**Title:** CB (SUVALI) CRUDE ASSAY

**Client:** **Cairn Energy India Pvt Ltd**
Survey No 232, Onshore Terminal, Surat Hazira Road, Hazira Surat, Surat - 394270

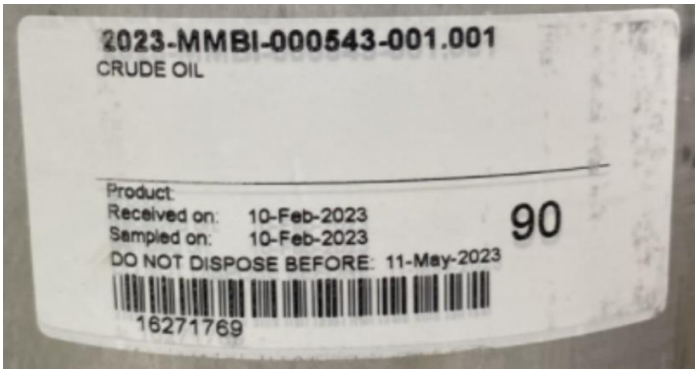
Report No.: 2023-SING-004514
Issue No.: 1
Date of Issue: 23 March 2023

**Sample Description:**

**Intertek Reference**

Sample ID: CB (SUVALI) CRUDE OIL
Lab ID: **2023-SING-004514**
Date Received: **16 February 2023**
Date(s) Tested: **17 Feb - 21 Mar 2023**

**Per Sample Label**

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FORM NO.: ITSQA-REP-01/3
DATE ISSUED: APR 19

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## Table of Content

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## Properties of Crude

| Sample ID | CB (SUVALI) CRUDE OIL |
|---|---|
| Lab ID | 2023-SING-004514 |
| Client ID | Cairn Energy India Pvt Ltd |
| Date | 23 March 2023 |

| Test | Method | Result | Unit |
|---|---|---|---|
| Density @15°C | D5002 | 0.8052 | kg/L |
| Specific Gravity @60/60°F | | 0.8056 | - |
| API Gravity | | 44.2 | °API |
| Ash Content | D482 | 0.007 | % wt |
| Asphaltene stability | ASTM D2007 | 2.9 | - |
| Basic Nitrogen | UOP 269 | 0.0090 | % wt |
| Carbon Residue- Micro | D4530 | 0.63 | % wt |
| CFPP | IP 309 | NA[1] | °C |
| Characterization factor | UOP 375 | 12.2 | - |
| Colour ASTM | D1500 | >8.0 | - |
| Flash Point | ip 170 | <10.0 | °C |
| H2S | UOP 163 | <1 | ppm wt |
| Kinematic Viscosity @ 40°C | D445 | 2.468 | cSt |
| Kinematic Viscosity @ 50°C | D445 | 2.035 | cSt |
| Kinematic Viscosity @ 100°C | D445 | NA[2] | cSt |
| Mercaptan Sulphur | UOP 163 | <1 | ppm wt |
| Metal - Mercury | UOP 938 | <1.00 | ppm wt |
| Metal - Cu | ICPES | <1 | ppm wt |
| Metal - Fe | ICPES | 3 | ppm wt |
| Metal - Ni | ICPES | <1 | ppm wt |
| Metal - Na | ICPES | 6 | ppm wt |
| Metal - V | ICPES | <1 | ppm wt |
| Mol Wt | GPC | 179.5 | g/mol |
| Pour Point-upper | D5853A | 9 | °C |
| Reid Vapour Pressure @37.8°C | D323 | 4.05 | psi |
| Salt Content | D3230 | 6.3 | lb/1000bbls |
| SARA (on 260+ cut) - Saturates | D2007 | 69.9 | % wt |
| SARA (on 260+ cut) - Aromatics | D2007 | 19.4 | % wt |
| SARA (on 260+ cut) - Resins | D2007 | 4.9 | % wt |
| SARA (on 260+ cut) - Asphaltene | D2007 | 0.1 | % wt |
| Sediment by Extraction | D473 | 0.02 | % wt |
| Total Acid Number | D664 | 0.07 | mg KOH/g |
| Total Nitrogen | D5762 | 170 | ppm wt |
| Total Sulphur | D4294 | 0.0297 | %wt |
| Viscosity-Grav Constant @ 100°C | D2501 | NA[2] | - |
| Water Content | D4006 | 0.45 | %Vol |
| WAT | DSC | 53.0 | °C |
| WDT | DSC | 27.3 | °C |
| Wax Content | UOP 46 | 24.3 | % wt |

Note :

NA[1] - Unable to perform. Dark sample. Color >8.0 (CFPP) / Color >3.5 (Cloud Pt)

NA[2] - Unable to perform. Sample has low flash.

## Chemical Composition By Whole oil GC

| Component | Mole, % | Component | Mole, % |
|---|---|---|---|
| Methane | <0.01 | Dodecanes | 4.31 |
| Ethane | <0.01 | Tridecanes | 4.51 |
| Propane | 0.79 | Tetradecanes | 4.46 |
| iso-Butane | 1.08 | Pentadecanes | 3.50 |
| n-Butane | 1.74 | Hexadecanes | 2.72 |
| Neo-pentane | 0.02 | Heptadecanes | 2.87 |
| iso-Pentane | 1.93 | Octadecanes | 1.73 |
| n-Pentane | 2.66 | Nonadecanes | 1.74 |
| Hexanes | 6.13 | Eicosanes | 1.43 |
| Methyl Cyclo Pentane | 1.43 | Heneicosanes | 1.40 |
| Benzene | 0.36 | Docasanes | 1.31 |
| Cyclohexane | 3.64 | Tricosanes | 1.07 |
| Heptanes | 6.21 | Tetracosanes | 1.02 |
| Methyl Cyclo Hexane | 5.52 | Pentacosanes | 1.00 |
| Toluene | 0.81 | Hexacosanes | 0.92 |
| Octanes | 7.44 | Heptacosanes | 0.91 |
| Ethyl Benzene | 0.23 | Octacosanes | 0.73 |
| Meta+Para Xylene | 1.13 | Nonacosanes | 0.65 |
| Ortho Xylene | 0.33 | Triacontanes | 0.61 |
| Nonanes | 6.21 | Hentriacontanes | 0.56 |
| Iso-Propyl benzene | 0.03 | Dotriacontanes | 0.36 |
| n-Propyl benzene | 0.12 | Tritriacontanes | 0.31 |
| 1,2,4-Trimethylbenzene | 0.09 | Tetratriacontanes | 0.22 |
| Decanes | 6.05 | Pentatriacontanes | 0.22 |
| Undecanes | 5.43 | Hexatriacontanes + | 2.07 |

