

WEAR	
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

## Machine Id MACK 4 Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- GAL)

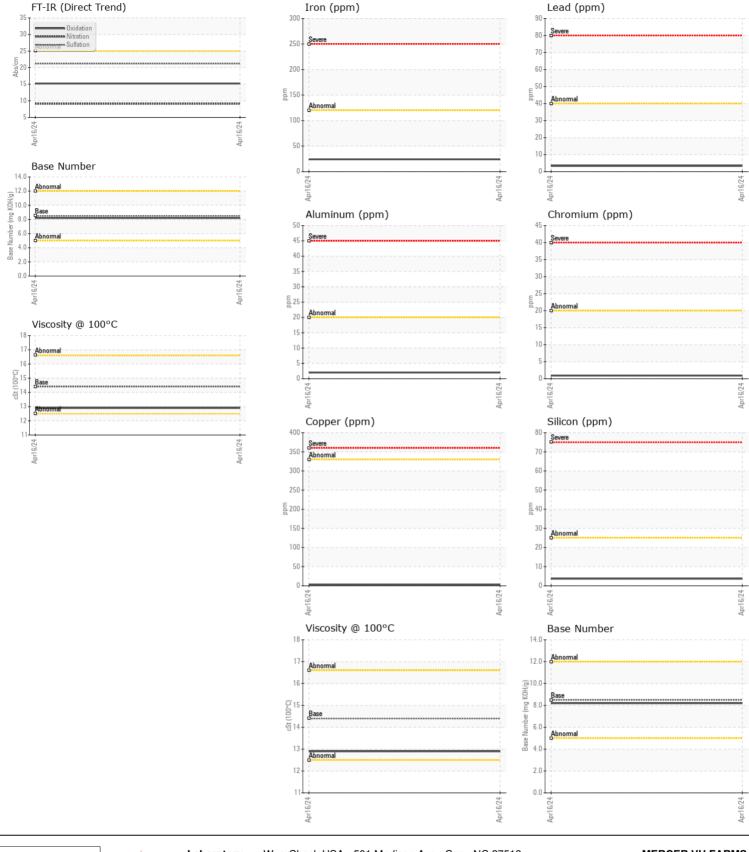
Besample at the next service interval to monitor.    Sample Number Sample At the next service interval to monitor.    Sample Number Sample At the Into    Client Info	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample badg    Simple badg		Sample Number		Client Info		DC0030915		
Oil Age    mits    Client Info    13000        Filter Changed    Oilent Info    13000        Enter Changed    Oilent Info    Client Info    Changed        Sample Status    NOTRAL     NOTRAL        WEAR    Iron    ppm    ASTIL051850    >210        All component wear rates are normal.    Iron    ppm    ASTIL05180    >20        Normal    ppm    ASTIL05180    >20    21		Sample Date		Client Info		16 Apr 2024		
Filter Age    mis    Client Info    1000    Chenged       WEAR    Tron    ppm    ASTIU 5188    >52    4       All component wear rates are normal.    Tron    ppm    ASTIU 5188    >52    1       Nickal    ppm    ASTIU 5188    >52    1        All component wear rates are normal.    Nickal    ppm    ASTIU 5188    >52    1        Silver    ppm    ASTIU 5188    >50    1        All uninum    ppm    ASTIU 5188    >20        Aluminum    ppm    ASTIU 5188    >30    3        Yanadum    ppm    ASTIU 5188    >30    3        Wellow Metal    scalar    Yisual    NONE    NONE       Ware    VC Method    s20    3        Ware    VC Method <td< th=""><th>-</th><th>mls</th><th>Client Info</th><th></th><th>612368</th><th></th><th></th></td<>		-	mls	Client Info		612368		
Oil Changed Filter Changed    Client Info    Nenged Client Info    Nenged		Oil Age	mls	Client Info		13000		
Filter Changed Sample Status    Client Info    Changed NORMA        WEAR    Iron    ppm    ASTU 05168    >20    24        All component wear rates are normal.    Iron    ppm    ASTU 05168    >20    24        Nickel    ppm    ASTU 05168    >20    24        Silver    ppm    ASTU 05168    >20    24        Qopper    ppm    ASTU 05168    >20    2        Lead    ppm    ASTU 05168    >300    3        Vanadum    ppm    ASTU 05168    >300    3        Vanadum    ppm    ASTU 05168    >300    3        Vanadum    ppm    ASTU 05168    >25    4        Vanadum    ppm    ASTU 05168    >25    4        Valeow Metal    scala		-	mls	Client Info		13000		
Sample Statu:Normaln.n.n.n.WEARAll component wear rates are normal.IronpmSMU058>20<111NickelpmSMU058>20<111111NickelpmSMU058>20<11		-				-		
WEAR    Iron    ppm    ASTUDSISM    >120    24        All component wear rates are normal.    Ppm    ASTUDSISM    >20    <1        Nickel    ppm    ASTUDSISM    >5    <1        Silver    ppm    ASTUDSISM    >20    0        All minimum    ppm    ASTUDSISM    >2    0        Aluminum    ppm    ASTUDSISM    >20    0        Aluminum    ppm    ASTUDSISM    >20    0        Auadium    ppm    ASTUDSISM    >20    3        Vanadium    ppm    ASTUDSISM    S0    3        Vanadium    ppm    ASTUDSISM    S0    3        Vanadium    ppm    ASTUDSISM    S0    3        Vanadum    ppm    ASTUDSISM				Client Info				
