

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id DT779 Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

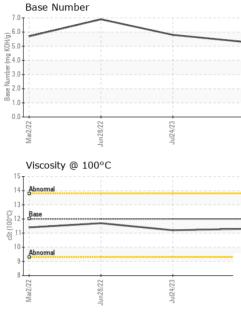
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | Widt202 | 2 Jun2022 | Jul2023 Di | 102023 | |
|------------------|----------------|-------------|------------|-------------|-------------|-------------|
| SAMPLE INFORM | MATION | method | | | | history2 |
| Sample Number | | Client Info | | PCA0110874 | PCA0100020 | PCA0075873 |
| Sample Date | | Client Info | | 12 Dec 2023 | 24 Jul 2023 | 28 Jun 2022 |
| Machine Age | mls | Client Info | | 154121 | 128127 | 0 |
| Oil Age | mls | Client Info | | 154121 | 128127 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATI | ON | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | 20.2 | NEG | NEG | NEG |
| WEAR METALS | c | method | limit/base | | history1 | - |
| | | | | current | | history2 |
| Iron | ppm | ASTM D5185m | >110 | 17 | 16 | 33 |
| Chromium | ppm | ASTM D5185m | >4 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | 0 | 2 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | <1 | 0 | <1 |
| Aluminum | ppm | | >25 | 8 | 4 | 20 |
| Lead | ppm | ASTM D5185m | >45 | 0 | <1 | <1 |
| Copper | ppm | | >85 | 1 | 14 | 40 |
| Tin | ppm | ASTM D5185m | >4 | 0 | <1 | <1 |
| Antimony | ppm | ASTM D5185m | | | | |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| Boron | ppm | ASTM D5185m | 2 | 7 | 1 | 5 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 50 | 67 | 63 | 57 |
| Manganese | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 950 | 946 | 889 | 919 |
| Calcium | ppm | ASTM D5185m | 1050 | 1132 | 1155 | 1139 |
| Phosphorus | ppm | ASTM D5185m | 995 | 1068 | 842 | 939 |
| Zinc | ppm | ASTM D5185m | 1180 | 1314 | 1156 | 1220 |
| Sulfur | ppm | ASTM D5185m | 2600 | 2669 | 3021 | 2454 |
| CONTAMINAN | TS | method | limit/base | current | history1 | history2 |
| Silicon | ppm | ASTM D5185m | >30 | 7 | 6 | 5 |
| Sodium | ppm | ASTM D5185m | | <1 | 2 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | 10 | 4 | 48 |
| INFRA-RED | | method | limit/base | current | history1 | history2 |
| Soot % | % | *ASTM D7844 | >3 | 0.7 | 0.7 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.9 | 10.7 | 9.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 23.5 | 21.1 | 22.8 |
| FLUID DEGRAD |)AT <u>ION</u> | method | limit/base | current | history1 | history2 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 19.4 | 16.0 | 19.2 |
| | | | . =• | | | |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 5.3 | 5.8 | 6.9 |



