

1. PRODUCT NAME

ENERCHRON® V40

2. SUPPLIER

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3. PRODUCT DESCRIPTION

ENERCHRON is a fluid surface applied, energy efficient, environmentally beneficial, coating system which is designed to reduce energy flow through building surfaces, protect building substrates from degradation and decorate interior, exterior and roof surfaces. The system is highly flexible and allows for greater movement with the substrate, even at low temperatures, and accommodates the thermal expansion and contraction of the substrate. This material has superior resistance to ponding water; it even seals against driving rain storms. On interior surfaces it offers excellent acoustical properties. It will resist the impact of hailstones, is resistant to cracking upon long term exterior exposure, offers chemical and flame resistance and protection from ultraviolet degradation. It has high resistance to dirt pickup for long term electromagnetic radiation reflectivity, lowering heating and air conditioning costs.

The material incorporates Du Pont KEVLAR® fibers (which are five times as strong as steel and are inherently flame resistant) in a new resin technology which gives this coating system excellent thermal qualities for condensation control and exceptional strength durability characteristics. It will transmit low levels of water vapor through the material and thereby resists the formation of vapor traps in the building.

Basic Use: Surface applied energy efficient, graffiti fighting, weather barrier, coating system for application over wood, metal and roofing surfaces (on approval), masonry, plaster and concrete substrates. The durability, elasticity, energy reflective and cleaning qualities of this one-piece membrane coating offers exceptional protection to building structures, storage tanks.

Limitations: The substrate must be clean and sound before product application. ENERCHRON cannot be bonded to wax, oils, grease or solvent based tar. It cannot be applied to concrete cured with compounds of wax or chlorinated rubber. It should not be applied to totally flat roofs. ENERCHRON must have 7 days cure time before being exposed to ponding water conditions.

Composition and Materials: ENERCHRON is a new coating system which is environmentally friendly, non-halogen and flame retardant with a VOC emission well below the VOC limits for architectural coatings as set by the EPA and California Air Pollution Control Districts. This is the first coating of its kind to incorporate Du Pont KEVLAR® fibers and FS-EMRST™ resin technology. It totally eliminates hazardous and expensive solvents since it can be cleaned with water.

Sizes: The basic ingredients in ENERCHRON are shipped in liquid form in metal and plastic containers, in sizes of 5 and 50 gallon capacity.

Colors: White is a standard color. It may be tinted to an off-white or pastel color using a maximum amount of appropriate colorant of 1/8 to 1/4 of a fluid ounce of tint per gallon.



This Spec-Data Sheet conforms to editorial style prescribed by The Construction Specifications Institute. The manufacturer is responsible for technical accuracy.

4. TECHNICAL DATA

Physical properties of ENERCHRON are included in Table 1. Test results of the cured coating film are listed in Table 2.

TABLE 1. PHYSICAL PROPERTIES OF ENERCHRON®

PHYSICAL PROPERTY	RESULTS	PHYSICAL PROPERTY	RESULTS
Flashpoint	- None	Material VOC	- 60 G. / L.
Odor	- Slight Ammonial Odor	Gloss	- Flat/Sheen
Specific Gravity	- 1.10	Grind	- 4 - 5
Viscosity	- 88-95 KU	Spread @1mil	- 872 S.F./ G. Dry
Solids by Volume %	- 54.38%	Dry Time	- 30 Min. @ 68f / 20C
		Cure	- 7 Days
		Weight/Gal.	- 9.18 Lb./Gal.

TABLE 2. PERFORMANCE REQUIREMENTS OF CURED FILM

PHYSICAL PROPERTY	TEST METHOD	RESULTS
Fire Retardancy	ASTM-E108-88	Class "A" over noncombustible substrate. Test results after 30 days cure time.
Reflectivity %	Albedo LBL	.81
Loss of reflectivity of material cleaned after 4 seasons of real world measurements	Albedo LBL	Less than .03 loss of original surface measurement. Surface color within 3% of original color.
Surface 5 yrs old, temp. @ peak solar gain June	FLUKE - 85 80T-150U	Temperature within 4 degrees F. of original surface measurement
Impact Resistance	ASTM-D-2794	Withstood 160 inch pounds.

