

## Machine Id **77080** Component **Diesel Engine** Fluid **DIESEL ENGINE OIL SAE 5W30 (--- QTS)**

## RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

## **WEAR**

All component wear rates are normal.

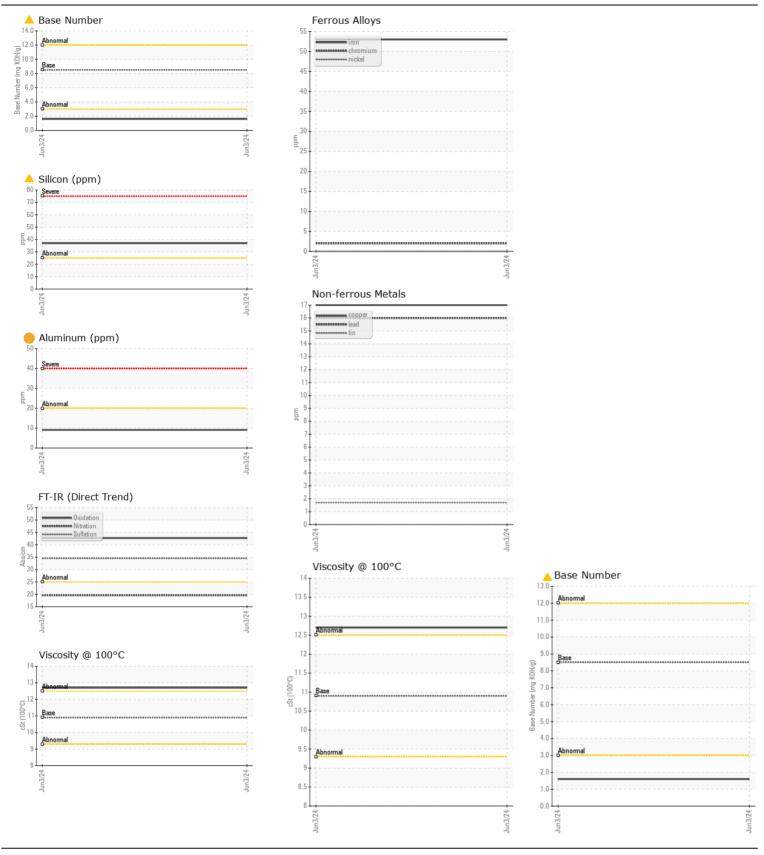
ΝΤΑΓ		IN

Elemental levels of silicon (Si) and aluminum (Al) indicate aluminasilicate (coarse dirt) ingress.

## FLUID CONDITION

The BN level is low.

Test    UOM    Method    Limit/An    Current    History1    History2      Sample Number    Client Info    03 Jur 2024        Machine Age    mils    Client Info    03 Jur 2024        Oil Age    mils    Client Info    0        Oil Age    mils    Client Info    0        Oil Changed    Client Info    0        Sample Status    Client Info    0        Filter Changed    Client Info    0        Sample Status     ABNORMAL        Iron    ppm    ASTM D5185m    >4    0        Iron    ppm    ASTM D5185m    >4    0        Silver    ppm    ASTM D5185m    >330    17        Aluminum    ppm    ASTM D5185m    >33							
Sample DateClient Info03 Jun 2024Machine AgemisClient Info0Oil AgemisClient Info0Oil ChangedClient InfoChangedOil ChangedClient InfoChangedFilter AgemisClient InfoChangedSample StatusABNORMALIronppmASTM D5185m>202NickelppmASTM D5185m>202NickelppmASTM D5185m>30PittaniumppmASTM D5185m>30AluminumppmASTM D5185m>33017LeadppmASTM D5185m>33017VanadumppmASTM D5185m>33017VanadumppmASTM D5185m>209Vellow Metalscalar"VisualNONENONESiliconppmASTM D5185m>202Vellow Metalscalar"VisualNONENONESiliconppmASTM D5185m2010.1SiliconppmASTM D5185m2011.6	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age    mis    Client Info    0        Filter Age    mis    Client Info    0        Filter Age    mis    Client Info    Changed        Filter Changed    Client Info    Changed        Sample Status    ASTM D5185n<>100    53        Iron    ppm    ASTM D5185n<>20    2        Nickel    ppm    ASTM D5185n<>20    9        Silver    ppm    ASTM D5185n<>20    9        Aluminum    ppm    ASTM D5185n<>20    9        Silver    ppm    ASTM D5185n<>20    9        Mandum    ppm    ASTM D5185n<>20    10        Vanadum    ppm    ASTM D5185n<>20    2        Veltow Metal    scalar    "Visual <none< td="">    NONE   </none<>	Sample Number		Client Info		WC0875945		
Oil Age    mis    Client Info    0       Filter Age    mis    Client Info    0       Oil Changed    Client Info    Changed       Sample Status    Client Info    Shange       Iron    ppm    ASTM D5185n    >100    53       Chromium    ppm    ASTM D5185n    >20        Nickel    ppm    ASTM D5185n    >4    0        Silver    ppm    ASTM D5185n    >3    0        Aluminum    ppm    ASTM D5185n    >3    0        Aluminum    ppm    ASTM D5185n    >4    0        Vanadium    ppm    ASTM D5185n    >2        Vanadium    ppm    ASTM D5185n    >2        Vanadium    ppm    ASTM D5185n    >2	Sample Date		Client Info		03 Jun 2024		