All component wear rates are normal.    Chromium    ppm    ASTM 05185m    >20    <1		Sample Status				NORMAL		
All component wear rates are normal.    Chromium    ppm    ASTM 05185m    >20    <1	WEAR	Iron	maa	ASTM D5185m	>120	24		
All component wear rates are normal.  Nickel  ppm  45110 (515m)  50  c1      Titanium  ppm  45110 (515m)  52  c1      All uminum  ppm  45110 (515m)  52  c1      All uminum  ppm  45110 (515m)  52  c1      Lead  ppm  45110 (515m)  51  1      Vandum  ppm  45110 (515m)  51  1      Vandum  ppm  45110 (515m)  51  1      Value  scalar  'Visual  NONE  NONE      There is no indication of any contamination in the oil.  Silicon  ppm  45110 (515m)  20  3      Water  Wolkehod  530  c1.0        Upolo  Wolkehod  530  c1.0        There is no indication of any contamination in the oil. <td< td=""><th></th><td></td><td>ASTM D5185m</td><td>&gt;20</td><th></th><td></td><td></td></td<>				ASTM D5185m	>20			
Titanium    ppm    ASTM D5185n    >2    c1       Silver    ppm    ASTM D5185n    >20    0       Aluminum    ppm    ASTM D5185n    >20    2       Lead    ppm    ASTM D5185n    >40    33        Copper    ppm    ASTM D5185n    >30    30    3        Tin    ppm    ASTM D5185n    >10    1        Vanadum    ppm    ASTM D5185n    >20    1        Vanadum    ppm    ASTM D5185n    >22    4        Vanadum    ppm    ASTM D5185n    >22    4        Vanadum    ppm    ASTM D5185n    >22    4        Valow Metal    scalar    Visual    NONE    NONE        Valow Metal    scalar    Visual    NONE    NONE <th>All component wear rates are normal.</th> <th>Nickel</th> <th></th> <th>ASTM D5185m</th> <th>&gt;5</th> <th>&lt;1</th> <th></th> <th></th>	All component wear rates are normal.	Nickel		ASTM D5185m	>5	<1		
Aluminum    ppm    ASTM 05185m    >20    2       Lead    ppm    ASTM 05185m    >40    3        Copper    ppm    ASTM 05185m    >30    3        Tin    ppm    ASTM 05185m    >15    1        White Metal    scalar    Visual    NONE    NONE    NONE       White Metal    scalar    Visual    NONE    NONE        There is no indication of any contamination in the oil.    Silicon    ppm    ASTM 05185m    >26    4        Visual    NONE    NONE		Titanium		ASTM D5185m	>2	<1		
Lead    ppm    ASTM 05185m    >4.0    3        Copper    ppm    ASTM 05185m    >10    1        Tin    ppm    ASTM 05185m    1    1         Vanadium    ppm    ASTM 05185m    1         White Metal    scalar    Visual    NONE    NONE        Vellow Metal    scalar    Visual    NONE    NONE        There is no indication of any contamination in the oil.    Silicon    ppm    ASTM 05185m    >20    3        Glyco    WC Method    >    WC Method    >    NEG        Soft %    %-    YaSTM 07451    >-0          Soft %    %-    YaSTM 0745    >    NEG         Soft %    %-    YaSTM 0745    >-0    21<		Silver	ppm	ASTM D5185m	>2	0		
Copper    ppm    ASTM D5185m    >330    3        Tin    ppm    ASTM D5185m    >15    1        Vanadium    ppm    ASTM D5185m    >15    1        White Metal    scalar    'Visual    NONE    NONE        CONTAMINATION    Silicon    ppm    ASTM D5185m    >25    4        Potassium    ppm    ASTM D5185m    >20    3        White Metal    scalar    'Visual    NONE         Potassium    ppm    ASTM D5185m    >20    3        Water    WC Method    >0.0    <1.0         Solf %    %    'ASTM D784    >4    1.7        Solf %    %    'ASTM D784    >20    9.1        Solf % <td< th=""><th>Aluminum</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;20</th><th>2</th><th></th><th></th></td<>		Aluminum	ppm	ASTM D5185m	>20	2		
