TCW III Oil Test Results

Sample A: Evinrude XD50

Sample B: Pennzoil Premium Plus Semi Synthetic

Sample C: Supertech

Sample D: Mercury Marine Optimax/DFI Sample E: Yamalube 2M Semi Synthetic

easy to read additives list

http://www.sea-doo.net/techarticles/oil/oil.htm

http://www.powerchutes.com/oil.pdf

Results from someone else

Link to a viscosity chart

Basically the oil tested is 20W

molybdenum

Thanks to RobShaw Mercury oil is made by Citgo

Citgo oil's MSDS looks the same as Mercury's

Yamaha is also made by Citgo



LAB NUMBER: D38470 REPORT DATE: 5/1/2008 CLIENT ID: 31016

UNIT ID: A PAYMENT: Prepaid

MAKE/MODEL: Virgin Oil OIL TYPE & GRADE: Cycle Oil

FUEL TYPE: ADDITIONAL INFO: Cycle Oil

OIL USE INTERVAL:

CODE: 44/284

CLIENT

PAUL: This oil was clean and dry and with this viscosity, could be a 46-grade. The traces of metals probably shouldn't be there but we doubt they will hurt anything.

MI/HR on Oil	10	CARRENT	0.00	10	- 1	10	9
MI/HR on Unit		LOCATION					UNIVERSAL
Sample Date	04/30/08	AVERAGES		- 3	- 3		AVERAGES
Make Up Oil Added	1			- 1		1	
ALUMINUM	0			Ž	- //		
ALUMINUM CHROMIUM IRON	0						
IRON.	원 ~40		ē	3)	31		
COMMENS	1						
LEAD	0		- 8	- 13	- 0		
TIN:	0						
2 MOLYBOENUM	0		- 8	23	- 3		ģ.
M NICKEL	0		- 8	- 10	3		1
MANGANESE	0					1	
SILVER	0		9	9	3		ii .
CATE DAVOUE DIVI	0						
POTASSIUM BORON SILICON SODIUM	0		9	3			
BORON	0			10			
SILICÓN	3		- 3	2)	- 1		
SODIUM	2		- 8	- 3	3		8
CALCIUM	4			(2)	A.		
MAGNESILM	0		- 3	77	-9		
PHOSPHORUS	2						
ZINC	3		3	- 83	- 3		8
BARIUM	0						

Values Should Be*

	SUS Viscosity @ 210°F	52.6	2 2	98	1 1
PRO	dSt Viscosity @ 100°C	52.6 8.07	- 6	71	
	Flashpoint in °F	215	1 0	- 4	
	Fuel %	1000	5 5		
	Antifreeze %	+			
	Water %	0.0	3 8	- 3	
	Insolubles %	0.0			
	TBN		3 8	ä	
	TAN				
	ISO Code		5 8	- 0	

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

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LAB NUMBER: D38471 REPORT DATE: 5/1/2008 CLIENT ID: 31016

UNIT ID: B PAYMENT: Prepaid

Cycle Oil

MAKE/MODEL: Virgin Oil FUEL TYPE:

ADDITIONAL INFO: Cycle Oil

OIL TYPE & GRADE:

OIL USE INTERVAL:

CODE: 44/284

PAUL: This oil has slightly more additive in it (we're talking traces here) but otherwise it contained little of note. The viscosity read closer to a 68-grade than the 46-grade of Sample A.

