

ENKLO FRDU 68 FIRE RESISTANT HYDRAULIC FLUID

SPECIAL FEATURES

ENKLO FRDU grades are fire resistant hydraulic fluids based on organic ester. These fluids meet the HFDU classification system as per European Mines Safety Commision. These fluids can replace phosphate esters in high temperature applications and are recommended as control governor fluids for steam and gas turbine. They do not have any seal compatibility issues which are inherent in phosphate ester fluids. The same seals used with mineral oils can be used with ENKLO FRDU 68. These fluids not only provide improved safety as compared to mineral oil but offer superior lubricity and antiwear properties as compared to invert emulsion (FRIE) fluids and also mineral oil based hydraulic fluids. While changing over from invert emulsion to FRDU based fluids care must be taken that there is no residual fluid or moisture present in the system. If necessary the line may be flushed with mineral oil to ensure that no traces of invert emulsion fluid remains in the system. ENKLO FRDU 68 is also approved by Director General Of Mines and Safety Dhanbad on a permanent basis. The product is also bio degradable.

PHYSICO-CHEMICAL PROPERTIES

Kinematic Viscosity @ 40°C, cSt Kinematic Viscosity @ 100°C, cSt 12.36 Viscosity Index 185 Flash Point, COC, °C 322 Fire Point, °C Auto-ignition temperature, °C, Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count Four Ball Weld Load NAS 1638 Class 6 Four Ball Weld Load		
Viscosity Index Flash Point, COC, °C Fire Point, °C Auto-ignition temperature, °C, Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins 5.2 Foam tendency/Stability NAS 1638 Class 6	Kinematic Viscosity @ 40°C, cSt	67.07
Flash Point, COC, °C Fire Point, °C Auto-ignition temperature, °C, Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins 5.2 Foam tendency/Stability Particle Count NAS 1638 Class 6	Kinematic Viscosity @ 100°C, cSt	12.36
Fire Point, °C Auto-ignition temperature, °C, Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip © 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count NAS 1638 Class 6	Viscosity Index	185
Auto-ignition temperature, °C, Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count S04 0.9267 0.9267 0.9267 1.04 Rust prevention Characteristics (A&B) Passes Passes Passes Pour ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm 0.29 0.29 0.30 0.30 Sludge, % of TOP 0 Demulsibility, ASTM D 1401, 25 mins 40-37-3 Air release value, mins 5.2 Foam tendency/Stability 30/nil 30/nil	Flash Point, COC, °C	322
Relative Density, 15 °C, g/cc Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins 5.2 Foam tendency/Stability Particle Count O.9267 0.9267 0.029 0.29 0.29 0.30 0.30 0.30 Sludge, % of TOP 0 0 0 0 0 0 0 0 0 0 0 0 0	Fire Point, °C	352
Pour point, °C Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip © 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count -30 -30 1.04 Passes Passes Passes 0.29 0.29 0.29 0.30 0.30 Sludge, % of TOP 0 0 0 0 0 0 0 1030 30/0il 30/nil 30/nil	Auto-ignition temperature, °C,	504
Total acidity, mg KOH/g Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count 1.04	Relative Density, 15 °C, g/cc	0.9267
Rust prevention Characteristics (A&B) Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count Particle Count Passes Passes Passes Passes Passes Passes Passes Passes Ala Passes Ala Ala Ala Ala Ala Ala Ala Al	Pour point, °C	-30
Four ball test, 20 kg, 1800 rpm, 55±2°C for 1 hr, Scar dia, mm 0.29 Corrosion Cu strip @ 100°C, 3 hrs, max 1A Temperature for viscosity of 1500 cSt -18 Oxidation test Oxidation and thermal TOP, % 0.30 Sludge, % of TOP 0 Demulsibility, ASTM D 1401, 25 mins 40-37-3 Air release value, mins 5.2 Foam tendency/Stability 30/nil 30/nil Particle Count NAS 1638 Class 6	Total acidity, mg KOH/g	1.04
1 hr, Scar dia, mm Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count O.29 0.30 0.30 0.30 5.2 40-37-3 40-37-3 Air release value, mins 5.2 Foam tendency/Stability 30/nil 30/nil	Rust prevention Characteristics (A&B)	Passes
Corrosion Cu strip @ 100°C, 3 hrs, max Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability Particle Count 1A 1A 1A 1A 1A 15 15 10 10 10 10 10 10 10 10	Four ball test, 20 kg, 1800 rpm, 55±2°C for	
Temperature for viscosity of 1500 cSt Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability 30/nil 30/nil Particle Count NAS 1638 Class 6	1 hr, Scar dia, mm	0.29
Oxidation test Oxidation and thermal TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability 30/nil 30/nil Particle Count NAS 1638 Class 6	Corrosion Cu strip @ 100°C, 3 hrs, max	1A
TOP, % Sludge, % of TOP Demulsibility, ASTM D 1401, 25 mins Air release value, mins Foam tendency/Stability 30/nil 30/nil Particle Count NAS 1638 Class 6	Temperature for viscosity of 1500 cSt	-18
Sludge, % of TOP0Demulsibility, ASTM D 1401, 25 mins40-37-3Air release value, mins5.2Foam tendency/Stability30/nil 30/nilParticle CountNAS 1638 Class 6		
Demulsibility, ASTM D 1401, 25 mins 40-37-3 Air release value, mins 5.2 Foam tendency/Stability 30/nil 30/nil 30/nil Particle Count NAS 1638 Class 6		0.30
Air release value, mins Foam tendency/Stability 30/nil 30/nil 30/nil Particle Count NAS 1638 Class 6		
Foam tendency/Stability 30/nil 30/nil 30/nil Particle Count NAS 1638 Class 6	·	40-37-3
30/nil 30/nil Particle Count NAS 1638 Class 6	Air release value, mins	5.2
Particle Count 30/nil NAS 1638 Class 6	Foam tendency/Stability	· ·
Particle Count NAS 1638 Class 6		· ·
		·
Four Ball Weld Load 210 kg		
	Four Ball Weld Load	210 kg
FZG A/8.3/90 Passes Stage 12	FZG A/8.3/90	Passes Stage 12
Mineral Oil Content by FTIR % Nil	Mineral Oil Content by FTIR %	Nil