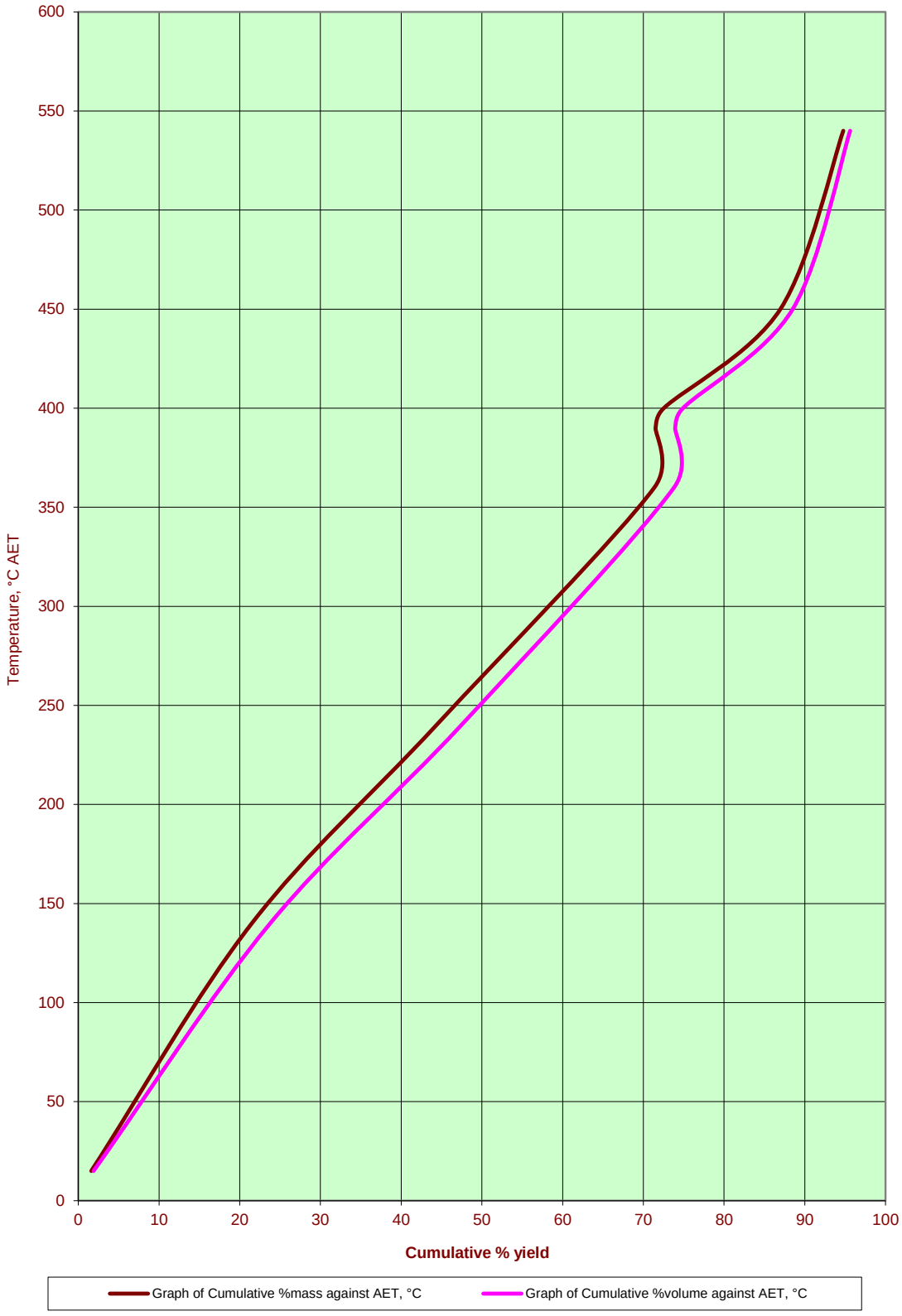
## Distillation %mass Yield and %volume Yield

| Cut Range °C | %mass | Cumulative %mass | %volume | Cumulative %volume | Specific Gravity @60/60°F |
|---|---|---|---|---|---|
| LPG | 1.6 | 1.6 | 1.9 | 1.9 | 0.5735 |
| 15 - 140 | 19.9 | 21.5 | 21.9 | 23.8 | 0.7245 |
| 140 - 240 | 22.9 | 44.4 | 23.7 | 47.4 | 0.7779 |
| 240 - 360 | 27.0 | 71.4 | 26.4 | 73.8 | 0.8255 |
| 360 - 390 | 0.1 | 71.5 | 0.1 | 73.9 | 0.8463 |
| 390 - 400 | 1.0 | 72.5 | 1.0 | 74.9 | 0.8466 |
| 400 - 450 | 14.4 | 87.0 | 13.6 | 88.5 | 0.8563 |
| 450 - 540 | 7.8 | 94.8 | 7.1 | 95.6 | 0.8819 |
| 540+ | 5.2 | 100.0 | 4.4 | 100.0 | 0.9627 |