OIL ANALYSIS REPORT

VISUAL



| | | White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
|-------------------------------|---|--|---|--|---|-------------|---|--|
| | | Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| | | Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| 23 - | - 23 | | scalar | *Visual | NORML | NORML | NORML | NORML |
| Jul24/23 | Dec12/23 | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| | | Emulsified Water | | | | | NEG | |
| | | | scalar | *Visual | >0.2 | NEG | | NEG |
| 1 | | Free Water | scalar | *Visual | | NEG | NEG | NEG |
| | | FLUID PROP | | method | limit/base | current | history1 | history2 |
| | | Visc @ 100°C | cSt | ASTM D445 | 12.00 | 11.3 | 11.2 | 11.7 |
| | | GRAPHS | | | | | | |
| | | Ferrous Alloys | | | | | | |
| 4/23 - | | 120 - iron | | | | | | |
| Jul24/23 | | 100 - nickel | | | | | | |
| | | 80 | | | | | | |
| | | | | | | | | |
| | | 60 | | | | | | |
| | | 40 | | | | | | |
| | | 20 | | | | | | |
| | | | | | | | | |
| | | Mar2/22 un28/22 | | Jul24/23 | 2/23 | | | |
| | | Mar Jun2 | | Jul2 | Dec12/23 | | | |
| | | Non-ferrous Met | als | | | | | |
| | | 45 T | | | | | | |
| | | 40 - copper | | | | | | |
| | | 35 tin | | | | | | |
| | | 30- | | | | | | |
| | | | | | | | | |
| | | E ²⁵ | | | | | | |
| | | E ²⁵ 20 | | | | | | |
| | | 15 | | | | | | |
| | | - I | | | | | | |
| | | 15 | | | | | | |
| | | 15- 10- 5- 0- | | 1/3 | 123 | | | |
| | | 15- 10- 5- 0- | | Juit4/23 | Dec12/23 | | | |
| | | 15- 10- 5- 0- | PC | Jui24/23 | Dec12/23 | Baco Numbor | | |
| | | 15 0 2772 EW Viscosity @ 100° | c | July 123 | | Base Number | | |
| | | 15 10 5 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | ic . | Jul24/23 | 7.0 6.0 | Base Number | | |
| | | 15 0 2772 EW Viscosity @ 100° | rc | Juit24/23 | 7.0 6.0 | Base Number | | |
| | | Viscosity @ 100° | rc | Jui24/23 | 7.0 6.0 | Base Number | | |
| | | Viscosity @ 100° | rc | Jui24/23 | 7.0 6.0 | Base Number | | |
| | | Viscosity @ 100° | PC | Jui24/23 | 7.0 6.0 | Base Number | | |
| | | Viscosity @ 100° | nc | Jui24/23 | 7.0 | Base Number | | |
| | | Viscosity @ 100° | nc | Jul24/23 | 7.0 6.0 | Base Number | | |
| | | Viscosity @ 100° | nc | | 7.0 6.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0 | | | |
| | | Viscosity @ 100° | nc | | 7.0 6.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0 | | 8/22 | 4/23 |
| | | Viscosity @ 100° | nc | Jui24/23 | 7.0 - 6.0 - (0) 5.0 - (0) 4.0 - - | Base Number | Jun28/22 | Jui24/23 |
| | | Viscosity @ 100° | nc | | 7.0 6.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0 | | Jun28/22 | Jui24/23 |
| | _aboratory | Viscosity @ 100° | | Jul24/23 | 0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 | Ma2/22 | ITE & CO - COL | |
| | Sample No. | Viscosity @ 100° Viscosity @ 100° Abnomal Base CZCRW Viscosity @ 2000 CZCRW Viscosity @ 100° CZCRW CZCRW CZCRUN CZC | 501 Madi Recieved | son Ave., Ca | ry, NC 27513 Dec 2023 | Ma2/22 | ITE & CO - COL 100 INDEPE | UMBIA DIVISIO |
| | Sample No. Lab Number | Viscosity @ 100° | 501 Madi Recieved Diagnos | son Ave., Ca d : 21 l ed : 22 l | ry, NC 27513 Dec 2023 Dec 2023 | Ma2/22 | ITE & CO - COL 100 INDEPE | UMBIA DIVISIO NDENCE BLV COLUMBIA, S |
| | Sample No. Lab Number Jnique Number | Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal Base CZURY Viscosity @ 100° CZURY Viscosity @ 100° CZURY CZUR | 501 Madi Recieved | son Ave., Ca d : 21 l ed : 22 l | ry, NC 27513 Dec 2023 | Nma2222 | ITE & CO - COL 100 INDEPE | Umbia divisio Ndence BLV Columbia, S US 292 |
| VELABORATORY L icate L2367 | Sample No. Lab Number Jnique Number Fest Package | Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal EVEry Control of the second seco | 501 Madi Recieved Diagnos Diagnost | son Ave., Ca d : 21 ed : 22 tician : We | ry, NC 27513 Dec 2023 s Davis | Nma2222 | ITE & CO - COL 100 INDEPE Contact: GEOF | UMBIA DIVISIO NDENCE BLV COLUMBIA, S US 292 RGE EDWARE |
| icate L2367 | Sample No. Lab Number Jnique Number Test Package Sample report, | Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal Base CZURY Viscosity @ 100° CZURY Viscosity @ 100° CZURY CZUR | 501 Madi Recieved Diagnos Diagnosi | son Ave., Ca d : 21 ed : 22 tician : We | ry, NC 27513 Dec 2023 s Davis | Nma2222 | ITE & CO - COL 100 INDEPE Contact: GEOF | UMBIA DIVISIO NDENCE BL\ COLUMBIA, S US 292 |