Mi7HR on Oil	10		- 0	19			2
MI/HR on Unit		LOCATION					UNIVERSAL
Sample Date	04/30/08	AVERAGES	4	- 8	- 3		AVERAGES
Make Up Oil Added	7			- 3	7		
& ALUMINUM	0			2	- 1		
CHROMIUM	0						
ALUMINUM CHROMIUM IRON	S 24		9	- 33	3	31	
Service College Disc	0						
LEAD TIN	0			18			
	0			- 1	10		
MOLYBDENUM NICKEL	0			33	- 3		
NICKEL	0		- 8	- 33	- 3		
MANGANESE	0						
SILVER	0		i i	9			
TITANIUM	0						
POTASSIUM	0		2	3		34	
BORON	0]]		
SILICON	0			- 1)			
POTASSIUM BORON SILICON SOCIUM COLCUM	4		- 5	- 3	3		2
Televisia (1997)	8			(2)			
MAGNESIUM	77 54		- 3	72	- 9	-1	
PHOSPHORUS	2						
ZINC	3			- 83	- 3	1	
BARIUM	0					I	

Values

	SUS Viscosity @ 210°F	57.7	93	22	1 1
12020	dSt Viscosity @ 100°C	9.56		74	
	PROCESS OF THE REPORT OF THE PARTY OF THE PA	210	U)		
10	Fuel %		2)		
PROPERTIES	Antifreeze %				
	Water %	0.0	- 8		
2	Insolubles %	0.0			
ä	TBN		- 8	8	
20,000	TAN				
	ISO Code		- 9	9	* 1

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

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LAB NUMBER: D38472 REPORT DATE: 5/1/2008 CLIENT ID: 31016

UNIT ID: C PAYMENT: Prepaid

MAKE/MODEL: Virgin Oil FUEL TYPE: ADDITIONAL INFO: Cycle Oil

OIL TYPE & GRADE: OIL USE INTERVAL:

CODE: 44/284

Cycle Oil

GUIENT

PAUL: No trace metals found here. The viscosity read in the ISO 46-grade range, though it's not far from being a 68-grade. No moisture or insolubles found. Additives were scant, just like in the other samples.

Mi/HR on Oil			2	10	W.	0.0	9
MI/HR on Unit		LOCATION	i i		Ti .		UNIVERSAL
Sample Date	04/30/08	AVERAGES	- 4	- 8	9		AVERAGES
Make Up Oil Added	7						
ALUMINUM	0			- 2	7		
ALUMINUM CHROMIUM IRON	0						
IRON	0		9	3)	9	3	
COMMEN	0						
# LEAD	0			13			
TIN:	0				1		
2 MOLYBOENUM	0		- 8	33			9
OF NICKEL	0		- 8	10	3		ži.
MANGANESE	0						
SILVER	0		9	9	2		
11113AUUUU	0						
POTASSIUM BORON SILICON SODIUM	0		9	- 8			
BORON	0			- 1			
SILICON	0			3)			8
SODIUM	2			- 23	3		3
CALCIUM	. 7			(2)			4
MAGNESIUM	0		3	73	-11		
PHOSPHORUS	4						
ZINC	3		- 8	- 8	3	1	ä
BARIUM	0						

Values

	SUS Viscosity @ 210°F	53.3	E 20	9	
ROPERTIES	dSt Viscosity @ 100°C	8.28	E 2	7	
	Flashpoint in °F	8.28 215	U U		
	Fuel %		E 2.	1	
	Antifreeze %				
	Water%	0.0	3 - 8	- 3	
	Insolubles %	0.0			
ä	TBN		2 8	â	
3325	TAN				
	ISO Code		E	9	

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

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LAB NUMBER: D38473 REPORT DATE: 5/1/2008 CLIENT ID: 31016

UNIT ID: D PAYMENT: Prepaid

MAKE/MODEL: FUEL TYPE: Virgin Oil ADDITIONAL INFO: Cycle Oil OIL TYPE & GRADE: Cycle Oil

CODE: 44/284

OIL USE INTERVAL:

PAUL: You can see the molybdenum in this sample, which is the only significant additive. Boron read at 18 ppm. Everything else is pretty minor. The viscosity of this oil read closer to a 32-grade oil, thinner than Samples A, B, or C,