Filter Age    mls    Client Info    0        Oil Changed    Client Info    Changed        Sample Status    ABNORMAL        Iron    ppm    ASTM D5185n<>100    53       Iron    ppm    ASTM D5185n<>20    2       Nickel    ppm    ASTM D5185n<>20    2       Titanium    ppm    ASTM D5185n<>20    9       Silver    ppm    ASTM D5185n<>30    0       Aluminum    ppm    ASTM D5185n<>40    16       Copper    ppm    ASTM D5185n<>40    16       Vanadium    ppm    ASTM D5185n<>15    2       Vanadium    ppm    ASTM D5185n<>20    2       Vellow Metal    scalar    *Visual    NONE       Sold Son    ppm    ASTM D5185n<>20    2       Vanadium    ppm    ASTM D5185n <th>Machine Age</th> <th>mls</th> <th>Client Info</th> <th></th> <th>307037</th> <th></th> <th></th>	Machine Age	mls	Client Info		307037		
Oil Changed    Client Info    Changed       Filter Changed    Client Info    Changed       Sample Status    ASTM D5185m    >100    53       Iron    ppm    ASTM D5185m    >20    2       Nickel    ppm    ASTM D5185m    >20    2       Nickel    ppm    ASTM D5185m    >20    9       Aluminum    ppm    ASTM D5185m    >30        Aluminum    ppm    ASTM D5185m    >40    16        Lead    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    >20    2        Vanadium    ppm    ASTM D5185m    >20    2        Vanadium    ppm    ASTM D5185m    >20    37	Oil Age	mls	Client Info		0		
Filter Changed    Client Info    Changed        Sample Status    ABNORMAL        Iron    ppm    ASTM D5185m    >100    53        Iron    ppm    ASTM D5185m    >20    2        Nickel    ppm    ASTM D5185m    >20    2        Silver    ppm    ASTM D5185m    >20    9        Aluminum    ppm    ASTM D5185m    >40    16        Copper    ppm    ASTM D5185m    >40    16        Vanadium    ppm    ASTM D5185m    >21    0        Vanadium    ppm    ASTM D5185m    >22    A    37       Vellow Metal    scalar    *Visual    NONE    NONE       Vellow Metal    scalar    *Visual    NONE        Vellow Metal<	Filter Age	mls	Client Info		0		
Sample Status    ABNORMAL       Iron    ppm    ASTM D5185m<>100    53        Chromium    ppm    ASTM D5185m<>20    2        Nickel    ppm    ASTM D5185m<>4    0        Silver    ppm    ASTM D5185m<>3    0        Aluminum    ppm    ASTM D5185m<>20    ● 9        Lead    ppm    ASTM D5185m<>30    177        Vanadium    ppm    ASTM D5185m<>15    2        Vanadium    ppm    ASTM D5185m<>20    2        Vanadium    ppm    ASTM D5185m<>20    2        Veltow Metal    scalar    *Visual    NONE    NONE       Veltow Metal    scalar    Visual    NONE        Silicon    pp    ASTM D5185m<>20    19.6	Oil Changed		Client Info		Changed		
Iron    ppm    ASTM D5185m    >100    53        Chromium    ppm    ASTM D5185m    >20    2        Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >30    16        Lead    ppm    ASTM D5185m    >30    17        Copper    ppm    ASTM D5185m    >30    17        Vanadium    ppm    ASTM D5185m    >10         Vanadium    ppm    ASTM D5185m    >20    2        Vanadium    ppm    ASTM D5185m    >20    2        Vellow Metal    scalar    *Visual    NONE         Silicon    ppm	Filter Changed		Client Info		Changed		
Chromium    ppm    ASTM D5185m    >20    2        Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Silver    ppm    ASTM D5185m    >20    9        Aluminum    ppm    ASTM D5185m    >40    6        Lead    ppm    ASTM D5185m    >40    6        Copper    ppm    ASTM D5185m    >330    17        Vanadium    ppm    ASTM D5185m    >15    2        Vante    scalar    *Visual    NONE    NONE        Veltow Metal    scalar    *Visual    NONE    NONE        Sviiticon    ppm    ASTM D7624    >20    19.6        Glycol    WC Method	Sample Status				ABNORMAL		