5. INSTALLATION

Licensed Contractors:

ENERCHRON coatings should only be applied by licensed contractors of the Helios Energy Products Corporation. These licensed contractors are trained for the application of Helios Energy Products coatings in complete accordance with application instructions provided by the Helios Energy Products Corporation. Contractors are licensed on a non-exclusive basis.

Preparatory Work:

Contractors Must Refer to ENERCHRON® APPLICATION SPECIFICATIONS: EAS-VB.

Applicators have the responsibility for following proper application methods as per instructions and specifications under Helios Energy Products Corporation, SSPC, PDCA and ISO 9001 standards. Proper surface preparation is of the utmost importance. All surfaces to which ENERCHRON® is to be applied must be uniform, dry, clean, free of sharp projections and other defects. Remove dirt, chalked paint, mildew and any foreign matter. Loose or scaling materials not removed by pressure cleaning shall be removed by power or hand tool cleaning.

Methods:

The ENERCHRON® system is applied by spray or roller. Small areas may be brushed. Preferred method is to apply with airless spray system. When using the spray method a size 20 tip is recommended.

Primer: ENERCHRON® is self-priming EXCEPT OVER SURFACES WHICH MAY BLEED. Over wood, metal or any substrates that may bleed, primers are recommended, as specified by the Helios Energy Products Corporation. Over roof substrates the applied system must be approved in writing, by the Helios Energy Products Corporation prior to product application.

Thinning: DO NOT THIN. Material is supplied at spray viscosity and needs no thinning.

Cleanup: Clean all equipment immediately with soap and water. Spray equipment should be flushed with Mineral Spirits to remove water.

WARNING: Because of the highly reflective nature of ENERCHRON protective sunglasses must be worn when coating external surfaces.

TABLE 2. PERFORMANCE REQUIREMENTS OF CURED FILM

PHYSICAL PROPERTY	TEST METHOD	RESULTS
Adhesion (tape cross hatched method)	ASTM-D-3359	100% of coating remained in place.
Abrasion Resistance	ASTM-D-968	Withstood 450 liters of falling sand abrasion. No wear through.
Chemical Resistance	ASTM-D-1308	24 hour exposure to 9 chemicals. No effects from Ethyl Alcohol, Vinegar, Petroleum Based Mineral Oil and Mineral Spirits, Animal Fat, Detergent & Soap Concentrate (Included Tide, Ivory and Clorox) and Distilled Water. Little to no effects from Sodium Hydroxide 50% Solution, Hydrochloric Acid 10% Solution.
Corrosion Resistance	ASTM-B-117	600 hours salt fog. No rust.
Accelerated Weathering	ASTM-E-42	Maintained elastomeric properties after 3000 hours (8.2 years) No cracking, no delamination, no checking, no blooming, chalking or shrinkage.
Cold/Hot Cycling	ASTM-D-1211	6 cold / hot cycles. No cracking or other deleterious effects +82 degrees C. and -40 degrees C. Cold checking 6 cold check cycles. No cracking or other deleterious effects.
Blistering Resistance	ASTM-D-714	No blisters.
Ponding Water Resistance	ASTM-G-53	56.0 initial, 36.9 1000 Hrs.
Fungal Resistance	ASTM-D-3273-73T	No fungal growth on sample.

6. AVAILABILITY AND COST

Availability: ENERCHRON is available through licensed applicators.

ENERCHRON®

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ENERCHRON® V40

HMIS CODES: H F R P
0 0 B

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: HELIOS ENERGY PRODUCTS, INC.