Mi/HR on Oil	10		2	10			2
MI/HR on Unit		LOCATION					UNIVERSAL
Sample Date	04/30/08	AVERAGES		- 3	- 3		AVERAGES
Make Up Oil Added	4			- 3	- 24		
ALUMINUM	0			- 3	- A		
CHROMIUM	0						
ALUMINUM CHROMIUM IRON	2		8	- 33	9		
Service Control Disc	1				Ш		
LEAD TIN	0		- 8	13	- 0		
OL TIN	0			11			
MOLYBDENUM NICKEL MOLYBDENUM NICKEL MOLYBDENUM MOLYB	1069		- 8	- 33	- 3		
OF NICKEL	0		- 8	13	31		
MANGANESE	0			U	l l		
SILVER	0		9	23			
TITANIUM	0						
POTASSIUM	0		9	- 3		36	
BORON	18						
POTASSIUM BORON SILICON SODIUM	7				- 3		3
SODIUM	4		- 5	- 3	3		2
CALCIUM	9			G.			
MAGNESIUM	0		- 3	75	- 9		
PHOSPHORUS	9			L.			
ZINC	· 1		- 3	- 8	- 3		8
BARIUM	0						

Values

PROPERTIES	SUS Viscosity @ 210°F	47.3	2	98	1 1
	dSt Viscosity @ 100°C	6.44	5 5	7.	
	Flashpoint in °F	6.44 215	. U	AL .	
	Fuel %		3 2	- 1	
	Antifreeze %				
	Water %	0.0	3 8	- 3	
	Insolubles %	0.0			
	TBN		3	8	
	TAN				
	ISO Code		100	- 8	

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

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LAB NUMBER: D38474 REPORT DATE: 5/1/2008 CLIENT ID: 31016

UNIT ID: E PAYMENT: Prepaid

Cycle Oil

MAKE/MODEL: FUEL TYPE:

Virgin Oil

ADDITIONAL INFO: Cycle Oil

OIL TYPE & GRADE:

OIL USE INTERVAL:

CODE: 44/284

GUIENT

PAUL: This oil resembles an ATF in additives and viscosity. It also has a lot of moly in it (which most ATFs do not). The viscosity read in the ISO 46-grade range. The first 3 samples are all very similar and there's no significant difference between them, except the viscosity. The last two contained more additive. We don't know what kind your 2-cycle outboard calls for, as far as oil. You can't go wrong following what the manufacturer says. If you want a certain viscosity, there are some differences. You could run each for a certain # of hrs and see how wear compares.

MI/HR off Oil	M - 1	C. AND RED T	2	10	1	- 0	2
MI/HR on Unit	ii ii	LOCATION					UNIVERSAL
Sample Date	04/30/08	AVERAGES		- 8			AVERAGES
Make Up Oil Added				- 2			
ALUMINUM	0			2	- 4		
ALUMINUM CHROMIUM IRON	0						
IRON	§ ~¶		8	- 3	39	3	
Control Control	0						
E LEAD	0		- 8)}	- 1		
TIN:	0			11	16		
MOLYBDENUM	948		- 8	- 33	- 3		9
MOLYBDENUM NICKEL MANGANESE	0		- 8	- 10	- 3		8
MANGANESE	0						
SILVER	0		9	9	- 2		
TITANIUM	0						
SILVER TITANIUM POTASSIUM BORON SILICÓN SODIUM CALCIUM	8 1		3	- 8			
BORON	15			10			
SILICON	5			3)			
SODIUM	3		- 3	- 3	- 3		
CALCIUM	30		- 2	(2)	A.		
MAGNESIUM	0		3	73	- 9		
PHOSPHORUS	266						
ZINC	17		3	- 8	- 3		3
BARIUM	0						

Values

PROPERTIES	SUS Viscosity @ 210°F	51.2	2	9		
	cSt Viscosity @ 100°C	7.63 250		7		
	Flashpoint in °F	250	. 0			
	Fuel %	17/200	5 5			
	Antifreeze %	-				
	Water%	0.0	3 8			
	Insolubles %	0.0				
	TBN		2 3	3		
	TAN					
	ISO Code	3	Ti 7	3		

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