Chromium    ppm    ASTM D5185m    >20    2        Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Silver    ppm    ASTM D5185m    >20    9        Aluminum    ppm    ASTM D5185m    >40    6        Lead    ppm    ASTM D5185m    >40    6        Copper    ppm    ASTM D5185m    >330    17        Vanadium    ppm    ASTM D5185m    >15    2        Vante    scalar    *Visual    NONE    NONE        Veltow Metal    scalar    *Visual    NONE    NONE        Sviiticon    ppm    ASTM D7624    >20    19.6        Glycol    WC Method							
Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    <    <1        Silver    ppm    ASTM D5185m    >20    ● 9        Aluminum    ppm    ASTM D5185m    >20    ● 9        Lead    ppm    ASTM D5185m    >40    16        Copper    ppm    ASTM D5185m    >40    16        Vanadium    ppm    ASTM D5185m    >40    0        Vanadium    ppm    ASTM D5185m    >20    P        Vanadium    ppm    ASTM D5185m    >20    2        Yellow Metal    scalar    *Visual    NONE        Silicon    ppm    ASTM D784    >3    0.1        Fuel    WC Method    >0.1	-						
Titanium    ppm    ASTM D5185m    <1		ppm					
Silver    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >20    ● 9        Lead    ppm    ASTM D5185m    >20    ● 9        Copper    ppm    ASTM D5185m    >40    16        Vanadium    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    >20    2        Yellow Metal    scalar    *Visual    NONE         Solicon    ppm    ASTM D5185m    >20    2    10        Water    WC Method    >0.2    NEG         Sot %    %    *ASTM D7624    >20    19.6        Sulfation    Abs/r				>4			
Aluminum    ppm    ASTM D5185m    >20    9        Lead    ppm    ASTM D5185m    >40    16        Copper    ppm    ASTM D5185m    >330    17        Vanadium    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    >15    2        White Metal    scalar    *Visual    NONE    NONE        Yellow Metal    scalar    *Visual    NONE         Silicon    ppm    ASTM D5185m    >20    2        Fuel    WC Method    >0.2    NEG        Water    WC Method    >0.2    NEG        Soot %    %    % ASTM D7844    >3    0.1        Sulfation    Abs/(mm 'ASTM D7624    >30    34.5 <th></th> <th>ppm</th> <th></th> <th></th> <th></th> <th></th> <th></th>		ppm					
Lead  ppm  ASTM D5185m  >40  16      Copper  ppm  ASTM D5185m  >330  17      Tin  ppm  ASTM D5185m  >15  2      Wanadium  ppm  ASTM D5185m  0      White Metal  scalar  *Visual  NONE  NONE      Yellow Metal  scalar  *Visual  NONE  NONE      Silicon  ppm  ASTM D5185m  >20  2      Fuel  WC Method  >5  <1.0      Glycol  WC Method  >0.2  NEG      Solf %  %  *ASTM D7624  >20  19.6      Sulfation  Abs/.tm< *ASTM D7624  >20  19.6      Sulfation  Abs/.tm< *ASTM D7624  >20  19.6      Sulfation  Abs/.tm< *ASTM D7624  >20  19.6		ppm					
