Initial Preparation Date: ***11/10/2004***
Last Revision Date: ***None***
Effective Date: ***8/1/2005***

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTITY: PEAK® 0° WASH

1. CHEMICAL PRODUCT & COMPANY INFORMATION

OLD WORLD INDUSTRIES, INC.
4065 COMMERCIAL AVENUE
NORTHBROOK, ILLINOIS 60062
PHONE: 847-559-2000
EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC)

2. COMPOSITION / INFORMATION ON INGREDIENTS

MATERIAL	***CAS#***	***% BY WT***	***8-Hour Time Weighted Avg. (TWA)***
Methanol	67-56-1	<23	200 ppm (260 Mg/M^3)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Slight odor.	***May be fatal if swallowed.***	***Vapors can cause eye irritation.***

LD50 Rat (Oral):	32,361 mg/kg	(23% methanol concentration)
LD50 Rabbit (Skin):	115 g/kg	(23% methanol concentration)
Carcinogency:	No	
National Toxicology Program:	No	
International Agency for Research on Cancer:	No	
OSHA Regulated:	Yes	

HAZARD RATING SYSTEM

HMIS: HEALTH: 2 FLAMMABILITY: 2 REACTIVITY: 0 PERSONAL PROTECTION: A

KEY: 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe A - Safety glasses

POTENTIAL HEALTH EFFECTS

Health Hazards (Acute and Chronic):

Acute:

Acute methanol intoxication is manifested initially by signs of narcosis. This is followed by a latent period in which formic acid accumulates in the body causing metabolic acidosis. Severe abdominal, leg, and back pain occur and visual degeneration can lead to blindness.

1. Humans – Ingestion of 80 to 150 mL of methanol is usually fatal to humans (HSDB 1994). One worker died from exposure to vapor ranging from 4,000 to 13,000 ppm over 12 hours (ACGIH 1991). The concentration of 4,000 ppm is roughly equivalent to a total of 1,140 mg/kg over the 12-hour period (see end note 2). Poisoning by nonlethal doses can be described in three stages: (1) narcotic stage similar to ethanol; (2) latent period of 10-15 hours; (3) visual disturbances and central nervous system lesions (Rowe and McCollister 1981). Visual disturbances can lead to blindness due to edema of the retina and atrophy of the optic nerve head (HSDB 1994). Third-stage CNS lesions include headache, dizziness, abdominal, back, and leg pain, delirium that can lead to coma, and nausea (HSDB 1994). Formic acid production causes severe metabolic acidosis (Rowe and McCollister 1981).

2. Animals – Oral LD50 values for methanol is animals are 0.4 g/kg in the mouse, 6.2 to 13 g/kg in the rat, 14.4 g/kg in the rabbit, and 2 to 7 g/kg in the monkey (Rowe and McCollister 1981). The LD50 for dermal application to rabbits is 20 mL/kg (approximately 16 g/kg) (Rowe and McCollister 1981). Dose-response data for inhalation vary with species, dose, and duration (8,800 ppm for 8 hours to 152,800 ppm for 94 minutes). Symptoms of intoxication include incoordination, salivation, lethargy, narcosis, and death (Rowe and McCollister 1981).

Subchronic/Chronic:

Chronic exposure to methanol, either orally or by inhalation, causes headache, insomnia, gastrointestinal problems, and blindness in humans and hepatic and brain alterations in animals. EPA has derived an oral RfD (reference dose) (see end note 3) for methanol of 0.5 mg/kg/day, based on the absence of liver and brain effects in animals exposed by mouth to 500 mg/kg/day.

1. Humans – "Chronic" exposure to methanol vapors (no time or dose given) caused conjunctivitis, headache, giddiness, insomnia, gastric disturbances, and bilateral blindness (ACGIH 1991). Marked vision loss occurred in one worker exposed to 1,200 to 8,000 ppm vapor for 4 years (ACGIH 1991).

