

## 1.0 PURPOSE

This document establishes MSHA's Standard Application Procedure (SAP) for Approval of Fire-Resistant Hydraulic Fluids According to Title 30 Code of Federal Regulations (30 CFR), Part 35.

## 2.0 SCOPE

These procedures apply to all applications for MSHA Approval of fire-resistant hydraulic fluids and storage fluids.

## 3.0 REFERENCES

30 CFR, Part 35, Subparts A & B

## 4.0 DEFINITIONS

- 4.1. Permissible - as applied to hydraulic fluids, means that the fluid conforms to the requirements of 30 CFR, Part 35, and that a certificate of approval to that effect has been issued.
- 4.2. Certificate of Approval - means a formal document issued by MSHA stating that the fluid has met the requirements of 30 CFR, Part 35 for fire-resistant hydraulic fluids and authorizing the use of an official identifying marking so indicating.
- 4.3. Fire-resistant hydraulic fluid - means a fluid of such chemical composition and physical characteristics that it will resist the propagation of flame.
- 4.4. Concentrate - means a substance in concentrated form that might not be fire-resistant as such but when mixed with water or other vehicle in accordance with instructions furnished by the applicant will constitute a fire-resistant hydraulic fluid.
- 4.5. Storage fluids - are hydraulic fluids used primarily to protect "out of service" mining equipment from freezing &/or corrosion. Although storage fluids are tested in accordance with the procedures described in 30 CFR, Subpart B, Part 35, they may not be required to pass all of the prescribed tests since their use is limited to "out of service" equipment only. When approved as a storage fluid, the approval will be issued with the condition of use, "Storage Fluid Only" and should be used in equipment that is "not in service".
- 4.6. Applicant - means an individual, partnership, company, corporation, association, or other organization that manufactures, compounds, refines, or otherwise produces, a fire-resistant hydraulic fluid or a concentrate for the production thereof, and seeks a certificate of approval.

## 5.0 APPLICATION PROCEDURE

5.1. It is recommended that applicants contact the Quality Assurance & Materials Safety Division at 304-547-0400 to discuss approval and testing requirements prior to submitting an application.

5.2. The application requesting an approval or extension of approval should be sent to the following address:

MSHA, Approval and Certification Center

Attention: IPSO

765 Technology Drive

Triadelphia, West Virginia 26059

5.2.1. FAX to: 304-547-2084

5.2.2. Email Submittals:

Application letters, specifications, drawings and other supporting documentation should be sent to [zzMSHA-IPSO@DOL.gov](mailto:zzMSHA-IPSO@DOL.gov)

5.2.3. FTP Submittals:

Application letters and supporting documentation can be placed on the MSHA FTP server, [mfgr.msha.gov](http://mfgr.msha.gov). Please call the Information Processing Services Office (IPSO) at 304-547-0400 to establish your user account.

5.3. Each application for approval of a product must be in the English Language and include the following:

A 6 digit (or less) numeric code number assigned by the applicant.

Provide product name or trade designation of the hydraulic fluid.

Provide your company Employer Identification Number (EIN) and Tax Identification Number (TIN).

Identify the hydraulic fluid type:

Invert Emulsion

Water Glycols & Storage Fluids

High Water Concentrate

Synthetic (polyol ester, other)

5.3.1. The complete formulation with percentages, tolerances and function of each ingredient (See Example 1, page 9). Each ingredient must be specified by its chemical or generic name along with its percentage (weight) and tolerance. Organic ingredients should be named according to the current rules of the International Union of Pure and Applied Chemistry. Inorganic ingredients should be named according to the Chemical Abstract of the American Chemical Society. A prepolymer formulation which has been registered with MSHA may be identified by furnishing the MSHA assigned ID number. However, each additional ingredient the manufacturer adds to the chemical or generic name, along with its percentage (weight) and tolerance must be identified by chemical or generic name, along with its percentage (weight) and tolerance.

5.3.2. Provide the following hydraulic fluid specifications:

Color

Neutralization Number or pH

Viscosity (Saybolt or Furol) at 100°F, 150°F and 175°F

Viscosity index

Pour Point

Freezing Point

Specific Gravity

Minimum Water Content by Percent Weight & Volume

5.3.3. Samples sizes required for testing:

5.3.3.1. Invert emulsion, water glycols and synthetics require a 5-gallon sample.

5.3.3.2. High water concentrate fluids require a 2-quart sample for testing.

5.3.3.3. All samples must be shipped prepaid for testing.

5.3.4. Information on the base oil, as applicable to the type of fluid for:

Type, naphthenic, paraffinic, or other identification

Code or ID number

Manufacturer and address

Viscosity

Specific gravity or density

Flash point (closed cup & test method)

A one-gallon sample shipped prepaid, if testing is required.

Information on the applicant's method for determining the water content of the hydraulic fluid quickly in the field.

5.3.5. Information on toxicity - The application shall state whether the fluid submitted for testing is toxic or irritating to the skin and what precautions are necessary for handling the fluid. An OSHA Materials Safety Data Sheet (MSDS) should be included. Section 5.8 (MSHA Approval Labels) provides information concerning the use of the caution statements in the label design.