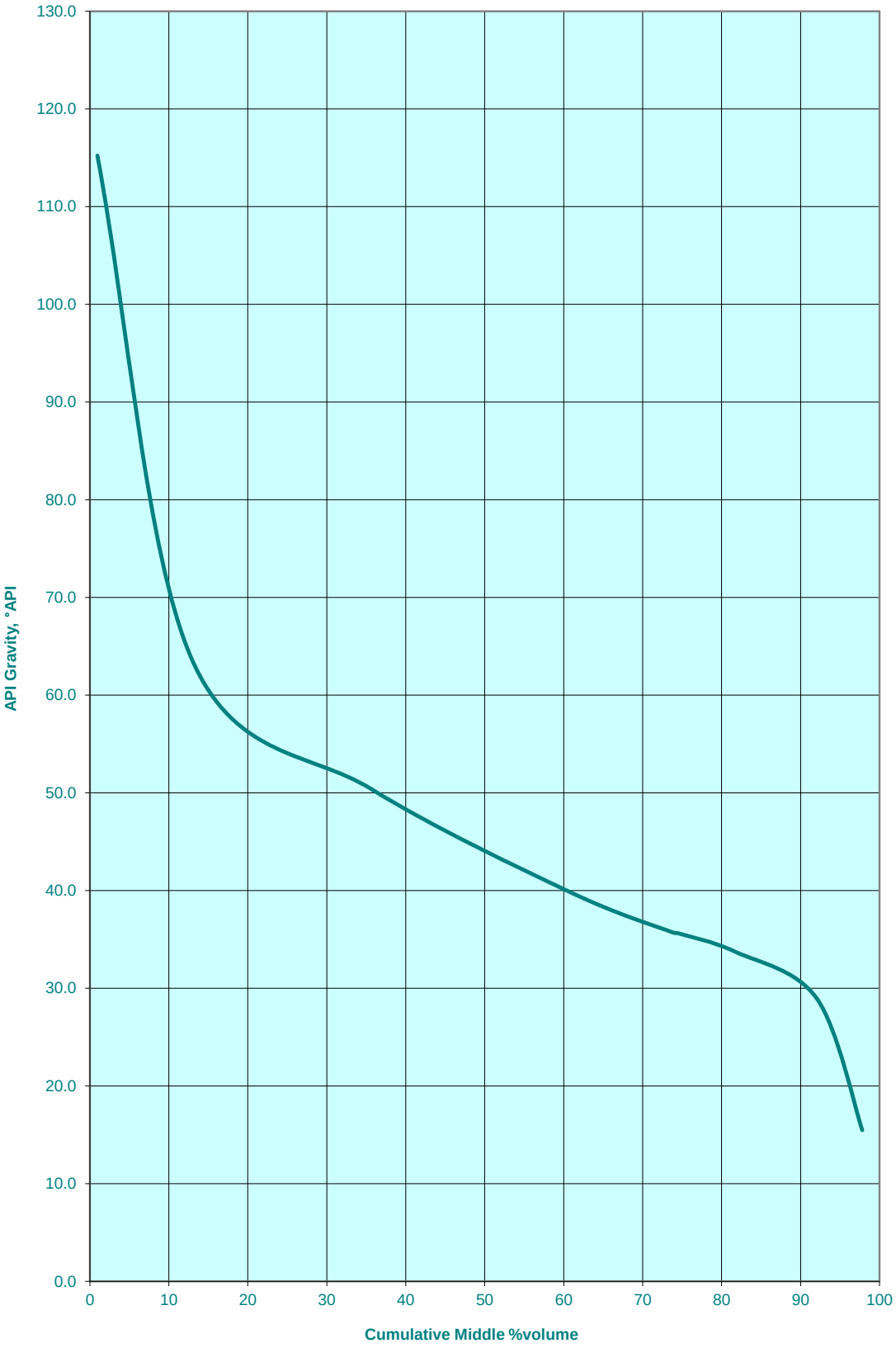
Water removed during distillation ~ 130 ml (~ 0.7 vol%)

Data is based on dewatered sample (Dry Crude)

## Graph of Cumulative % yield against Temperature, °C AET



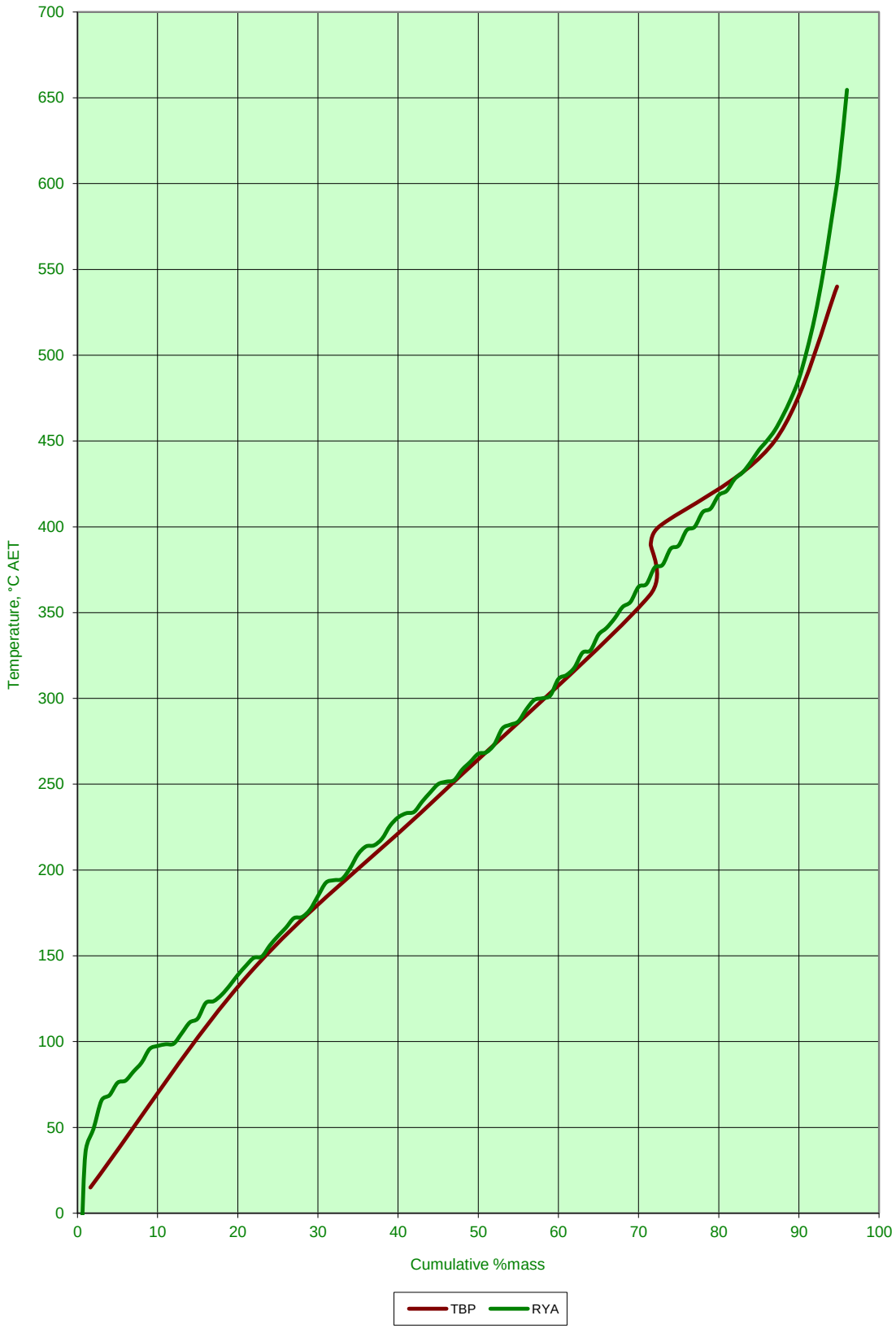
## Graph of Cumulative Middle %volume against API Gravity, °API