MAIL ADDRESS: POB 9 Diamond Springs, CALIFORNIA 95619

EMERGENCY PHONE: 916-332-5424

DATE REVISED: 01-09-93

NAME OF PREPARER: R Klimovich

SECTION II - HAZARDOUS INGREDIENTS/ SARA III INFORMATION

HAZARDOUS COMPONENTS	OCCUPATIONAL EXPOSURE LIMITS				VAPOR PRESSURE mm Hg @ TEMP	WEIGHT PERCENT
	CAS NUMBER	OSHA PEL	ACGIH TLV	OTHER		

NO REPORTABLE QUANTITIES OF INGREDIENTS ARE PRESENT.

*** No toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372 are present.***

SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING RANGE: 212 F°

SPECIFIC GRAVITY (H20=1): 1.10

VAPOR DENSITY: LIGHTER THAN AIR

EVAPORATION RATE: SLOWER THAN ETHER

MATERIAL V.O.C. : 60 G/L

SOLUBILITY IN WATER: DILUTABLE

APPEARANCE AND ODOR: WHITE MILKY FLUID, MILD ODOR.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE

FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: NON-FLAMABLE UPPER: NON-FLAMABLE

EXTINGUISHING MEDIA: WATER FOG, DRY CHEMICAL

SPECIAL FIREFIGHTING PROCEDURES: Non-flammable (aqueous emulsion). After water evaporates, remaining material will carbonize, full carbonization at 2500 F°.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Product will not burn but may splatter if temperature exceeds boiling point of water. Dried solids may burn, giving off oxides of carbon.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: Avoid inhalation of product spray through use of engineering controls. Use respirators.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon monoxide, carbon dioxide, oxides of nitrogen.

HAZARDOUS POLYMERIZATION: Will not occur. None

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MATERIAL SAFETY DATA SHEET

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: Trace component and residual monomer vapors may be irritating to eyes, skin, mucous membranes, respiratory tract and may produce symptoms of headache and nausea in poorly ventilated areas.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE: Prolonged contact may cause transient reddening of the skin. Direct contact may cause eye irritation.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: Transient reddening of the skin.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: No evidence of adverse effects from available information. Consult physician.

HEALTH HAZARDS (ACUTE AND CHRONIC): Toxicology studies of similar material have shown, the material to be of very low acute toxicity. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition. There is no evidence of adverse effects from available information.

CARCINOGENICITY: NTP? NO, IARC MONOGRAPHS: NO, OSHA REGULATED? NO May contain trace amounts of free formaldehyde. Formaldehyde is identified by OSHA as a potential carcinogen. There is minimal to no risk when used with proper ventilation.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: No evidence of adverse effects from available information.

EMERGENCY AND FIRST AID PROCEDURES: Swallowing: No harmful effects expected. See physician. Inhalation: No emergency care anticipated. Eyes and Skin: Immediately flush thoroughly with water, wash skin with soap and water. If clothing is soaked, remove and wash before reuse.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Minor spills may be reduced with water and flushed down sewer, if permitted by local, state and federal regulations. Major spills should be collected for disposal.

WASTE DISPOSAL METHOD: Bury in suitable landfill where permitted by appropriate government regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid breathing vapors. Keep container closed. Use with adequate ventilation. Avoid contact with skin and clothing. Wash thoroughly after handling. Keep from freezing.

OTHER PRECAUTIONS: Not known.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: Use MSHA/NIOSH approved respirator in poorly ventilated areas to keep airborne mists and vapor concentrations below the time weighted threshold limit values (TLV).

VENTILATION: Mechanical ventilation or local exhaust should be suitable to keep vapor concentrations below TLV.

PROTECTIVE GLOVES: Impermeable chemical handling gloves for skin protection.

EYE PROTECTION: Use chemical safety glasses, goggles and faceshields for eye protection. When applying material to exterior surfaces 100% U.V. reducing sunglasses must be worn.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Use impermeable aprons and protective clothing whenever possible to prevent skin contact.

WORK/HYGIENIC PRACTICES: Eye washes and safety showers in the work place is recommended.

SECTION IX - DISCLAIMER

DISCLAIMER: To the best of our knowledge, the information herein is accurate, obtained from sources believed by HELIOS ENERGY PRODUCTS, INC. to be accurate.