2. Animals – No effects were seen in rats given 1% (approximately 140 mg/kg/day) methanol in drinking water for 6 months (Rowe and McCollister 1981). Hepatic abnormalities (proteinic degeneration, altered RNA metabolism) occurred in rhesus monkeys given 3 to 6 g/kg for 3 to 20 weeks and in rats given 10, 100, or 500 mg/kg/day for one month (Rowe and McCollister 1981). Rabbits chronically fed methanol (no dose or time given) had increasing blood levels, brain and eye edema, and myelin thinning (HSDB 1994). Male and female rats were gavaged with 100, 500, or 2,500 mg/kg/day for 90 days (U.S. EPA 1994). Increased levels of SGPT and SAP as well as decreased brain weights were seen in both sexes at the highest dose; a no-observed-adverse effect level (NOAEL) for the study was 500 mg/kg/day. Based on

these data, the U.S. EPA (1994) calculated a chronic RfD (see end note 4) for methanol of 0.5 mg/kg/day. No toxic effects were seen in dogs exposed by inhalation to either 10,000 ppm for 3 minutes, 3x/day, for 100 days or to 450 or 500 ppm, 8 hours/day for 379 days (Rowe and McCollister 1981). Ultrastructural changes were observed in the photoreceptor cells of rabbits exposed to 46.6 ppm for 6 months (Rowe and McCollister 1981). Rowe and McCollister (1981) concluded that the effects of combined oral and inhalation exposure appear to be additive. Rats exposed by inhalation to 16.8 ppm, 4 hours/day, for 6 months and administered 0.7 mg/kg/day orally had changes in blood morphology, oxidation-reduction processes, and liver function (Rowe and McCollister 1981).

Carcinogenicity:

No information was found on the carcinogenicity of methanol in the secondary sources searched.

1. Humans – No information was found in the secondary sources searched concerning the carcinogenicity of methanol to humans.

2. Animals – No information was found in the secondary sources searched concerning the carcinogenicity of methanol to animals. The NTP has assigned a project leader for methanol and the design of the study is in progress (NTP 1994).

4. FIRST AID MEASURES
Ensure physician has access to this MSDS.

Routes of Entry: Inhalation, Skin, Ingestion

Signs and Symptoms of Exposure:

Eye Contact: May cause eye irritation.

Skin Contact: Frequent or prolonged contact may cause skin irritation experienced as burning, drying, cracking and redness.

Inhalation: May cause nose and throat irritation. High concentrations may cause acute central nervous system depression characterized by headaches, dizziness, nausea and confusion.

Skin Absorption Health Risks and Symptoms of Exposure: Harmful quantities of Methyl Alcohol may affect eyes and central nervous system.

Ingestion Health Risks and Symptoms of Exposure: May cause nausea, abdominal pain, headache, shortness of breath, visual impairment and blindness. Severe poisoning can cause coma and death.

Medical Conditions Generally Aggravated by Exposure: Ingestion of large amounts of Methyl Alcohol has been shown to damage organs including liver, kidney, pancreas, heart, lungs and brain. Although this rarely occurs, survivors of severe intoxication may suffer permanent neurological damage. Overexposure may aggravate pre-existing disorders of the eyes.

People have died as a result of drinking large amounts of methanol. Drinking smaller, non-lethal amounts of methanol adversely affects the human nervous system. Effects range from headaches to incoordination similar to that associated with drunkenness. Delayed effects such as severe abdominal, leg, and back pain can follow the inebriation effects of methanol. Loss of vision and even blindness can also occur after exposure to amounts of methanol causing inebriation. These effects are not likely to occur at levels of methanol that are normally found in the environment.

Human health effects associated with breathing or otherwise consuming smaller amounts of methanol over long periods of time are not known. Workers repeatedly exposed to methanol have experienced several adverse effects. Effects range from headaches to sleep disorders and gastrointestinal problems to optic nerve damage. Laboratory studies show that repeat exposure to large amounts of methanol in air or in drinking water cause similar adverse effects in animals.

TREATMENT

Eyes: Flush with large quantities of water for 15 minutes and seek medical attention.

Skin: Remove contaminated clothing and wash contaminated skin with large amounts of soap and water. If irritation persists, get medical attention. Launder clothing before reuse.

Inhalation: Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available. Get medical attention.

Ingestion: **Notes to Physician**: This product contains methanol which can cause intoxication and central nervous system depression. Methanol is metabolized to formic acid and formaldehyde. These metabolites can cause metabolic acidosis, visual disturbances and blindness. Since metabolism is required for these toxic symptoms, their onset may be delayed from 6 to 30 hours following ingestion. Ethanol competes for the same metabolic pathway and has been used to prevent methanol metabolism. Ethanol administration is indicated in symptomatic patients or at blood hemodialysis. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), liver, kidney, central nervous system, pancreas, heart). Exposure to this material may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemias.