## Rapid Yield Analysis Data

| %mass | Temperature °C |
|---|---|
| IBP | -15 |
| 1 | 36 |
| 2 | 49 |
| 3 | 66 |
| 4 | 69 |
| 5 | 76 |
| 6 | 77 |
| 7 | 83 |
| 8 | 88 |
| 9 | 96 |
| 10 | 97 |
| 11 | 98 |
| 12 | 99 |
| 13 | 105 |
| 14 | 111 |
| 15 | 113 |
| 16 | 123 |
| 17 | 124 |
| 18 | 127 |
| 19 | 133 |
| 20 | 139 |
| 21 | 144 |
| 22 | 149 |
| 23 | 150 |
| 24 | 156 |
| 25 | 161 |
| 26 | 166 |
| 27 | 172 |
| 28 | 173 |
| 29 | 177 |
| 30 | 185 |
| 31 | 193 |
| 32 | 194 |
| 33 | 195 |
| 34 | 201 |
| 35 | 209 |
| 36 | 214 |
| 37 | 214 |
| 38 | 218 |
| 39 | 226 |
| 40 | 231 |
| 41 | 233 |
| 42 | 234 |
| 43 | 240 |
| 44 | 245 |
| 45 | 250 |
| 46 | 251 |
| 47 | 252 |
| 48 | 259 |
| 49 | 263 |
| 50 | 268 |
| 51 | 269 |
| 52 | 273 |
| 53 | 282 |
| 54 | 285 |
| 55 | 287 |
| 56 | 294 |
| 57 | 299 |
| 58 | 300 |
| 59 | 302 |
| 60 | 311 |
| 61 | 314 |
| 62 | 318 |
| 63 | 327 |
| 64 | 328 |
| 65 | 337 |
| 66 | 341 |
| 67 | 347 |
| 68 | 353 |
| 69 | 356 |
| 70 | 365 |
| 71 | 367 |
| 72 | 376 |
| 73 | 378 |
| 74 | 387 |
| 75 | 389 |
| 76 | 398 |
| 77 | 400 |
| 78 | 409 |
| 79 | 411 |
| 80 | 418 |
| 81 | 421 |
| 82 | 428 |
| 83 | 432 |
| 84 | 438 |
| 85 | 445 |
| 86 | 450 |
| 87 | 456 |
| 88 | 465 |
| 89 | 475 |
| 90 | 486 |
| 91 | 503 |
| 92 | 523 |
| 93 | 547 |
| 94 | 577 |
| 95 | 609 |
| 96 | 655 |

