

*Initial Preparation Date:* 10/10/11  
*Last Revision Date:* 8/22/12  
*Effective Date:* 8/22/12

## MATERIAL SAFETY DATA SHEET

### PRODUCT IDENTITY: SHIELD™ MVI ANTI-WEAR HYDRAULIC FLUID AW 32 (ISO 32)

#### 1. CHEMICAL PRODUCT & COMPANY INFORMATION

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

#### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Material</u>	<u>CAS#</u>	<u>% by Wt.</u>	<u>TLV (ACGIH)</u>	<u>STEL (ACGIH)</u>
Highly refined mineral oils & additives	Mixture	<3% (w/w) DMSO-extract (according to IP346)	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Zinc alkyl dithiophosphate	68649-42-3	-		

#### 3. HAZARDS IDENTIFICATION

##### EMERGENCY OVERVIEW

*Appearance & Odor:* Colorless. Liquid at room temperature. Slight hydrocarbon odor.  
*Health hazard:* High-pressure injection under the skin may cause serious damage including local necrosis.  
*Safety Hazard:* Not classified as flammable but will burn.  
*Environmental Hazard:* Not classified as dangerous for the environment.

##### HAZARD RATING SYSTEM

Not classified as dangerous for supply or conveyance. Not classified as flammable but will burn.

NFPA: HEALTH: 0      FLAMMABILITY: 1      REACTIVITY: 0

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

## ***POTENTIAL HEALTH EFFECTS***

Not expected to be a health hazard when used under normal conditions.

## ***4. FIRST AID MEASURES***

***Ensure physician has access to this MSDS.***

### **Routes of Entry:**

**Inhalation:** Under normal conditions of use, this is not expected to be a primary route of exposure.

**Skin:** Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Ingestion may result in nausea, vomiting and/or diarrhea.

**Signs and Symptoms of Exposure:** Oil acne / folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.

## ***TREATMENT***

**Eyes:** May cause slight irritation to eyes. Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

**Skin:** Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

**Inhalation:** No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Notes to Physician:** Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy to minimize tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

Used oil may contain harmful impurities. Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.

## ***5. FIRE FIGHTING MEASURES***

### ***FIRE & EXPLOSION HAZARD DATA***

**Flammable Properties:** Not classified as flammable but will burn.

Flash Point: > 230°C / 446° F

Method Used: Cleveland Open Cup

**Flammability Limits** – Percentage of vapor concentration at which product can ignite in presence of spark.

LEL: 1 % by volume  
UEL: 10% by volume

**Autoignition Temperature:** > 320°C / 608° F

**Hazardous Combustion Products:** Hazardous combustion products may include: a complex mixture of airborne solid and liquid particulates and gases (smoke); carbon monoxide; and unidentified organic and inorganic compounds.

**Extinguishing Media:** Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

**Fire Fighting Instructions:** Clear fire area of all non-emergency personnel.

**Protective Equipment For Fire Fighters:** Proper protective equipment, including breathing apparatus, must be worn when approaching a fire in a confined space.

## ***6. ACCIDENTAL RELEASE MEASURES***

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment, see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

**Protect People:** Avoid contact with skin and eyes.

**Protect the Environment:** Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth or other appropriate barriers.

**Cleanup:** Slippery when spilt. Avoid accidents. Clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

Local authorities should be advised if significant spillages cannot be contained.

## ***7. HANDLING AND STORAGE***

**General Precautions:** Use local exhaust ventilation if there is risk of inhalation of vapors, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

**Handling:** Avoid prolonged or repeated contact with skin. Avoid inhaling vapor and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

**Storage:** Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closeable containers. Storage temperature: 0° - 50° C / 32° - 122°F.

**Recommended Materials:** For containers or container linings, use mild steel or high density polyethylene.

**Unsuitable Materials:** PVC.

**Additional Information:** Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

## ***8. EXPOSURE CONTROLS / PERSONAL PROTECTION***

The level of protection and types of controls necessary will vary, depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

**Respiratory Protection:** No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate / organic gases and vapors [boiling point > 65° C (149° F)].