If swallowed, induce vomiting of conscious patient immediately by giving two glasses of water and pressing finger down throat. Drink a large amount of water, milk or sodium bicarbonate to dilute material in stomach. (Never give anything by mouth to an unconscious person.) Call Poison Control Center, hospital emergency room or physician immediately.

5. FIRE FIGHTING MEASURES

FIRE & EXPLOSION HAZARD DATA

Flammable Properties

Flash Point:	103°F
Method Used:	Open cup

Flammability Limits - % of vapor concentration at which methanol can ignite in presence of spark.

LEL:	6.0%
UEL:	36.0%

Hazardous Combustion Products: Methanol

Extinguishing Media: Foam, dry chemical, carbon dioxide or any Class B extinguishing agent. Water may be unsuitable as an extinguishing medium but helpful in keeping adjacent containers cool

Fire Fighting Instructions: Use water spray to cool fire exposed containers.

Water may be ineffective but may be used to cool exposed containers to prevent pressure buildup and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

Unusual Fire and Explosion Hazards: Handle as flammable liquid. Vapors are heavier than air and may travel along the ground or may be moved by ventilation. Vapors form an explosive mixture in air between the upper and lower explosive limits which can be ignited by many sources, such as pilot lights, open flames, electrical motors and switches.

Protective Equipment For Fire Fighters: Wear NIOSH approved self-contained breathing apparatus with full face piece and protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Small Spill

Absorb liquid on vermiculite, floor absorbent or other absorbent material.

Large Spill

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

7. HANDLING AND STORAGE

Do not swallow. Store in closed containers in a cool, dry, well-ventilated area. Keep away from sparks and open flame.

Respiratory Protection: Use approved NIOSH respirator when TLV is exceeded.

Ventilation: Provide sufficient ventilation to maintain exposure below TLV.
Protective Gloves: Wear appropriate impermeable gloves.

Eye Protection: Use chemical safety glasses, goggles and face shields for eye protection.

Other Protective Clothing or Equipment: Long sleeves and apron are recommended.

Work / Hygienic Practices: Avoid prolonged or repeated skin contact.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Eye Protection:
Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

Skin Protection:
Wear resistant gloves (consult your safety equipment supplier). To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

Respiratory Protection:
If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respiratory is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls:
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines:
Component

Methyl Alcohol (67-56-1)
OSHA VPEL 200.000 ppm – TWA (skin)
OSHA VPEL 250.000 ppm – STEL (skin)
ACGIH TLV 200.000 ppm – TWA (skin)
ACGIH TLV 250.000 ppm – STEL (skin)

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Range:	184°F - 186°F
Specific Gravity (Water =1):	.97 @ 20° C
Vapor Pressure (mm of Hg):	37.2 @ 20° C
Vapor Density (Air=1):	Heavier than air
Water Solubility:	Soluble
Appearance:	Clear blue liquid
Odor:	Mild alcohol odor
Evaporation Rate:	Greater than m-butyl acetate

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: Ignition sources, such as heat, sparks and flames

Incompatibility (Materials to Avoid): Strong acids and strong oxidizing agents

Hazardous Decomposition Products: Burning can produce carbon monoxide and/or carbon dioxide. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations an act as an asphyxiant.

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Mutagenicity (The Effects On Genetic Material):

Genotoxicity:

Methanol was negative for cell transformation in Syrian hamster embryo cells (clonal assay and viral enhanced), sister chromatid exchange in vitro, and for aneuploidy and chromosome aberrations in Neurospora crassa (GENETOX 1992). The micronucleus test and the assay for chromosome aberrations in mammalian polychromatic erythrocytes were inconclusive (GENETOX 1992).

Developmental/Reproductive Toxicity:

No information was found on the developmental toxicity of methanol in humans. Methanol can cause adverse effects in the developing offspring in rats at doses that cause overt maternal intoxication.

1. Humans – No information was found in the secondary sources searched regarding the developmental or reproductive toxicity of methanol to humans. However, one of the breakdown products of the artificial sweetener aspartame is methanol. Increased blood methanol levels did not lead to increased formic acid levels in women receiving up to 200 mg/kg aspartame (no other details reported) and no evidence of fetal risk was detected (HSDB 1994).