Copper    ppm    ASTM D5185m    >330    17        Tin    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    0        White Metal    scalar    *Visual    NONE    NONE        Yellow Metal    scalar    *Visual    NONE    NONE        Silicon    ppm    ASTM D5185m<>20    2         Fuel    WC Method    >0.2    NEG         Water    WC Method    >0.2    NEG         Sot %    %    *ASTM D7624<>20    19.6         Sulfation    Abs/(1mm    *ASTM D7624<>20    19.6         Sulfation    Abs/(1mm    *ASTM D7624<>20    19.6         Sulfation    Abs/(1mm    *ASTM D76					-		
Tin    ppm    ASTM D5185m    >15    2        Vanadium    ppm    ASTM D5185m    0        White Metal    scalar    *Visual    NONE    NONE        Yellow Metal    scalar    *Visual    NONE    NONE        Silicon    ppm    ASTM D5185m    >20    2        Potassium    ppm    ASTM D5185m    >20    2        Water    WC Method    >5    <1.0         Glycol    WC Method    >0.1          Sott %    %    *ASTM D7624    >20    19.6        Sulfation    Abs/cm< *ASTM D7624    >20    19.6        Sulfation    Abs/cm< *ASTM D7624    >20    19.6        Sulfation    Abs/cm< *Visual    NONE    NONE					-		
Vanadium    ppm    ASTM D5185m    0    0        White Metal    scalar    *Visual    NONE    NONE        Yellow Metal    scalar    *Visual    NONE    NONE        Silicon    ppm    ASTM D5185m    >20    2        Potassium    ppm    ASTM D5185m    >20    2        Fuel    WC Method    >5    <1.0         Glycol    WC Method    >0.2    NEG         Soot %    %    'ASTM D7624    >20    19.6        Sulfation    Abs/.tmm    'ASTM D715    >30    34.5        Sulfation    Abs/.tmm    'ASTM D7145    >30    34.5        Sodium    scalar    'Visual    NONE    NONE        Appearance    <							
White Metal  scalar  *Visual  NONE  NONE      Yellow Metal  scalar  *Visual  NONE  NONE      Silicon  ppm  ASTM D5185m  >25  A 37      Potassium  ppm  ASTM D5185m  >20  2      Fuel  WC Method  >5  <1.0      Glycol  WC Method  >0.2  NEG      Soot %  %  *ASTM D7644  >3  0.1      Soot %  %  *ASTM D7645  >20  19.6      Sulfation  Abs/cm  *ASTM D7645  >30  34.5      Sulfation  Abs/cm  *ASTM D715  >30  34.5      Debris  scalar  *Visual  NONE  NONE      Sand/Dirt  scalar  *Visual  NORE  NORML      Appearance  scalar  *Visual				>15	_		
Yellow Metal  scalar  *Visual  NONE      Silicon  ppm  ASTM D5185m<>25  ▲ 37      Potassium  ppm  ASTM D5185m<>20  2      Fuel  WC Method  >5  <1.0      Water  WC Method  >0.2  NEG      Glycol  WC Method  >0.2  NEG      Soot %  %  *ASTM D7844  >3  0.1      Soot %  %  *ASTM D7624  >20  19.6      Sulfation  Abs/.mm<*ASTM D7624  >20  19.6      Sulfation  Abs/.mm<*ASTM D7614  >30  34.5      Sulfation  Abs/.imm<*ASTM D7614  >30  34.5      Sulfation  Abs/.imm<*ASTM D7614  >20  NORE      Sand/Dirt  scalar  *Visual  NORE <t< th=""><th></th><th></th><th></th><th></th><th>-</th><th></th><th></th></t<>					-		
Silicon  ppm  ASTM D5185m< >25  ▲ 37      Potassium  ppm  ASTM D5185m  >20  2      Fuel  WC Method  >5  <1.0      Water  WC Method  >0.2  NEG      Glycol  WC Method  >0.2  NEG      Soot %  %  *ASTM D7844  >3  0.1      Soot %  %  *ASTM D7624  >20  19.6      Sulfation  Abs/cm  *ASTM D7644  >30  34.5      Sulfation  Abs/tmm  *ASTM D7644  >20  NORE      Sulfation  Abs/timm  NORME  NO							