**Skin Protection:** Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. Where hand contact with the product may occur, the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove are dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be wash and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

**Eye Protection:** Wear safety glasses or full face shield if splashes are likely to occur.

**Engineering Controls:** Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances, biological monitoring may also be appropriate. Minimize release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

### **ACGIH EXPOSURE LIMITS**

<b>Component</b>	<b>Type</b>	<b>Exposure Limits</b>
Oil mist, mineral	TWA (Mist)	5 mg/m <sup>3</sup>
Oil mist, mineral	STEL (Mist)	10 mg/m <sup>3</sup>

**Carcinogenicity:** Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.

## ***9. PHYSICAL AND CHEMICAL PROPERTIES***

<b>Boiling Point:</b>	>280° C / 536° F estimated value(s)
<b>Specific Gravity (Water =1):</b>	Typical .879 at 15°C / 59°F
<b>Vapor Pressure (mm of Hg):</b>	< 0.5 Pa at 20° C / 68° F (estimated values)
<b>Vapor Density (Air=1):</b>	> 1 (estimated value)
<b>Water Solubility:</b>	Negligible
<b>Appearance:</b>	Colorless. Liquid at room temperature
<b>Odor:</b>	Slight hydrocarbon
<b>Evaporation Rate:</b>	Data not available
<b>pH:</b>	Not applicable
<b>N-Octanol/Water Partition Coefficient (log Pow):</b>	> 6 (based on information on similar products)
<b>Kinematic Viscosity:</b>	> 30 mm <sup>2</sup> /s at 40°C / 104°F
<b>Flash point:</b>	>Typically 230°C / 446°F (COC)

## ***10. STABILITY & REACTIVITY DATA***

<b>Stability:</b>	Stable
<b>Conditions to Avoid:</b>	Extremes of temperature and direct sunlight.
<b>Incompatibility (Materials to Avoid):</b>	Strong oxidizing agents
<b>Hazardous Decomposition Products:</b>	Hazardous decomposition products are not expected to form during normal storage.

## ***11. TOXICOLOGICAL INFORMATION***

**Basis for Assessment:** Information given is based on data on the components and the toxicology of similar products.

**Acute Inhalation Toxicity:** Not considered to be an inhalation hazard under normal conditions of use.

**Skin:** Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Eye Irritation:** Expected to be slightly irritating.

**Sensitization:** Not expected to be a skin sensitizer.

**Repeated Dose Toxicity:** Not expected to be a hazard.

**Mutagenicity (The Effects On Genetic Material):** Not considered a mutagenic hazard.

**Reproductive and Developmental Toxicity:** Not expected to be a hazard.

**Significant Data With Possible Relevance To Humans:** Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use, and they may present risks to

health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

**Lowest Known LD50 (Oral):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rat

**Lowest Known LD50 (Skin):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rabbit

## ***12. ECOLOGICAL INFORMATION***

### ***ENVIRONMENTAL FATE***

Not classified as dangerous for the environment.

**Acute Toxicity:** Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic. LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.) Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

**Movement & Partitioning:** Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

**Degradation & Persistence:** Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

**Ecotoxicology:** Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

**Bioaccumulation:** Contains components with the potential to be bioaccumulate.

**Other Adverse Effects:** Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

## ***13. DISPOSAL CONSIDERATIONS***

**Material Disposal:** Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

**Container Disposal:** Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

**Location Legislation:** Disposal should be in accordance with applicable regional, national, and local laws and regulations.

## ***14. TRANSPORT INFORMATION***

**U.S. DEPARTMENT OF TRANSPORTATION (DOT):** This material is not subject to DOT regulations under 49 CFR Parts 171-180.

**ICAO/IATA:** This material is not classified as dangerous under IATA regulations.

**IMDG:** This material is not classified as dangerous under IMDG regulations.

## ***15. REGULATORY INFORMATION***

This regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

<b><u>CHEMICAL NAME</u></b>	<b><u>CAS NUMBER</u></b>
Zinc alkyl Dithiophosphate	68649-42-3

**TSCA (United States):** All components listed.

**EINECS (Europe):** All components listed.

**DSL (Canada):** All components listed.

**SARA Title III:**

Section 311/312 - Categories: No SARA 311/312 hazards.