2. Animals – Rats were exposed by inhalation, 7 hours/day, to 5,000 or 10,000 ppm methanol on gestation days 1-19 or to 20,000 ppm on days 7-15. Maternal intoxication (unsteadiness) occurred at the highest dose and coincided with extra or rudimentary ribs and urinary or cardiovascular defects in the fetuses (ACGIH 1991). Male rats had significantly lowered testosterone levels after inhalation exposure to 200 ppm methanol for 6 weeks; at 10,000 ppm a change in luteinizing hormone was also observed (HSDB 1994).

Neurotoxicity:

Methanol causes central nervous system depression in humans and animals as well as degenerative changes in the brain and visual system.

1. Humans – Methanol causes narcosis similar to ethanol intoxication and nonlethal doses can lead to blindness. Autopsy of individuals after lethal doses revealed edema and hyperemia of the brain and degeneration of the ganglion cells of the retina (Rowe and McCollister 1981).

2. Animals – Acute methanol intoxication in animals causes CNS depression as observed by narcosis, incoordination, lethargy, drowsiness, and prostration (Rowe and McCollister 1981).

Significant Data With Possible Relevance To Humans:

Pharmacokinetics:

1. Absorption – Methanol is readily absorbed after oral, inhalation, or dermal exposure. Oral doses in humans of 71 to 84 mg/kg resulted in blood levels of 4.7 to 7.6 mg/100 mL of blood within 3 hours (Rowe and McCollister 1981). Inhalation of 500 to 1,000 ppm methanol for 3 to 4 hours gave urine concentrations of 1 to 3 mg methanol/100 mL of urine at the end of exposure (Rowe and McCollister 1981). Based on urinary methanol levels, the rate of absorption of the chemical appears to be proportional to the concentration of vapor inhaled (HSDB 1994). The rate of dermal absorption increased for 35 minutes then decreased over the next 25 minutes (no other details given) (HSDB 1994).

2. Distribution – Methanol distributes rapidly in dogs exposed to 4,000 to 15,000 ppm for 12 hours to 5 days; the highest concentrations of the chemical were found in blood, eye fluid, bile, and urine (HSDB 1994).

3. Metabolism – Methanol is oxidized in the human liver by the enzyme alcohol dehydrogenase (Rowe and McCollister 1981). Metabolic products include formaldehyde and formic acid (HSDB 1994). The rate of metabolism for methanol (25 mg/kg/hr) is much slower than for ethanol (175 mg/kg/hr) and is independent of concentrations in the blood (HSDB 1994). Formic acid is responsible for the toxic effects of methanol (ACGIH 1991).

4. Excretion – Methanol is excreted either as parent compound in the urine or expired air, or as the formic acid metabolite in urine (Rowe and McCollister 1981; HSDB 1994). The amount of formic acid excreted varies greatly with species from 1% in rabbits to 20% in dogs; humans are intermediate (HSDB 1994). In humans, the half-life of methanol elimination in expired air after oral or dermal exposure is 1.5 hours (HSDB 1994).

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

Methanol evaporates when exposed to air. It dissolves completely when mixed with water. Most direct releases of methanol to the environment are to air. Methanol also evaporates from water and soil exposed to air. Once in air, it breaks down to other chemicals. Microorganisms that live in water and in soil can also break down methanol. Because it is a liquid that does not bind well to soil, methanol that makes it way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store methanol.

Methanol by itself is not likely to cause environmental harm at levels normally found in the environment. Methanol can contribute to the formation of photochemical smog when it reacts with other volatile organic carbon substances in air.

Movement & Partitioning:

The miscibility of methanol in water and a low KOC (9) indicate that the chemical will be highly mobile in soil (HSDB 1994). Volatilization half-lives from a model river and an environmental pond were estimated at 4.8 days and 51.7 days, respectively (HSDB 1994). Methanol can be removed from the atmosphere in rain water (HSDB 1994).

Degradation & Transformation:

1. Air – Once in the atmosphere, methanol exists in the vapor phase with a half life of 17.8 days (HSDB 1994). The chemical reacts with photochemically produced hydroxyl radicals to produce formaldehyde (HSDB 1994). Methanol can also react with nitrogen dioxide in polluted air to form methyl nitrite (HSDB 1994).

2. Soil – Biodegradation is the major route of removal of methanol from soils. Several species of Methylobacterium and Methylomonas isolated from soils are capable of utilizing methanol as a sole carbon source (CHEMFATE 1994).