## Graph of True Boiling Point against Graph of RYA



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| Sample ID | CB (SUVALI) CRUDE ASSAY | | | Cut Range | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | | | | | | | | | | | | |
| Client ID | Cairn Energy India Pvt Ltd | | | | | | | | | | | | | |
| Date | 23 March 2023 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Test | Method | Unit | Whole | LPG | C5 - 140 °C | 140 - 240 °C | 240 - 360 °C | 360 - 390 °C | 360 - 400 °C | 400 - 450 °C | 450 - 540 °C | 360 - 540 °C | 360+ °C | 540+ °C |
| Mass Yield | D2892/D5236 | %mass | | 1.6 | 19.9 | 22.9 | 27.0 | 0.1 | 1.2 | 14.4 | 7.8 | 23.4 | 28.6 | 5.2 |
| Volume Yield | | %volume | | 1.9 | 21.9 | 23.7 | 26.4 | 0.1 | 1.1 | 13.6 | 7.1 | 21.8 | 26.2 | 4.4 |
| Density @15°C | D5002/D4052/ D2598 | kg/L | 0.8052 | 0.5735 | 0.7243 | 0.7776 | 0.8251 | 0.8459 | 0.8462 | 0.8558 | 0.8814 | 0.8638 | 0.8804 | 0.9621 |
| Specific Gravity @60/60°F | | - | 0.8056 | 0.5735 | 0.7245 | 0.7779 | 0.8255 | 0.8462 | 0.8467 | 0.8563 | 0.8819 | 0.8643 | 0.8809 | 0.9627 |
| API Gravity | | °API | 44.2 | 115.2 | 63.8 | 50.4 | 39.9 | 35.7 | 35.6 | 33.7 | 28.9 | 32.2 | 29.1 | 15.5 |
| Aniline Point | D611 | °C | | | | 66.0 | 83.0 | NA[3] | 100.1 | 103.5 | 108.6 | 104.9 | | |
| Antiknock Index | Calc | - | | | 57.5 | | | | | | | | | |
| Ash Content | D482 | % wt | 0.007 | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | 0.014 | 0.089 |
| Asphaltenes | IP 143 | %wt | | | | | | | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Asphaltene stability | ASTM D2007 | | 2.9 | | | | | | | | | | | |
| Basic Nitrogen | UOP 269 | % wt | 0.0090 | | | | 0.0018 | NA[3] | 0.0059 | 0.0070 | 0.0194 | 0.0100 | 0.0296 | 0.109 |
| CHNS - Carbon | D5291 | % wt | | | | 85.2 | | | 86.7 | 86.3 | 86.7 | 86.3 | 86.6 | 87.2 |
| CHNS - Hydrogen | D5291 | % wt | | | | 14.4 | | | 13.4 | 12.7 | 13.5 | 13.8 | 10.7 | 12 |
| Carbon Residue- Micro | D4530 | % wt | 0.63 | | | | | | <0.10 | <0.10 | 0.20 | <0.10 | 2.09 | 11.9 |
| Carbon Residue- Micro, 10% | D4530 | % wt | | | | | <0.10 | NA[3] | | | | | | |
| Cetane Index | D4737 | - | | | | 50.8 | | | NA[3] | 89.3 | 87.3 | NA[3] | | |
| Cetane Number | D6890 | - | | | | | 68.6 | NA[3] | | | | | | |
| CFPP | IP 309 | °C | NA[1] | | | | | | | | | | | |
| Characterization factor | UOP 375 | - | 12.2 | | | | 12.1 | NA[3] | | | | | | |
| Cloud Point | D2500 | °C | | | | -51 | 7 | NA[3] | 42 | 50 | NA[1] | NA[1] | | |
| Colour ASTM | D1500 | - | >8.0 | | | | 0.5 | NA[3] | 2.5 | 2.5 | >8.0 | >8.0 | | |
| Copper Corrosion, 100C, 2 hrs | D130 | °C | | | | 1a | 1a | NA[3] | | | | | | |
| FIA - Aromatics | D1319 | % vol | | | 4.8 | 9.9 | | | | | | | | |
| FIA - Olefins | D1319 | % vol | | | <0.1 | <0.1 | | | | | | | | |
| FIA - Saturates | D1319 | % vol | | | 95.2 | 90.1 | | | | | | | | |
| Flash Point | IP 170 / D93 | °C | <10.0 | | | 43.5 | 124 | NA[3] | | | | | | |
| Freezing Point | D7153 | °C | | | <-60 | -47.3 | | | | | | | | |
| Gross calorific Value | D240 | MJ/kg | | | | | | | | | | | 45.535 | 43.910 |
| H2S | UOP 163 | ppm wt | <1 | | | | | | | | | | | |
| Kinematic Viscosity @ -20°C | D445 | cSt | | | | 3.208 | | | | | | | | |
| Kinematic Viscosity @ 20°C | D445 | cSt | | | | 1.446 | | | | | | | | |
| Kinematic Viscosity @ 40°C | D445 | cSt | 2.468 | | | 1.098 | 3.576 | NA[3] | NA[5] | NA[5] | NA[5] | NA[5] | | |
| Kinematic Viscosity @ 50°C | D445 | cSt | 2.035 | | | 0.9688 | 2.963 | NA[3] | 8.596 | 11.65 | NA[5] | NA[5] | | |
| Kinematic Viscosity @ 70°C | D445 | cSt | | | | 0.7779 | 2.079 | NA[3] | 5.247 | 6.985 | 16.69 | 8.884 | 15.04 | NA[5] |
| Kinematic Viscosity @ 100°C | D445 | cSt | NA[2] | | | | | | 3.079 | 3.849 | 7.739 | 4.718 | 7.979 | 226.9 |
| Mercaptan Sulphur | UOP 163 | ppm wt | <1 | | <1 | <1 | | | | | | | | |
| Metal - Mercury | UOP 938 | ppm wt | <1.00 | | | | | | | | | | | |
| Metal - Cu | ICPES | ppm wt | <1 | | | | | | <1 | <1 | <1 | <1 | <1 | <1 |
| Metal - Fe | ICPES | ppm wt | 3 | | | | | | <1 | <1 | <1 | <1 | 6 | 27 |
| Metal - Ni | ICPES | ppm wt | <1 | | | | | | <1 | <1 | <1 | <1 | 4 | 21 |
| Metal - Na | ICPES | ppm wt | 6 | | | | | | 3 | <1 | 3 | 17 | 11 | 49 |
| Metal - V | ICPES | ppm wt | <1 | | | | | | <1 | <1 | <1 | <1 | <1 | <1 |
| Mol Wt | GPC | g/mol | 179.5 | | | | | | | | | | | |
| Motor Octane Number | D2700 | - | | | 57 | | | | | | | | | |
| Naphthalene Content | D1840 | %vol | | | | 0.66 | | | | | | | | |
| Organic Chloride | D4929B | ppm wt | | | <1 | | | | | | | | | |
| DHA - Paraffins | D6730 | %vol | | | 58.1 | | | | | | | | | |
| DHA - Olefins | D6730 | %vol | | | <0.1 | | | | | | | | | |
| DHA - Naphthenes | D6730 | %vol | | | 37.2 | | | | | | | | | |
| DHA - Aromatics | D6730 | %vol | | | 4.4 | | | | | | | | | |
| DHA - Unknown | D6730 | %vol | | | 0.3 | | | | | | | | | |
| Pour Point-upper | D5853A | °C | 9 | | | | | | | | | | | |
| Pour Point | D97 | °C | | | | | 6 | NA[3] | 39 | 45 | 57 | 48 | 51 | 72 |
| Refractive Index @70°C | D1747 | - | | | | 1.4109 | 1.4391 | NA[3] | 1.4504 | 1.4543 | 1.4693 | NA[1] | | |
| Reid Vapour Pressure @37.8°C | D323 | psi | 4.05 | | 3.95 | | | | | | | | | |
| Research Octane Number | D2699 | - | | | 58 | | | | | | | | | |
| Salt Content | D3230 | lb/1000bbls | 6.3 | | | | | | | | | | | |
| SARA (on 260+ cut) - Saturates | D2007 | % wt | 69.9 | | | | | | | | | | | |
| SARA (on 260+ cut) - Aromatics | D2007 | % wt | 19.4 | | | | | | | | | | | |
| SARA (on 260+ cut) - Resins | D2007 | % wt | 4.9 | | | | | | | | | | | |
| SARA (on 260+ cut) - Asphaltene | D2007 | % wt | 0.1 | | | | | | | | | | | |
| Saybolt Colour | D156 | - | | | | 30 | | | | | | | | |
| Sediment by Extraction | D473 | % wt | 0.02 | | | | | | | | | | | |
| Smoke Point | D1322 | mm | | | 44.6 | 32.6 | | | | | | | | |
| Total Acid Number | D664 | mg KOH/g | 0.07 | | | 0.02 | 0.04 | NA[3] | 0.05 | 0.11 | 0.33 | 0.16 | 0.23 | 0.08 |
| Total Nitrogen | D4629/D5762 | ppm wt | 170 | | 0.1 | 0.7 | 37 | NA[3] | 140 | 170 | 430 | 250 | 640 | 2300 |
| Total Sulphur | D5453 | ppm wt | | | 4.4 | | | | | | | | | |
| Total Sulphur | D4294 | %wt | 0.0297 | | | 0.0134 | 0.0331 | NA[3] | 0.0328 | 0.0341 | 0.0528 | 0.0405 | 0.0602 | 0.1450 |
| Viscosity-Grav Constant @ 40°C | D2501 | - | | | | | NA[4] | NA[3] | | | | | | |
| Viscosity-Grav Constant @ 100°C | D2501 | - | NA[2] | | | | | | 0.802 | 0.794 | 0.816 | 0.810 | 0.814 | 0.832 |
| Water Content | D4006 | %Vol | 0.45 | | | | | | | | | | | |
| WAT | DSC | °C | 53.0 | | | | | | | | | | | |
| WDT | DSC | °C | 27.3 | | | | | | | | | | | |
| Wax Content | UOP 46 | % wt | 24.3 | | | | | | 58.5 | 63.5 | 46.8 | 49.9 | 52.5 | 24.2 |

Note:
NA[1] - Unable to perform. Dark sample. Color >8.0 (CFPP) / Color >3.5 (Cloud Pt)
NA[2] - Unable to perform. Sample has low flash.
NA[3] - Not enough sample to perform test.
NA[4] - Unable to perform. Viscosity @40°C < 5.5 cSt
NA[5] - Unable to perform. Pour point and visc bath temp is close.