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):**

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**OSHA Regulated:** Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## ***16. OTHER INFORMATION***

**Contact:** Thomas Cholke

**Phone:** (847) 559-2225

**Old World Industries, LLC makes no warranty, representation or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of this product. Since actual use by others is beyond our control, no warranty, expressed or implied, is made by Old World Industries, LLC as to the effects of such use, the results to be obtained or the safety and toxicity of this product, nor does Old World Industries, LLC**

**assume liability arising out of the use by others of this product referred to herein. The data in this MSDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.**



*Initial Preparation Date: 10/10/11*  
*Last Revision Date: 8/22/12*  
*Effective Date: 8/22/12*

## MATERIAL SAFETY DATA SHEET

### PRODUCT IDENTITY: SHIELD™ MVI ANTI-WEAR HYDRAULIC FLUID AW 46 (ISO 46)

#### 1. CHEMICAL PRODUCT & COMPANY INFORMATION

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

#### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Material</u>	<u>CAS#</u>	<u>% by Wt.</u>	<u>TLV (ACGIH)</u>	<u>STEL (ACGIH)</u>
Highly refined mineral oils & additives	Mixture	<3% (w/w) DMSO-extract (according to IP346)	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Zinc alkyl dithiophosphate	68649-42-3	-		

#### 3. HAZARDS IDENTIFICATION

##### EMERGENCY OVERVIEW

*Appearance & Odor: Colorless. Liquid at room temperature. Slight hydrocarbon odor.*  
*Health hazard: High-pressure injection under the skin may cause serious damage including local necrosis.*  
*Safety Hazard: Not classified as flammable but will burn.*  
*Environmental Hazard: Not classified as dangerous for the environment.*

##### HAZARD RATING SYSTEM

Not classified as dangerous for supply or conveyance. Not classified as flammable but will burn.

**NFPA: HEALTH: 0      FLAMMABILITY: 1      REACTIVITY: 0**

KEY:            0 - Minimal            1 - Slight            2 - Moderate            3 – Serious            4 - Severe

## ***POTENTIAL HEALTH EFFECTS***

Not expected to be a health hazard when used under normal conditions.

### ***4. FIRST AID MEASURES***

***Ensure physician has access to this MSDS.***

#### **Routes of Entry:**

**Inhalation:** Under normal conditions of use, this is not expected to be a primary route of exposure.

**Skin:** Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Ingestion may result in nausea, vomiting and/or diarrhea.

**Signs and Symptoms of Exposure:** Oil acne / folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.

## ***TREATMENT***

**Eyes:** May cause slight irritation to eyes. Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

**Skin:** Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

**Inhalation:** No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Notes to Physician:** Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy to minimize tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

Used oil may contain harmful impurities. Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.

### ***5. FIRE FIGHTING MEASURES***

#### ***FIRE & EXPLOSION HAZARD DATA***

**Flammable Properties:** Not classified as flammable but will burn.

Flash Point: > 230°C / 446° F

Method Used: Cleveland Open Cup

**Flammability Limits** - Percentage of vapor concentration at which product can ignite in presence of spark.

LEL: 1 % by volume  
UEL: 10% by volume

**Autoignition Temperature:** > 320°C / 608° F

**Hazardous Combustion Products:** Hazardous combustion products may include: a complex mixture of airborne solid and liquid particulates and gases (smoke); carbon monoxide; and unidentified organic and inorganic compounds.

**Extinguishing Media:** Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

**Fire Fighting Instructions:** Clear fire area of all non-emergency personnel.

**Protective Equipment For Fire Fighters:** Proper protective equipment, including breathing apparatus, must be worn when approaching a fire in a confined space.

## ***6. ACCIDENTAL RELEASE MEASURES***

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment, see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

**Protect People:** Avoid contact with skin and eyes.

**Protect the Environment:** Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth or other appropriate barriers.

**Cleanup:** Slippery when spilt. Avoid accidents. Clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly. Local authorities should be advised if significant spillages cannot be contained.

## ***7. HANDLING AND STORAGE***

**General Precautions:** Use local exhaust ventilation if there is risk of inhalation of vapors, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

**Handling:** Avoid prolonged or repeated contact with skin. Avoid inhaling vapor and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

**Storage:** Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closeable containers. Storage temperature: 0° - 50° C / 32° - 122°F.

**Recommended Materials:** For containers or container linings, use mild steel or high density polyethylene.

**Unsuitable Materials:** PVC.

**Additional Information:** Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

## ***8. EXPOSURE CONTROLS / PERSONAL PROTECTION***

The level of protection and types of controls necessary will vary, depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.

Appropriate measures include: adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

**Respiratory Protection:** No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate / organic gases and vapors [boiling point > 65° C (149° F)].

**Skin Protection:** Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. Where hand contact with the product may occur, the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove are dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be wash and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

**Eye Protection:** Wear safety glasses or full face shield if splashes are likely to occur.

**Engineering Controls:** Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances, biological monitoring may also be appropriate.