Copper    ppm    ASTM D5185m    >330    3        Tin    ppm    ASTM D5185m    -15    1        Vanadium    ppm    ASTM D5185m    -15    1        White Metal    scalar    'Visual    NONE    NONE        Vellow Metal    scalar    'Visual    NONE    NONE        CONTAMINATION    Potassium    pm    ASTM D5185m    >25    4        Potassium    pm    ASTM D5185m    >20    3        Water    WC Method    >3.0    <1.0         Glycol    WC Method    >0.2    NEG         Water    WC Method    >0.2    NCB         Sulfation    Abs/tm    'NSTM D784    >4    1.7        Sulfatin		Lead		ASTM D5185m	>40	3		
Tin    ppm    ASTM D6185m    >15    1        Vanadium    ppm    ASTM D6185m    -		Copper		ASTM D5185m	>330	3		
White Metal Yellow Metal    scalar    'Visual    NONE    NONE        CONTAMINATION    Silicon    ppm    ASTM D5185m    >-20    3        There is no indication of any contamination in the oil.    Silicon    ppm    ASTM D5185m    >-20    3        Water    VC Method    >-02    NEG         Glycol    WC Method    >-02    NEG         Solit Grow    %    % SitM D784k    >4    1.7        Water    % SitM D764k    >02    NEG         Sulfation    Abs/rm    'ASTM D764k    >20    9.1        Sulfation    Abs/rm    'ASTM D764k    >30    21.2        Sulfation    Abs/rm    'ASTM D764k    >30    21.2        Debris    scalar    'Visual    NONE			ppm	ASTM D5185m	>15	1		
Yellow Metal    scalar    Visual    NONE    I    I      CONTAMINATION    Silicon    pp    ASTM D5185n    >225    4    I    I      Potassium    pp    MSIM D5185n    >20    3    I    I      Water    Image: Contamination in the oil.    Visual    WC Method    >3.0    I-1.0    I    I      Water    Image: Contamination in the oil.    WC Method    >0.2    NEG    I    I      Water    Image: Contamination in the oil.    WC Method    >0.2    NEG    I    I      Water    Image: Contamination in the oil.    WC Method    >0.2    NEG    I    I      Water    Image: Contamination in the oil.    WC Method    >0.2    NEG    I    I      Sitt    Scalar    Visual    NONE    I    I    I      Sitt    Scalar    Visual    NONE    I    I    I      Solditon    scalar    Visual		Vanadium	ppm	ASTM D5185m		<1		
Silicon    ppm    ASTM D5185m    >25    4       There is no indication of any contamination in the oil.    Potassium    ppm    ASTM D5185m    >20    3        Water    Image: Contamination in the oil.    WC Method    >3.0    <1.0     Image: Contamination in the oil.    Image: Contaminatin in the oil. <td< th=""><th>White Metal</th><th>scalar</th><th>*Visual</th><th>NONE</th><th>NONE</th><th></th><th></th></td<>		White Metal	scalar	*Visual	NONE	NONE		
Potassium    ppm    ASTM D5185m    >20    3        Fuel    WC Method    >3.0    <1.0    <    <      Water    WC Method    >0.2    NEG    <    <      Glycol    WC Method    >0.2    NEG    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >40    1.7    <    <      Soliti    scalar    'Visual    NONE    Sol    1.2    <      Debris    scalar    'Visual    NOR    NOR    <    <      Appearance    scalar    'Visual    NOR    NOR    <		Yellow Metal	scalar	*Visual	NONE	NONE		