Potassium    ppm    ASTM D5185m    >20    2       Fuel    WC Method    >5    <1.0       Water    WC Method    >0.2    NEG       Glycol    WC Method    >0.2    NEG       Soot %    %    *ASTM D7844    >3    0.1       Nitration    Abs/cm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1m    *ASTM D715    >30    34.5       Sulfation    Abs/.1m    *ASTM D7814    NONE    NONE       Sulfation    scalar    *Visual    NORM    NORML       Appearance    scalar    *Visual    NORM    NORML	Yellow Metal	scalar	*Visual	NONE	NONE		
Potassium    ppm    ASTM D5185m    >20    2       Fuel    WC Method    >5    <1.0       Water    WC Method    >0.2    NEG       Glycol    WC Method    >0.2    NEG       Soot %    %    *ASTM D7844    >3    0.1       Nitration    Abs/cm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1mm    *ASTM D7624    >20    19.6       Sulfation    Abs/.1m    *ASTM D715    >30    34.5       Sulfation    Abs/.1m    *ASTM D7814    NONE    NONE       Sulfation    scalar    *Visual    NORM    NORML       Appearance    scalar    *Visual    NORM    NORML	Silicon	nnm	ASTM D5185m	<u>\</u> 25	A 37		
Fuel    WC Method    >5    <1.0					-		
Water    WC Method    >0.2    NEG       Glycol    WC Method    NEG        Soot %    %    *ASTM D7844    >3    0.1        Nitration    Abs/cm    *ASTM D7624    >20    19.6        Sulfation    Abs/cm    *ASTM D7612    >20    19.6        Sulfation    Abs/cm    *ASTM D7415    >30    34.5        Sulfation    Abs/cm    *ASTM D7415    >30    34.5        Sulfation    Abs/cm    *Visual    NONE         Sulfation    scalar    *Visual    NONE    NONE        Sand/Dirt    scalar    *Visual    NORML    NORML        Appearance    scalar    *Visual    NORML    NORML		ppm			_		
Glycol  WC Method  NEG      Soot %  %  *ASTM D7844  >3  0.1      Nitration  Abs/cm  *ASTM D7624  >20  19.6      Sulfation  Abs/cm  *ASTM D7615  >30  34.5      Sulfation  Abs/cm  *Visual  NONE  NONE      Silt  scalar  *Visual  NONE  NONE      Debris  scalar  *Visual  NOR  NONE      Sand/Dirt  scalar  *Visual  NORM  NORML      Appearance  scalar  *Visual  NORML  NORML      Odor  scalar  *Visual  >0.2  NEG      Boron  ppm  ASTM D5185m  250  21      Barium  ppm  ASTM D5185m  100  0      Magnesium  ppm  AS							
Soot %    %    *ASTM D7844    >3    0.1        Nitration    Abs/cm    *ASTM D7624    >20    19.6        Sulfation    Abs/cm    *Visual    NONE    NONE        Debris    scalar    *Visual    NOR    NORE        Sand/Dirt    scalar    *Visual    NORM    NORML        Appearance    scalar    *Visual    NORM    NORML        Odor    scalar    *Visual    NORM    NORML        Boron    ppm    ASTM D5185m    250    21        Magnesium <th></th> <th></th> <th></th> <th>20.2</th> <th></th> <th></th> <th></th>				20.2			
NitrationAbs/cm*ASTM D7624>2019.6SulfationAbs/.1mm*ASTM D7415>3034.5Siltscalar*VisualNONENONEDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNORENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLBoronppmASTM D5185m9BariumppmASTM D5185m25021MalganeseppmASTM D5185m100104MagnesiumppmASTM D5185m3000908PhosphorusppmASTM D5185m1150745ZincppmASTM D5185m1350912SulfurppmASTM D5185m42502463SulfurppmASTM D5185m42502463DifferenceMath D5185m42502463SulfurppmASTM D5185m42502463DifferenceMath D5185m4250A42.7SulfurppmASTM D5185m4250A42.7	,	0/_		~3			