5.3.6. Test information showing the fire resistance of the hydraulic fluid, such as Factory Mutual, ASTM or other test standards.

5.3.7. Evidence that the hydraulic fluid has lubricating properties (such as wear test information).

#### 5.4. Quality Control Information

5.4.1. Describe the manufacturing procedures followed in the production of the candidate fluid beginning with the compounding of raw materials (base oils, fire retardant, bactericides, anti-wear agents, pour point depressants, etc.) and ending with the finished product. Include procedures and tolerances for:

5.4.1.1. Mixing and/or blending;

5.4.1.2. Measuring quantities of raw material;

5.4.1.3. Methods and/or procedures utilized in controlling the formulation of the finished fluid and such items as: fire-resistant properties, pour point, viscosity,

viscosity index, specific gravity, freezing point, color, neutralization number or pH, and water content.

- 5.4.2. Inspection/Testing Instructions – In order to assure that the quality of the fire-resistant hydraulic fluid is maintained in production, quality control inspection instructions must be provided for receiving inspection, in-process inspection, final inspection and packaging/shipping inspections. The documented instructions must include as a minimum the following:
- 5.4.2.1. Sampling Plan – Include procedures for sampling and identifying the status of material. The size and number of the samples must be specified which can vary according to the type of material. The sampling plan must follow procedures that insure representative sampling of bulk materials.
- 5.4.2.2. Characteristics - List those characteristics with tolerances that must be inspected/tested to control materials and operations. The source (i.e. specifications) for the characteristics must be referenced and must agree with the latest documents submitted to MSHA. Inspection instructions must include those characteristics which assure that the fire-resistant hydraulic fluid meets the MSHA approved design and 30 CFR, Part 35 requirements.
- 5.4.2.3. Inspection Records - Provide copies of the inspection records form(s) necessary to verify that all fire-resistant characteristics (for the fire-resistant hydraulic fluid shipped) were controlled and found in compliance with approved specifications and regulations. Provisions must be made on the record form(s) for the inspector's signature, date, lot or batch number, and information with regard to the traceability of the fire-resistant hydraulic fluid.
- 5.5. Applications requesting an Extension of Approval should include:

The MSHA - assigned approval number for the product for which the extension is being requested;

A brief description of the proposed change to the previously approved product;

Any change in the specifications and/or characteristics of the approved hydraulic fluid.

## 5.6. MSHA Approval Labels

- 5.6.1. Using the MSHA Approval Label provided in Example 2 (page 9) , provide the following information:
- 5.6.1.1. Cautionary information and handling instructions that should appear on the label.
- 5.6.1.2. Provisions for showing the date, place of manufacturing
- 5.6.1.3. For fluids that depend on water for their fire-resistant properties indicate the minimum water content of the fluid that must appear on the approval label.
- 5.6.2. MSHA’s Approval Label shall bear the emblem of the Mine Safety and Health Administration and shall be inscribed as follows:

PERMISSIBLE FIRE-RESISTANT

HYDRAULIC FLUID

MSHA APPROVAL NO. 35-AYYXXXX-0

ISSUED TO:

The label so inscribed shall be attached to each fluid container in such a manner that it cannot be easily removed or containers may be marked with a metal stencil. The letters and numbers shall be at least 1/2 inch in height and of a color which contrasts with that of the container. The “A” in the approval number designates the applicable standard; the “YY” designates the year of the standard revision, the “XXXX” designates the four digit approval number, and “0” designates the extension number to be assigned by MSHA following approval of the hydraulic fluid.

5.7. Fees:

Following the receipt of the application, we will advise the applicant of the charges to process the application for approval under Part 35. Applicants may submit a pre-authorization notice with their application. The pre-authorization notice is a statement by the applicant authorizing MSHA to expend a stated amount of money in evaluating the application prior to the preparation and issuance of the MSHA fee estimate. The pre-authorization permits immediate evaluation work to begin. The cost estimate will not be exceeded until agreed upon by the applicant.

**Example 1: Formulation Information**

Example of formulation information with percentages, tolerances and function of each ingredient (See 5.5.4, page 2).

<u>Ingredient</u>	<u>Function</u>	<u>Weight %</u>
Triazine tri 6-amino caproic acid	Corrosion Inhibitor	3.5 ± 0.1%
Ethoxylated alcohol	Emulsifier	1.25 ± 0.1%
3,3'-Methylenebis (5-methyloxazolidine)	Corrosion Inhibitor	2.0 ± 0.1%

**Example 2: MSHA Fire-Resistant Hydraulic Fluid Approval Label**

PERMISSIBLE FIRE-RESISTANT  
HYDRAULIC FLUID  
MSHA APPROVAL NO. 35-AYYXXXX  
HYDRAULIC FLUID NAME



Issued To:  
MANUFACTURER'S NAME  
MANUFACTURER'S ADDRESS

Add the appropriate handling instructions and cautionary statements along with the minimum water content.