| | | | |
|---|---|---|---|
| Sample ID | CB (SUVALI) CRUDE ASSAY | | |
| Lab ID | 2023-SING-004514 | | |
| Cut Range | LPG | | |
| Date | 23 March 2023 | | |
| | | | |
| Test | Method | Result | Unit |
| Mass Yield | D2892 | 1.6 | %mass |
| Volume Yield | | 1.9 | %volume |
| Density @15°C | D2598 | 0.5735 | kg/L |
| Specific Gravity @60/60°F | | 0.5735 | - |
| API Gravity | | 115.2 | °API |
| Ethane | D2421 / D2598 / D2163 | 0.264 | %mass |
| Propane | | 12.353 | |
| n-Butane | | 42.772 | |
| Isobutane | | 26.931 | |
| n-Pentane | | 3.504 | |
| Isopentane | | 12.854 | |
| 2,2-dimethylpropane | | 0.661 | |
| Cyclopentane | | 0.076 | |
| C6+ | | 0.585 | |

| Sample ID | CB (SUVALI) CRUDE ASSAY | | NAPHTHA / KERO | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | C5 - 140 °C | 140 - 240 °C |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Test | Method | Unit | | |
| Mass Yield | D2892/D5236 | %mass | 19.9 | 22.9 |
| Volume Yield | | %volume | 21.9 | 23.7 |
| Density @15°C | D4052 | kg/L | 0.7243 | 0.7776 |
| Specific Gravity @60/60°F | | - | 0.7245 | 0.7779 |
| API Gravity | | °API | 63.8 | 50.4 |
| Aniline Point | D611 | °C | | 66.0 |
| Antiknock Index | Calc | - | 57.5 | |
| CHNS - Carbon | D5291 | % wt | | 85.2 |
| CHNS - Hydrogen | D5291 | % wt | | 14.4 |
| Cetane Index | D4737 | - | | 50.8 |
| Cloud Point | D2500 | °C | | -51 |
| Copper Corrosion, 100C, 2 hrs | D130 | °C | | 1a |
| FIA - Aromatics | D1319 | % vol | 4.8 | 9.9 |
| FIA - Olefins | D1319 | % vol | <0.1 | <0.1 |
| FIA - Saturates | D1319 | % vol | 95.2 | 90.1 |
| Flash Point | IP 170 | °C | | 43.5 |
| Freezing Point | D7153 | °C | <-60 | -47.3 |
| Kinematic Viscosity @ -20°C | D445 | cSt | | 3.208 |
| Kinematic Viscosity @ 20°C | D445 | cSt | | 1.446 |
| Kinematic Viscosity @ 40°C | D445 | cSt | | 1.098 |
| Kinematic Viscosity @ 50°C | D445 | cSt | | 0.9688 |
| Kinematic Viscosity @ 70°C | D445 | cSt | | 0.7779 |
| Mercaptan Sulphur | UOP 163 | ppm wt | <1 | <1 |
| Motor Octane Number | D2700 | - | 57 | |
| Naphthalene Content | D1840 | %vol | | 0.66 |
| Organic Chloride | D4929B | ppm wt | <1 | |
| DHA - Paraffins | D6730 | %vol | 58.1 | |
| DHA - Olefins | D6730 | %vol | <0.1 | |
| DHA - Naphthenes | D6730 | %vol | 37.2 | |
| DHA - Aromatics | D6730 | %vol | 4.4 | |
| DHA - Unknown | D6730 | %vol | 0.3 | |

| Sample ID | CB (SUVALI) CRUDE ASSAY | | NAPHTHA / KERO | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | C5 - 140 °C | 140 - 240 °C |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Test | Method | Unit | | |
| Refractive Index @70°C | D1747 | - | | 1.4109 |
| Reid Vapour Pressure @37.8°C | D323 | psi | 3.95 | |
| Research Octane Number | D2699 | - | 58 | |
| Saybolt Colour | D156 | - | | 30 |
| Smoke Point | D1322 | mm | 44.6 | 32.6 |
| Total Acid Number | D664 | mg KOH/g | | 0.02 |
| Total Nitrogen | D4629 | ppm wt | <1.0 | <1.0 |
| Total Sulphur | D5453 | ppm wt | 4.4 | |
| Total Sulphur | D4294 | %wt | | 0.0134 |

| Sample ID | CB (SUVALI) CRUDE ASSAY | | GASOIL | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | 240 - 360 °C | 360 - 390 °C |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Test | Method | Unit | | |
| Mass Yield | D2892/D5236 | %mass | 27.0 | 0.1 |
| Volume Yield | | %volume | 26.4 | 0.1 |
| Density @15°C | D4052 | kg/L | 0.8251 | 0.8459 |
| Specific Gravity @60/60°F | | - | 0.8255 | 0.8462 |
| API Gravity | | °API | 39.9 | 35.7 |
| Aniline Point | D611 | °C | 83.0 | NA[3] |
| Basic Nitrogen | UOP 269 | % wt | 0.0018 | NA[3] |
| Carbon Residue- Micro, 10% | D4530 | % wt | <0.10 | NA[3] |
| Cetane Number | D6890 | - | 68.6 | NA[3] |
| Characterization factor | UOP 375 | - | 12.1 | NA[3] |
| Cloud Point | D2500 | °C | 7 | NA[3] |
| Colour ASTM | D1500 | - | 0.5 | NA[3] |
| Copper Corrosion, 100C, 2 hrs | D130 | °C | 1a | NA[3] |
| Flash Point | D93 | °C | 124 | NA[3] |
| Kinematic Viscosity @ 40°C | D445 | cSt | 3.576 | NA[3] |
| Kinematic Viscosity @ 50°C | D445 | cSt | 2.963 | NA[3] |
| Kinematic Viscosity @ 70°C | D445 | cSt | 2.079 | NA[3] |
| Pour Point | D97 | °C | 6 | NA[3] |
| Refractive Index @70°C | D1747 | - | 1.4391 | NA[3] |
| Total Acid Number | D664 | mg KOH/g | 0.04 | NA[3] |
| Total Nitrogen | D4629 | ppm wt | 37 | NA[3] |
| Total Sulphur | D4294 | %wt | 0.0331 | NA[3] |
| Viscosity-Grav Constant @ 40°C | D2501 | - | NA[4] | NA[3] |