SulfationAbs/.tmm*ASTM D7415>3034.5Siltscalar*VisualNONENONEDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m9BoronppmASTM D5185m25021BariumppmASTM D5185m1000MagneseppmASTM D5185m100104MagnesiumppmASTM D5185m3000908PhosphorusppmASTM D5185m1150745ZincppmASTM D5185m1350912SulfurppmASTM D5185m42502463Dase Number (BN)mg KOHgASTM D28968.5 <b>1.6</b>							
Siltscalar*VisualNONEDebrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m25021BariumppmASTM D5185m1000MalganeseppmASTM D5185m100104MagnesiumppmASTM D5185m3000908PhosphorusppmASTM D5185m1150745ZincppmASTM D5185m1350912SulfurppmASTM D5185m42502463Dese Number (BN)mg KOHgASTM D28868.5▲ 1.6							
Debrisscalar*VisualNONENONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m25021BoronppmASTM D5185m100BariumppmASTM D5185m100104MalganeseppmASTM D5185m3000908MagnesiumppmASTM D5185m1150745PhosphorusppmASTM D5185m1350912ZincppmASTM D5185m42502463SulfurppmASTM D5185m42502463DxidationAbs/1mm'ASTM D2868.5 <b>1</b> .6Base Number (BN)mg KOHgASTM D2868.5 <b>1</b> .6							
Sand/Dirtscalar*VisualNONENOREAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m25021BoronppmASTM D5185m100BariumppmASTM D5185m100104MolybdenumppmASTM D5185m100104MagneseppmASTM D5185m3000908PhosphorusppmASTM D5185m1150745ZincppmASTM D5185m1350912SulfurppmASTM D5185m42502463DxidationAbs.1mm'ASTM D2186&Base Number (BN)mg KOHgASTM D286&Base Number (BN)mg KOHgASTM D286&Base Number (BN)mg KOHgASTM D286&Astm D2868.51.6Astm D2868.51.6					-		
Appearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m9BoronppmASTM D5185m25021BariumppmASTM D5185m100MolybdenumppmASTM D5185m100104ManganeseppmASTM D5185m450755MagnesiumppmASTM D5185m3000908ZincppmASTM D5185m1350912SulfurppmASTM D5185m42502463OxidationAbs/.1mm*ASTM D7141>2542.7Base Number (BN)mg KOHgASTM D28968.5▲ 1.6					-		
Odorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGSodiumppmASTM D5185m9BoronppmASTM D5185m25021BariumppmASTM D5185m100MolybdenumppmASTM D5185m100104ManganeseppmASTM D5185m450755MagnesiumppmASTM D5185m3000908PhosphorusppmASTM D5185m1350912SulfurppmASTM D5185m42502463OxidationAbs.1mm*ASTM D5185m425042.7Base Number (BN)mg KOH/gASTM D28968.5▲ 1.6					-		
Emulsified Water    scalar    *Visual    >0.2    NEG       Sodium    ppm    ASTM D5185m    9        Boron    ppm    ASTM D5185m    250    21        Barium    ppm    ASTM D5185m    10    0        Molybdenum    ppm    ASTM D5185m    100    104        Manganese    ppm    ASTM D5185m    84        Magnesium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs/.1mm<*ASTM D2896    8.5    42.7					-		
Sodium    ppm    ASTM D5185m    9        Boron    ppm    ASTM D5185m    250    21        Barium    ppm    ASTM D5185m    100    0        Molybdenum    ppm    ASTM D5185m    100    104        Manganese    ppm    ASTM D5185m    100    104        Magnesium    ppm    ASTM D5185m    84        Calcium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs./1mm<*ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5							