Potassium    ppm    ASTM D5185m    >20    3        Fuel    WC Method    >3.0    <1.0    <    <      Water    WC Method    >0.2    NEG    <    <      Glycol    WC Method    >0.2    NEG    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >4    1.7    <    <      Soot %    %    'ASTM D7844    >40    1.7    <    <      Soliti    scalar    'Visual    NONE    Sol    1.2    <      Debris    scalar    'Visual    NOR    NOR    <    <      Appearance    scalar    'Visual    NOR    NOR    <		Silicon	nnm	ASTM D5185m	<u>\</u> 25	4		
Fuel    WC Method    >3.0    <1.0	CONTAMINATION							
Water    W CM ethod    >0.2    NEG        Glycol    WC Method    NEG     NEG        Soot %    %    'ASTM D764    >4    1.7        Nitration    Abs/m    'ASTM D763    >20    9.1        Sulfation    Abs/m    'ASTM D7151    >30    21.2        Sulfation    Abs/m    'Nisual    NONE    NONE        Debris    scalar    'Visual    NONE    NONE        Appearance    scalar    'Visual    NORM    NORM        Odor    scalar    'Visual    NORM    NORM        The BN result indicates that there is suitable alkalinity remaining in the oil is suitable for further service.    Sodium    pm    ASTM D5185    10    2        Manganese    ppm    ASTM D5185    10    2	There is no indication of any contamination in the oil.		pp					
Glycol    WC Method    NEG        Soot %    %    ASTM D7844    >-4    1.7        Nitration    Abs/cm    *ASTM D7844    >-20    9.1        Sultation    Abs/cm    *ASTM D7845    >-20    9.1        Sultation    Abs/cm    *ASTM D7845    >    Sol    21.2        Sultation    scalar    *Visual    NONE    NONE        Debris    scalar    *Visual    NONE    NONE        Sand/Dirt    scalar    *Visual    NORM    NORM        Appearance    scalar    *Visual    NORM    NORM        Emulsified Wate    scalar    *Visual    NORM    NORM        Boron    ppm    ASTM D5185m    50    1        Molybdenum    ppm								
Soot %    %    *ASTM D7844    >4    1.7        Nitration    Abs/cm    *ASTM D7624    >20    9.1        Sulfation    Abs/tm    *ASTM D7624    >30    21.2        Sulfation    Abs/tm    *Visual    NONE    NONE        Sadd/Dirt    scalar    *Visual    NOR    NORM        Appearance    scalar    *Visual    NORM    NORM        Odor    scalar    *Visual    NORM    NORM        Ddor    scalar    *Visual    NORM    NORM       FLUID CONDITION								
NitrationAbs/cm'ASTM D762>209.1SulfationAbs/tm'ASTM D741'>3021.2Siltscalar'VisualNONENONEDebrisscalar'VisualNONENONESand/Dirtscalar'VisualNORENONEAppearancescalar'VisualNORMNORMOdrscalar'VisualNORMNORMLDebrisscalar'VisualNORMNORMLAppearancescalar'VisualNORMNORMLOdrscalar'VisualNORMLNORMLBoronspmASTM D5185>102BariumppmASTM D518510057MagneseppmASTM D518510057MagnesiumppmASTM D518511501168PhosphorusppmASTM D518513501167SulfurppmASTM D518511501167SulfurppmASTM D518511501167SulfurppmASTM D518511501167MagnesiumppmASTM D518511501167Sulfurpp			%	*ASTM D7844	>4			