Minimize release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

### **ACGIH EXPOSURE LIMITS**

<b>Component</b>	<b>Type</b>	<b>Exposure Limits</b>
Oil mist, mineral	TWA (Mist)	5 mg/m <sup>3</sup>
Oil mist, mineral	STEL (Mist)	10 mg/m <sup>3</sup>

**Carcinogenicity:** Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.

**OSHA Regulated:** Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## ***9. PHYSICAL AND CHEMICAL PROPERTIES***

<b>Boiling Point:</b>	>280° C / 536° F estimated value(s)
<b>Specific Gravity (Water =1):</b>	Typical .868 at 15°C / 59°F
<b>Vapor Pressure (mm of Hg):</b>	< 0.5 Pa at 20° C / 68° F (estimated values)
<b>Vapor Density (Air=1):</b>	> 1 (estimated value)
<b>Water Solubility:</b>	Negligible
<b>Appearance:</b>	Colorless. Liquid at room temperature
<b>Odor:</b>	Slight hydrocarbon
<b>Evaporation Rate:</b>	Data not available
<b>pH:</b>	Not applicable
<b>N-Octanol/Water Partition Coefficient (log Pow):</b>	> 6 (based on information on similar products)
<b>Kinematic Viscosity:</b>	> 30 mm <sup>2</sup> /s at 40°C / 104°F
<b>Flash point:</b>	>Typically 230°C / 446°F (COC)

## ***10. STABILITY & REACTIVITY DATA***

<b>Stability:</b>	Stable
<b>Conditions to Avoid:</b>	Extremes of temperature and direct sunlight.
<b>Incompatibility (Materials to Avoid):</b>	Strong oxidizing agents
<b>Hazardous Decomposition Products:</b>	Hazardous decomposition products are not expected to form during normal storage.

## ***11. TOXICOLOGICAL INFORMATION***

**Basis for Assessment:** Information given is based on data on the components and the toxicology of similar products.

**Acute Inhalation Toxicity:** Not considered to be an inhalation hazard under normal conditions of use.

**Skin:** Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Eye Irritation:** Expected to be slightly irritating.

**Sensitization:** Not expected to be a skin sensitizer.

**Repeated Dose Toxicity:** Not expected to be a hazard.

**Mutagenicity (The Effects On Genetic Material):** Not considered a mutagenic hazard.

**Reproductive and Developmental Toxicity:** Not expected to be a hazard.

**Significant Data With Possible Relevance To Humans:** Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use, and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

**Lowest Known LD50 (Oral):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rat

**Lowest Known LD50 (Skin):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rabbit

## ***12. ECOLOGICAL INFORMATION***

### ***ENVIRONMENTAL FATE***

Not classified as dangerous for the environment.

**Acute Toxicity:** Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic. LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.) Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

**Movement & Partitioning:** Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

**Degradation & Persistence:** Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

**Ecotoxicology:** Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

**Bioaccumulation:** Contains components with the potential to be bioaccumulate.

**Other Adverse Effects:** Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

## ***13. DISPOSAL CONSIDERATIONS***

**Material Disposal:** Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

**Container Disposal:** Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

**Location Legislation:** Disposal should be in accordance with applicable regional, national, and local laws and regulations.

#### ***14. TRANSPORT INFORMATION***

**U.S. DEPARTMENT OF TRANSPORTATION (DOT):** This material is not subject to DOT regulations under 49 CFR Parts 171-180.

**ICAO/IATA:** This material is not classified as dangerous under IATA regulations.

**IMDG:** This material is not classified as dangerous under IMDG regulations.

#### ***15. REGULATORY INFORMATION***

This regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

<b><u>CHEMICAL NAME</u></b>	<b><u>CAS NUMBER</u></b>
Zinc alkyl Dithiophosphate	68649-42-3

**TSCA (United States):** All components listed.

**EINECS (Europe):** All components listed.

**DSL (Canada):** All components listed.

**SARA Title III:**

Section 311/312 - Categories: No SARA 311/312 hazards.