Boron    ppm    ASTM D5185m    250    21        Barium    ppm    ASTM D5185m    10    0        Molybdenum    ppm    ASTM D5185m    100    104        Manganese    ppm    ASTM D5185m    100    104        Magnesium    ppm    ASTM D5185m    84        Calcium    ppm    ASTM D5185m    450    755        Phosphorus    ppm    ASTM D5185m    3000    908        Zinc    ppm    ASTM D5185m    1150    745        Sulfur    ppm    ASTM D5185m    1350    912        Oxidation    Abs./.1mm<*ASTM D7141    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    ▲ 1.6							
Barium    ppm    ASTM D5185m    10    0       Molybdenum    ppm    ASTM D5185m    100    104        Manganese    ppm    ASTM D5185m    100    104        Magnesium    ppm    ASTM D5185m    450    755        Calcium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs.1mm<*ASTM D7141	Sodium	ppm			9		
Molybdenum    ppm    ASTM D5185m    100    104        Manganese    ppm    ASTM D5185m    450    844        Magnesium    ppm    ASTM D5185m    450    755        Calcium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs.1mm<*ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    ▲ 1.6	Boron	ppm	ASTM D5185m	250	21		
Manganese    ppm    ASTM D5185m    84        Magnesium    ppm    ASTM D5185m    450    755        Calcium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs/.1mm    *ASTM D2186    8.5    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    ▲ 1.6		ppm	ASTM D5185m				
Magnesium    ppm    ASTM D5185m    450    755        Calcium    ppm    ASTM D5185m    3000    908        Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs/.1mm    *ASTM D2896    8.5    ▲ 1.6	-	ppm	ASTM D5185m	100	104		
Calcium    ppm    ASTM D5185m    3000    908       Phosphorus    ppm    ASTM D5185m    1150    745       Zinc    ppm    ASTM D5185m    1350    912       Sulfur    ppm    ASTM D5185m    4250    2463       Oxidation    Abs/.1mm    *ASTM D2896    8.5    ▲ 1.6	Manganese	ppm			84		
Phosphorus    ppm    ASTM D5185m    1150    745        Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs/.1mm    *ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    ▲ 1.6	J	ppm	ASTM D5185m				
Zinc    ppm    ASTM D5185m    1350    912        Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs.1mm    *ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    A 1.6		ppm			908		
Sulfur    ppm    ASTM D5185m    4250    2463        Oxidation    Abs/.1mm    *ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5    ▲ 1.6	Phosphorus	ppm	ASTM D5185m	1150	745		
Oxidation    Abs/.1mm    *ASTM D7414    >25    42.7        Base Number (BN)    mg KOH/g    ASTM D2896    8.5 <b>4</b> 1.6		ppm		1350	912		
Base Number (BN) mg KOH/g ASTM D2896 8.5 🔺 1.6	Sulfur	ppm	ASTM D5185m	4250	2463		
Visc @ 100°C cSt ASTM D445 10.9 12.7	( )						
	Visc @ 100°C	cSt	ASTM D445	10.9	12.7		



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 SALEM NATIONALEASE CORPORATION Sample No. : WC0875945 Received 198 PARK PLAZA DRIVE : 11 Jul 2024 Lab Number : 06234351 Tested WINSTON SALEM, NC : 12 Jul 2024 Diagnosed Unique Number : 11123185 : 14 Jul 2024 - Don Baldridge US 27105 Test Package : FLEET **Contact: Audrey Hopkins** Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. Audrey.Hopkins@salemcorp.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (336)767-9642 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: x:

Contact/Location: Audrey Hopkins - SALWIN Page 2 of 2