannot be classified simply. The composition and quantity of both are dependent on the metal being welded, the process, procedures, and electrodes used. Other conditions which also influence the composition and quality of the fumes and gases to which workers may be exposed include coating on the metal being welded (such as paint, plating, or galvanizing), the number of welders, the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, and presence of contaminants in the atmosphere (ie, chlorinated hydrocarbon vapors from cleaning & degreasing activities). When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in section 2. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in section 2, plus those from the base metal and coating, etc.

SECTION 6 – HEALTH HAZARD

The international agency for research on cancer (IARC) has indicated that nickel and certain nickel compounds are probably carcinogenic for humans, but that the specified compounds which may be carcinogenic cannot be specified precisely. Chromium has also been listed by IARC because of "sufficient evidence for the carcinogenicity of chromium and certain chromium compounds." The studies forming the basis for the conclusion were from operations different from the production or welding of nickel and chromium alloys. Recent studies of workers melting and working alloys containing nickel/chromium have found increased risk of cancer. Nevertheless, exposure limits for these and all others must be maintained below the levels specified in sections 2 & 5.

Route of entry - primarily the respiratory system, eyes and skin.
Effects of acute exposure - Short term overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, lungs, or eyes. (see section 5&7)
Effects of chronic exposure - Long term over exposure to welding fumes can result in chronic respiratory problems, iron build up in the lungs, bone erosion, reduced pulmonary functions and nervous disorders.
Irritancy of products - Aggravation of pre-existing respiratory of allergenic conditions may occur in some workers even if the concentration of the fume is maintained below the recommended limits. Some studies have shown a higher level of lung related problems among older welders who smoked than those who did not smoke.
Carcinogenicity - Nickel and chromium must be considered possible carcinogens under OSHA (29cfr19410.1200).

SECTION 7 – PRECATIONS FOR SAFE HANDLING AND USE

Read and understand manufacturer's instructions and the precautionary label on the product. See American National Standard z249.1 "Safety in Welding and Cutting" published by the American Welding Society. Maintain all exposure below the limits in section 5. Monitor the air to ensure that the levels are below the above mentioned limits. See AWS f1.1 "Methods for Sampling Airborne Particles Generated by Welding and Allied Procedures" and AWS f1.3 "Evaluating Constituents in the Welding Environment: A Sampling Strategy Guide."

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLVs (threshold limit values) in the workers' breathing zone and the general area. Train the welder to keep his head out of the fumes. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the TLV.

Wear helmet or use a face shield with filter lens. Wear hand, head, and body protection, which help to prevent injury from radiation, sparks, and electrical shock. Train the welder not to touch live electrical parts and insulate himself from work and ground.

Prevent waste from contaminating the surrounding environment, discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, and local regulations.

SECTION 8 – FIRST AID PROCEDURES

If overcome by smoke or fumes, remove the victim to fresh air and call for medical aid. Employ first aid techniques recommended by the Red Cross.