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):**

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**OSHA Regulated:** Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### ***16. OTHER INFORMATION***

**Contact:** Thomas Cholke

**Phone:** (847) 559-2225

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*Initial Preparation Date:* 10/10/11  
*Last Revision Date:* 8/22/12  
*Effective Date:* 8/22/12

## MATERIAL SAFETY DATA SHEET

### PRODUCT IDENTITY: SHIELD™ MVI ANTI-WEAR HYDRAULIC FLUID AW 68 (ISO 68)

#### 1. CHEMICAL PRODUCT & COMPANY INFORMATION

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

#### 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Material</u>	<u>CAS#</u>	<u>% by Wt.</u>	<u>TLV (ACGIH)</u>	<u>STEL (ACGIH)</u>
Highly refined mineral oils & additives	Mixture	<3% (w/w) DMSO-extract (according to IP346)	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Zinc alkyl dithiophosphate	68649-42-3	-		

#### 3. HAZARDS IDENTIFICATION

##### EMERGENCY OVERVIEW

*Appearance & Odor:* Colorless. Liquid at room temperature. Slight hydrocarbon odor.  
*Health hazard:* High-pressure injection under the skin may cause serious damage including local necrosis.  
*Safety Hazard:* Not classified as flammable but will burn.  
*Environmental Hazard:* Not classified as dangerous for the environment.

##### HAZARD RATING SYSTEM

Not classified as dangerous for supply or conveyance. Not classified as flammable but will burn.

NFPA: HEALTH: 0      FLAMMABILITY: 1      REACTIVITY: 0

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

## ***POTENTIAL HEALTH EFFECTS***

Not expected to be a health hazard when used under normal conditions.

## ***4. FIRST AID MEASURES***

***Ensure physician has access to this MSDS.***

### **Routes of Entry:**

**Inhalation:** Under normal conditions of use, this is not expected to be a primary route of exposure.

**Skin:** Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Ingestion may result in nausea, vomiting and/or diarrhea.

**Signs and Symptoms of Exposure:** Oil acne / folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.

## ***TREATMENT***

**Eyes:** May cause slight irritation to eyes. Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

**Skin:** Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

**Inhalation:** No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Notes to Physician:** Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy to minimize tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

Used oil may contain harmful impurities. Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.

## ***5. FIRE FIGHTING MEASURES***

### ***FIRE & EXPLOSION HAZARD DATA***

**Flammable Properties:** Not classified as flammable but will burn.

Flash Point: > 290°C / 554° F

Method Used: Cleveland Open Cup

**Flammability Limits** – Percentage of vapor concentration at which product can ignite in presence of spark.

LEL: 1 % by volume

UEL: 10% by volume

**Autoignition Temperature:** > 320°C / 608° F

**Hazardous Combustion Products:** Hazardous combustion products may include: a complex mixture of airborne solid and liquid particulates and gases (smoke); carbon monoxide; and unidentified organic and inorganic compounds.

**Extinguishing Media:** Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

**Fire Fighting Instructions:** Clear fire area of all non-emergency personnel.

**Protective Equipment For Fire Fighters:** Proper protective equipment, including breathing apparatus, must be worn when approaching a fire in a confined space.

## ***6. ACCIDENTAL RELEASE MEASURES***

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment, see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

**Protect People:** Avoid contact with skin and eyes.

**Protect the Environment:** Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth or other appropriate barriers.

**Cleanup:** Slippery when spilt. Avoid accidents. Clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

Local authorities should be advised if significant spillages cannot be contained.

## ***7. HANDLING AND STORAGE***

**General Precautions:** Use local exhaust ventilation if there is risk of inhalation of vapors, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

**Handling:** Avoid prolonged or repeated contact with skin. Avoid inhaling vapor and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

**Storage:** Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closeable containers. Storage temperature: 0° - 50° C / 32° - 122°F.

**Recommended Materials:** For containers or container linings, use mild steel or high density polyethylene.

**Unsuitable Materials:** PVC.

**Additional Information:** Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

## ***8. EXPOSURE CONTROLS / PERSONAL PROTECTION***

The level of protection and types of controls necessary will vary, depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.

Appropriate measures include: adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

**Respiratory Protection:** No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate / organic gases and vapors [boiling point > 65° C (149° F)].

**Skin Protection:** Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. Where hand contact with the product may occur, the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove are dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be wash and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

**Eye Protection:** Wear safety glasses or full face shield if splashes are likely to occur.

**Engineering Controls:** Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances, biological monitoring may also be appropriate. Minimize release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

### **ACGIH EXPOSURE LIMITS**

<b>Component</b>	<b>Type</b>	<b>Exposure Limits</b>
Oil mist, mineral	TWA (Mist)	5 mg/m <sup>3</sup>
Oil mist, mineral	STEL (Mist)	10 mg/m <sup>3</sup>
<b>Carcinogenicity:</b> Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.		