Note:
NA[3] - Not enough sample to perform test.
NA[4] - Unable to perform. Viscosity @40°C < 5.5 cSt

intertek
caleb brett

| Sample ID | CB (SUVALI) CRUDE ASSAY | | VACUUM GASOIL | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | 400 - 450 °C | 450 - 540 °C |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Test | Method | Unit | | |
| Mass Yield | D2892/D5236 | %mass | 14.4 | 7.8 |
| Volume Yield | | %volume | 13.6 | 7.1 |
| Density @15°C | D4052 | kg/L | 0.8558 | 0.8814 |
| Specific Gravity @60/60°F | | - | 0.8563 | 0.8819 |
| API Gravity | | °API | 33.7 | 28.9 |
| Aniline Point | D611 | °C | 103.5 | 108.6 |
| Ash Content | D482 | % wt | <0.001 | <0.001 |
| Asphaltenes | IP 143 | %wt | <0.50 | <0.50 |
| Basic Nitrogen | UOP 269 | % wt | 0.0070 | 0.0194 |
| CHNS - Carbon | D5291 | % wt | 86.3 | 86.7 |
| CHNS - Hydrogen | D5291 | % wt | 12.7 | 13.5 |
| Carbon Residue- Micro | D4530 | % wt | <0.10 | 0.20 |
| Cetane Index | D4737 | - | 89.3 | 87.3 |
| Cloud Point | D2500 | °C | 50 | NA[1] |
| Colour ASTM | D1500 | - | 2.5 | >8.0 |
| Kinematic Viscosity @ 40°C | D445 | cSt | NA[5] | NA[5] |
| Kinematic Viscosity @ 50°C | D445 | cSt | 11.65 | NA[5] |
| Kinematic Viscosity @ 70°C | D445 | cSt | 6.985 | 16.69 |
| Kinematic Viscosity @ 100°C | D445 | cSt | 3.849 | 7.739 |
| Metal - Cu | ICPES | ppm wt | <1 | <1 |
| Metal - Fe | ICPES | ppm wt | <1 | <1 |
| Metal - Ni | ICPES | ppm wt | <1 | <1 |
| Metal - Na | ICPES | ppm wt | <1 | 3 |
| Metal - V | ICPES | ppm wt | <1 | <1 |
| Pour Point | D97 | °C | 45 | 57 |
| Refractive Index @70°C | D1747 | - | 1.4543 | 1.4693 |
| Total Acid Number | D664 | mg KOH/g | 0.11 | 0.33 |
| Total Nitrogen | D5762 | ppm wt | 170 | 430 |
| Total Sulphur | D4294 | %wt | 0.0341 | 0.0528 |
| Viscosity-Grav Constant @ 100°C | D2501 | - | 0.794 | 0.816 |
| Wax Content | UOP 46 | % wt | 63.5 | 46.8 |

Note:
NA[1] - Unable to perform. Dark sample. Color >8.0 (CFPP) / Color >3.5 (Cloud Pt)
NA[5] - Unable to perform. Pour point and visc bath temp is close.

| Sample ID | CB (SUVALI) CRUDE ASSAY | | BLEND | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | 360 - 400 °C | 360 - 540 °C |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Test | Method | Unit | | |
| Mass Yield | D2892/D5236 | %mass | 1.2 | 23.4 |
| Volume Yield | | %volume | 1.1 | 21.8 |
| Density @15°C | D4052 | kg/L | 0.8462 | 0.8638 |
| Specific Gravity @60/60°F | | - | 0.8467 | 0.8643 |
| API Gravity | | °API | 35.6 | 32.2 |
| Aniline Point | D611 | °C | 100.1 | 104.9 |
| Ash Content | D482 | % wt | <0.001 | <0.001 |
| Asphaltenes | IP 143 | %wt | <0.50 | <0.50 |
| Basic Nitrogen | UOP 269 | % wt | 0.0059 | 0.0100 |
| CHNS - Carbon | D5291 | % wt | 86.7 | 86.3 |
| CHNS - Hydrogen | D5291 | % wt | 13.4 | 13.8 |
| Carbon Residue- Micro | D4530 | % wt | <0.10 | <0.10 |
| Cetane Index | D4737 | - | NA[3] | NA[3] |
| Cloud Point | D2500 | °C | 42 | NA[1] |
| Colour ASTM | D1500 | - | 2.5 | >8.0 |
| Kinematic Viscosity @ 40°C | D445 | cSt | NA[5] | NA[5] |
| Kinematic Viscosity @ 50°C | D445 | cSt | 8.596 | NA[5] |
| Kinematic Viscosity @ 70°C | D445 | cSt | 5.247 | 8.884 |
| Kinematic Viscosity @ 100°C | D445 | cSt | 3.079 | 4.718 |
| Metal - Cu | ICPES | ppm wt | <1 | <1 |
| Metal - Fe | ICPES | ppm wt | <1 | <1 |
| Metal - Ni | ICPES | ppm wt | <1 | <1 |
| Metal - Na | ICPES | ppm wt | 3 | 17 |
| Metal - V | ICPES | ppm wt | <1 | <1 |
| Pour Point | D97 | °C | 39 | 48 |
| Refractive Index @70°C | D1747 | - | 1.4504 | NA[1] |
| Total Acid Number | D664 | mg KOH/g | 0.05 | 0.16 |
| Total Nitrogen | D5762 | ppm wt | 140 | 250 |
| Total Sulphur | D4294 | %wt | 0.0328 | 0.0405 |
| Viscosity-Grav Constant @ 100°C | D2501 | - | 0.802 | 0.810 |
| Wax Content | UOP 46 | % wt | 58.5 | 49.9 |

Note:

NA[1] - Unable to perform. Dark sample. Color >8.0 (CFPP) / Color >3.5 (Cloud Pt)

NA[3] - Not enough sample to perform test.

NA[5] - Unable to perform. Pour point and visc bath temp is close.

| Sample ID | CB (SUVALI) CRUDE ASSAY | | RESIDUE | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | | |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | 360+ °C | 540+ °C |
| Test | Method | Unit | | |
| Mass Yield | D2892/D5236 | %mass | 28.6 | 5.2 |
| Volume Yield | | %volume | 26.2 | 4.4 |
| Density @15°C | D4052 | kg/L | 0.8804 | 0.9621 |
| Specific Gravity @60/60°F | | - | 0.8809 | 0.9627 |
| API Gravity | | °API | 29.1 | 15.5 |
| Ash Content | D482 | % wt | 0.014 | 0.089 |
| Asphaltenes | IP 143 | %wt | <0.50 | <0.50 |
| Basic Nitrogen | UOP 269 | % wt | 0.0296 | 0.109 |
| CHNS - Carbon | D5291 | % wt | 86.6 | 87.2 |
| CHNS - Hydrogen | D5291 | % wt | 10.7 | 12 |
| Carbon Residue- Micro | D4530 | % wt | 2.09 | 11.9 |
| Gross calorific Value | D240 | MJ/kg | 45.535 | 43.910 |
| Kinematic Viscosity @ 70°C | D445 | cSt | 15.04 | NA[5] |
| Kinematic Viscosity @ 100°C | D445 | cSt | 7.979 | 226.9 |
| Metal - Cu | ICPES | ppm wt | <1 | <1 |
| Metal - Fe | ICPES | ppm wt | 6 | 27 |
| Metal - Ni | ICPES | ppm wt | 4 | 21 |
| Metal - Na | ICPES | ppm wt | 11 | 49 |
| Metal - V | ICPES | ppm wt | <1 | <1 |
| Pour Point | D97 | °C | 51 | 72 |
| Total Acid Number | D664 | mg KOH/g | 0.23 | 0.08 |
| Total Nitrogen | D5762 | ppm wt | 640 | 2300 |
| Total Sulphur | D4294 | %wt | 0.0602 | 0.1450 |
| Viscosity-Grav Constant @ 100°C | D2501 | - | 0.814 | 0.832 |
| Wax Content | UOP 46 | % wt | 52.5 | 24.2 |

Note:

NA[5] - Unable to perform. Pour point and visc bath temp is close.