3. Water – Most methanol is removed from water by biodegradation. The degradation products of methane and carbon dioxide were detected from aqueous cultures of mixed bacteria isolated from sewage sludge (CHEMFATE 1994). Aerobic, Gram-negative bacteria (65 strains) isolated from seawater, sand, mud, and weeks of marine origin utilized methanol as a sole carbon source (CHEMFATE 1994). Aquatic hydrolysis, oxidation, and photolysis are not significant fate processes for methanol (HSDB 1994).

4. Biota – Bioaccumulation of methanol in aquatic organisms is not expected to be significant based on an estimated bioconcentration factor of 0.2 (HSDB 1994).

Ecotoxicology:

1. Toxicity to Aquatic Organisms – Methanol has low acute toxicity to aquatic organisms; lethal concentrations are much greater than 100 mg/L. Ninety-six hour LC50 values for fish are 28,100 mg/L for Pimephales promelas (fathead minnow), 20,100 mg/L for Oncorhynchus mykiss (rainbow trout), and >28,000 mg/L for Alburnus alburnus (bleak) (AQUIRE 1994). Forty-eight hour LC50 values for Cyprinus carpio (common carp) and Carassius auratus (goldfish) are 28,000 mg/L and 1,700 mg/L, respectively (AWQUIRE 1994). Growth inhibition occurred for 4 strains of Anabaena (blue-green algae) over a range of EC50s of 2.57%-3.13% for 10-14 days (AQUIRE 1994). The LC50 for Artemia salina (brine shrimp) is >10,000 mg/L in 24 hours and that for Culex restuans (mosquito) is 20,000 mg/L in 18 hours (AQUIRE 1994).

2. Toxicity to Terrestrial Organisms – No information was found in the secondary sources searched regarding the toxicity of methanol to terrestrial organisms. However, based on the range of oral LD50s, 0.4 to 14.2 g/kg, for monkeys, rats, mice, and rabbits (Rowe and McCollister 1981), it is unlikely that methanol would be toxic to terrestrial animals at environmental levels.

Abiotic Effects – Methanol reacts with nitrogen dioxide in polluted atmospheres to produce methyl nitrite (HSDB 1994). According to the definition provided in the Federal Register (1992), methanol is a volatile organic compound (VOC) substance. As a VOC, methanol can contribute to the formation of photochemical smog in the presence of other VOCs.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

(U.S. D.O.T.) – U. S. Department of Transportation

Not D.O.T. regulated according to 49 CFR 173.116 (b) (3)

(IATA) International Air Dangerous Good Regulations

Proper Shipping Name: Flammable Liquid, n.o.s. (Methanol)
ID #: UN 1993
Class: 3
Hazard Label: Flammable Liquid
PG: III
Ltd. Qty. Packaging Instruction: Y309 (Max qty. per package 10L)
Special Provision: A3

(IMDG) International Maritime Dangerous Goods

Not IMDG regulated according to IMDG Code – Page 3003 Part 1.1.1

15. REGULATORY INFORMATION

THIS PRODUCT CONTAINS COMPONENT(S) CITED ON THE FOLLOWING REGULATIONS:

CHEMICAL NAME	***CAS NUMBER***
Methanol	67-56-1

U.S. Federal Regulations

TSCA (Toxic Substances Control Act) Status – TSCA (UNITED STATES)
The intentional ingredients of this product are listed.

CERCLA RQ – 40 CFR 302.4(a)

Component	RQ (lbs)
Methyl Alcohol	5,000

SARA 302 Components – 40 CFR 355 Appendix A

None

Section 311/312 Hazard Class – 40 CFR 370.2

Immediate (X) Delayed (X) Fire (X) Reactive ( ) Sudden Release of Pressure ( )

SARA 313 Components – 40 CFR 372.65

Section 313 Component(s)	CAS Number	%
Methanol	67-56-1	23

International Regulations

Inventory Status – DSL (CANADA)

The intentional ingredients of this product are listed.

WHMIS Information: B2, D1A

ECL (SOUTH KOREA)

The intentional ingredients of this product are listed.

EINECS (EUROPE)

The intentional ingredients of this product are listed.

ENCS (JAPAN)

The intentional ingredients of this product are listed.

State and Local Regulations – California Proposition 65

None

New Jersey RTK (Right-to-Know) **Label Information**

Methyl Alcohol	67-56-1

Pennsylvania RTK (Right-to-Know) **Label Information**

Methanol	67-56-1

Atmospheric Standards: The Clean Air Act Amendments of 1990 list methanol as a hazardous air pollutant.

16. OTHER INFORMATION

Contact: Tom Cholke **Phone**: (847) 559-2225

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