**OSHA Regulated:** Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## ***9. PHYSICAL AND CHEMICAL PROPERTIES***

<b>Boiling Point:</b>	>280° C / 536° F estimated value(s)
<b>Specific Gravity (Water =1):</b>	Typical .895 at 15°C / 59°F
<b>Vapor Pressure (mm of Hg):</b>	< 0.5 Pa at 20° C / 68° F (estimated values)
<b>Vapor Density (Air=1):</b>	> 1 (estimated value)
<b>Water Solubility:</b>	Negligible
<b>Appearance:</b>	Colorless. Liquid at room temperature
<b>Odor:</b>	Slight hydrocarbon
<b>Evaporation Rate:</b>	Data not available
<b>pH:</b>	Not applicable
<b>N-Octanol/Water Partition Coefficient (log Pow):</b>	> 6 (based on information on similar products)
<b>Kinematic Viscosity:</b>	97 mm <sup>2</sup> /s at 40°C / 104°F
<b>Pour point:</b>	Typical -9°C / 16°F
<b>Density:</b>	Typical 895 g/cm <sup>3</sup> at 15°C / 59°F
<b>Flash point:</b>	>Typical 230°C / 446°F (COC)

## ***10. STABILITY & REACTIVITY DATA***

<b>Stability:</b>	Stable
<b>Conditions to Avoid:</b>	Extremes of temperature and direct sunlight.
<b>Incompatibility (Materials to Avoid):</b>	Strong oxidizing agents
<b>Hazardous Decomposition Products:</b>	Hazardous decomposition products are not expected to form during normal storage.

## ***11. TOXICOLOGICAL INFORMATION***

**Basis for Assessment:** Information given is based on data on the components and the toxicology of similar products.

**Acute Inhalation Toxicity:** Not considered to be an inhalation hazard under normal conditions of use.

**Skin:** Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin, resulting in disorders such as oil acne / folliculitis.

**Ingestion:** Low toxicity if swallowed. In general, no treatment is necessary unless large quantities are swallowed; however, get medical advice.

**Eye Irritation:** Expected to be slightly irritating.

**Sensitization:** Not expected to be a skin sensitizer.

**Repeated Dose Toxicity:** Not expected to be a hazard.

**Mutagenicity (The Effects On Genetic Material):** Not considered a mutagenic hazard.

**Reproductive and Developmental Toxicity:** Not expected to be a hazard.

**Significant Data With Possible Relevance To Humans:** Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use, and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

**Lowest Known LD50 (Oral):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rat

**Lowest Known LD50 (Skin):** Expected to be of low toxicity: LD50 > 5000 mg/kg – rabbit

## ***12. ECOLOGICAL INFORMATION***

### ***ENVIRONMENTAL FATE***

Not classified as dangerous for the environment.

**Acute Toxicity:** Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic. LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.) Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

**Movement & Partitioning:** Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

**Degradation & Persistence:** Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

**Ecotoxicology:** Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

**Bioaccumulation:** Contains components with the potential to be bioaccumulate.

**Other Adverse Effects:** Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

## ***13. DISPOSAL CONSIDERATIONS***

**Material Disposal:** Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

**Container Disposal:** Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

**Location Legislation:** Disposal should be in accordance with applicable regional, national, and local laws and regulations.

#### ***14. TRANSPORT INFORMATION***

**U.S. DEPARTMENT OF TRANSPORTATION (DOT):** This material is not subject to DOT regulations under 49 CFR Parts 171-180.

**ICAO/IATA:** This material is not classified as dangerous under IATA regulations.

**IMDG:** This material is not classified as dangerous under IMDG regulations.

#### ***15. REGULATORY INFORMATION***

This regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

<b><u>CHEMICAL NAME</u></b>	<b><u>CAS NUMBER</u></b>
Zinc alkyl Dithiophosphate	68649-42-3

**TSCA (United States):** All components listed.

**EINECS (Europe):** All components listed.

**DSL (Canada):** All components listed.

##### **SARA Title III:**

Section 311/312 - Categories: No SARA 311/312 hazards.

##### **California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):**

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**OSHA Regulated:** Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### ***16. OTHER INFORMATION***

**Contact:** Thomas Cholke

**Phone:** (847) 559-2225

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