Siltscalar*VisualNONENONEDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONENONEAppearancescalar*VisualNORMNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsifiedWaterscalar*VisualNORMLNORMLBronppmASTM D5185m>1580BronppmASTM D5185m100577BariumppmASTM D5185m100577MarganeseppmASTM D5185m100577MarganeseppmASTM D5185m1001188CalciumppmASTM D5185m1501167PhosphorusppmASTM D5185m1501167ZincppmASTM D5185m1501167SuffurppmASTM D5185m152152SuffurppmASTM D5185m152152SuffurppmASTM D5185m152152Suffur <td< th=""><th rowspan="8"></th><th>Nitration</th><th>Abs/cm</th><th></th><th></th><th></th><th></th><th></th></td<>		Nitration	Abs/cm					
Debrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONENONEAppearancescalar*VisualNORMNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLEmulsified Waterscalar*VisualNORMLNORMLNORMLFLUID CONDITIONSodiumppmASTM D5185m>1580BoronppmASTM D5185m2501BoronppmASTM D5185m10027MolybdenumppmASTM D5185m10027ManganeseppmASTM D5185m10028MagnesiumppmASTM D5185m30001188MagnesiumppmASTM D5185m1107MagnesiumppmASTM D5185m1167MagnesiumppmASTM D5185m1167MagnesiumppmASTM D5185m13501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m14503413SulfurppmASTM D5185m14503413Sulfur		Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2		
Sand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*VisualNORMSodiumscalar*Visual>0.2NEGBoronppmASTM D5185m>1580BariumppmASTM D5185m102MolybdenumppmASTM D5185m102MaganeseppmASTM D5185m10057MagnesiumppmASTM D5185m450829MagnesiumppmASTM D5185m1101078PhosphorusppmASTM D5185m1501167SulfurppmASTM D5185m1501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13501167Sulfurppm		Silt	scalar	*Visual	NONE	NONE		
Appearancescalar*VisualNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGFLUID CONDITIONSodiumppmASTM D5185m>1580BoronppmASTM D5185m2501BariumppmASTM D5185m1002MolybdenumppmASTM D5185m10057MaganeseeppmASTM D5185m450829MagnesiumppmASTM D5185m30001188PhosphorusppmASTM D5185m11501078SulfurppmASTM D5185m13501167SulfurppmASTM D5185m42503413OxidationAbs/.1mm'ASTM D5114>2515.2		Debris	scalar	*Visual	NONE	NONE		
Odorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGNEGFLUID CONDITIONSodiumppmASTM D5185m>1580BoronppmASTM D5185m2501BariumppmASTM D5185m1002MolybdenumppmASTM D5185m10057MaganeseppmASTM D5185m450829CalciumppmASTM D5185m30001188PhosphorusppmASTM D5185m13001078SulfurppmASTM D5185m13501167SulfurppmASTM D5185m42503413SulfurppmASTM D5185m42503413SulfurppmASTM D5185m42503413SulfurppmASTM D5185m42503413SulfurppmASTM D5185m42503413SulfurppmASTM D5185m42503413SulfurppmASTM D5141>2515		Sand/Dirt	scalar	*Visual	NONE	NONE		
Emulsified Waterscalar*Visual>0.2NEGFLUID CONDITIONThe BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.SodiumppmASTM D5185m51580BariumppmASTM D5185m102MolybdenumppmASTM D5185m100577MaganeseppmASTM D5185m4508299MagnesiumppmASTM D5185m30001188PhosphorusppmASTM D5185m11501078SulfurppmASTM D5185m13501167SulfurppmASTM D5185m13503413OxidationAbs/.1mm*ASTM D7141>2515.2		Appearance	scalar	*Visual	NORML	NORML		
Sodium  ppm  ASTM D5185m  >158  0     Boron  ppm  ASTM D5185m  250  1      Barium  ppm  ASTM D5185m  10  2      Molybdenum  ppm  ASTM D5185m  100  57      Manganese  ppm  ASTM D5185m  450  829      Manganesium  ppm  ASTM D5185m  3000  1188      Manganesium  ppm  ASTM D5185m  1150  1078      Manganesium  ppm  ASTM D5185m  1350  1167      Manganesium  ppm  ASTM D5185m  1350  1167     Manga		Odor	scalar	*Visual	NORML	NORML		
Boron  ppm  ASTM D5185m  250  1     Barium  ppm  ASTM D5185m  10  2      Barium  ppm  ASTM D5185m  100  2      Molybdenum  ppm  ASTM D5185m  100  577      Manganese  ppm  ASTM D5185m  450  8299      Magnesium  ppm  ASTM D5185m  3000  1188      Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  150  1078      Zinc  ppm  ASTM D5185m  150  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D5185m  4250  3413		Emulsified Water	scalar	*Visual	>0.2	NEG		
Boron  ppm  ASTM D5185m  250  1     Barium  ppm  ASTM D5185m  10  2      Barium  ppm  ASTM D5185m  100  2      Molybdenum  ppm  ASTM D5185m  100  577      Manganese  ppm  ASTM D5185m  450  8299      Magnesium  ppm  ASTM D5185m  3000  1188      Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  150  1078      Zinc  ppm  ASTM D5185m  150  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D5185m  4250  3413	FLUID CONDITION	Sodium	nnm	ASTM D5185m	>158	0		
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.  Barium  ppm  ASTM D5185m  10  2      Molybdenum  ppm  ASTM D5185m  100  57      Manganese  ppm  ASTM D5185m  450  829      Magnesium  ppm  ASTM D5185m  3000  1188      Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  1150  1078      Zinc  ppm  ASTM D5185m  1350  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D7144  >25  15.2								
Molybdenum  ppm  ASTM D5185m  100  57     Manganese  ppm  ASTM D5185m  100  57      Manganese  ppm  ASTM D5185m  450  829      Magnesium  ppm  ASTM D5185m  3000  1188      Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  1150  1078      Zinc  ppm  ASTM D5185m  1350  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D7414  >25  15.2								
Manganese  ppm  ASTM D5185m  <1	oil. The condition of the oil is suitable for further service.							
Magnesium  ppm  ASTM D5185m  450  829      Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  1150  1078      Zinc  ppm  ASTM D5185m  1350  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D7414  >25  15.2		•						
Calcium  ppm  ASTM D5185m  3000  1188      Phosphorus  ppm  ASTM D5185m  1150  1078      Zinc  ppm  ASTM D5185m  1350  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D7414  >25  15.2		-			450			
Phosphorus    ppm    ASTM D5185m    1150    1078        Zinc    ppm    ASTM D5185m    1350    1167        Sulfur    ppm    ASTM D5185m    4250    3413        Oxidation    Abs/.1mm    *ASTM D7414    >25    15.2		0						
Zinc  ppm  ASTM D5185m  1350  1167      Sulfur  ppm  ASTM D5185m  4250  3413      Oxidation  Abs/.1mm  *ASTM D7414  >25  15.2								
Sulfur    ppm    ASTM D5185m    4250    3413        Oxidation    Abs/.1mm    *ASTM D7414    >25    15.2		•						
Oxidation    Abs/.1mm    *ASTM D7414    >25    15.2								
						8.2		

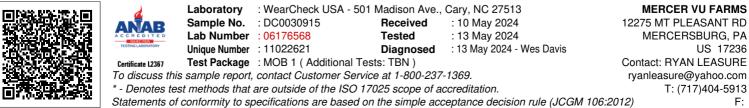
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12.9

ASTM D445 14.4

Visc @ 100°C cSt





Contact/Location: RYAN LEASURE - MERMERPA Page 2 of 2