## Distillation Report (ASTM D86)

| Sample ID | CB (SUVALI) CRUDE OIL | | | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | | |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Cut Range | C5 - 140 °C | 140 - 240 °C | 240 - 360 °C | 360 - 390 °C |
| | | | | |
| Description | °C | °C | °C | °C |
| IBP | 53.7 | 155.3 | 255.1 | Not Enough Sample |
| Recovery @ 5% | 73.4 | 165.9 | 267.1 | |
| Recovery @ 10% | 46.9 | 168.5 | 269.2 | |
| Recovery @ 15% | 80.0 | 168.9 | 270.1 | |
| Recovery @ 20% | 82.8 | 170.8 | 272.7 | |
| Recovery @ 30% | 88.2 | 175.0 | 275.0 | |
| Recovery @ 40% | 93.3 | 179.8 | 279.3 | |
| Recovery @ 50% | 98.0 | 185.2 | 284.9 | |
| Recovery @ 60% | 102.6 | 191.5 | 291.3 | |
| Recovery @ 70% | 107.4 | 198.6 | 299.3 | |
| Recovery @ 80% | 112.8 | 206.3 | 309.0 | |
| Recovery @ 85% | 116.0 | 210.3 | 314.5 | |
| Recovery @ 90% | 120.2 | 214.8 | 320.6 | |
| Recovery @ 95% | 125.8 | 219.9 | 328.1 | |
| FBP | 140.6 | 226.4 | 332.9 | |
| | | | | |
| | % vol | % vol | % vol | % vol |
| Recovered | 97.6 | 98.5 | 98.1 | |
| Residue | 1.2 | 1.3 | 1.0 | |
| Loss | 1.2 | 0.2 | 0.9 | |

## Vacuum Distillation Report (ASTM D1160)

| Sample ID | CB (SUVALI) CRUDE OIL | | | |
|---|---|---|---|---|
| Lab ID | 2023-SING-004514 | | | |
| Client ID | Cairn Energy India Pvt Ltd | | | |
| Date | 23 March 2023 | | | |
| | | | | |
| Cut Range | 360 - 400 °C | 400 - 450 °C | 450 - 540 °C | 360 - 540 °C |
| | | | | |
| Description | °C | °C | °C | °C |
| IBP | Not Enough Sample | 292 | 335 | Not Enough Sample |
| Recovery @ 5% | | 384 | 434 | |
| Recovery @ 10% | | 388 | 441 | |
| Recovery @ 20% | | 394 | 450 | |
| Recovery @ 30% | | 397 | 457 | |
| Recovery @ 40% | | 402 | 463 | |
| Recovery @ 50% | | 407 | 469 | |
| Recovery @ 60% | | 413 | 475 | |
| Recovery @ 70% | | 420 | 483 | |
| Recovery @ 80% | | 430 | 495 | |
| Recovery @ 90% | | 441 | 510 | |
| Recovery @ 95% | | 448 | 523 | |
| End Point | | 465 | 541 | |
| | | | | |
| | % vol | % vol | % vol | % vol |
| Total Recovered | | 99 | 99 | |

## Detailed Hydrocarbon Analysis

| Boiling Range | °C | C5 - 140 | |
|---|---|---|---|
| Yield | mass % | 19.89 | |
| | vol % | 21.89 | |
| Component | | mass % | vol % |
| i-pentane | | 2.762 | 3.203 |
| n-pentane | | 4.646 | 5.331 |
| 2,2-dimethylbutane | | 0.510 | 0.565 |
| cyclopentane | | 0.499 | 0.481 |
| 2,3-dimethylbutane | | 0.618 | 0.671 |
| 2-methylpentane | | 3.485 | 3.834 |
| 3-methylpentane | | 1.813 | 1.961 |
| n-hexane | | 7.139 | 7.779 |
| 2,2-dimethylpentane | | 0.318 | 0.339 |
| methylcyclopentane | | 3.200 | 3.072 |
| 2,4-dimethylpentane | | 0.334 | 0.356 |
| 2,2,3-trimethylbutane | | 0.076 | 0.080 |
| benzene | | 0.723 | 0.591 |
| 3,3-dimethylpentane | | 0.196 | 0.204 |
| cyclohexane | | 8.301 | 7.662 |
| 2-methylhexane | | 1.892 | 2.003 |
| 2,3-dimethylpentane | | 0.610 | 0.631 |
| 1,1-dimethylcyclopentane | | 0.496 | 0.472 |
| 3-methylhexane | | 1.798 | 1.880 |
| 1c,3-dimethylcyclopentane | | 0.739 | 0.713 |
| 1t,3-dimethylcyclopentane | | 0.686 | 0.659 |
| 3-ethylpentane | | 0.122 | 0.125 |
| 1t,2-dimethylcyclopentane | | 1.201 | 1.149 |
| 2,2,4-trimethylpentane | | 0.011 | 0.011 |
| n-heptane | | 9.103 | 9.567 |
| methylcyclohexane | | 15.008 | 14.016 |
| 2,2-dimethylhexane | | 0.493 | 0.510 |
| ethylcyclopentane | | 0.508 | 0.477 |
| 2,5-dimethylhexane | | 0.297 | 0.308 |
| 2,2,3-trimethylpentane | | 0.027 | 0.028 |
| 2,4-dimethylhexane | | 0.304 | 0.312 |
| 1c,2t,4-trimethylcyclopentane | | 0.373 | 0.351 |
| 3,3-dimethylhexane | | 0.170 | 0.173 |
| 1t,2c,3-trimethylcyclopentane | | 0.361 | 0.337 |
| 2,3,4-trimethylpentane | | 0.046 | 0.046 |
| 2,3,3-trimethylpentane | | 0.034 | 0.033 |
| toluene | | 2.043 | 1.693 |

## Detailed Hydrocarbon Analysis

| Boiling Range | °C | C5 - 140 | |
|---|---|---|---|
| Yield | mass % | 19.89 | |
| | vol % | 21.89 | |
| Component | | mass % | vol % |
| 2,3-dimethylhexane | | 0.395 | 0.398 |
| 2-methyl-3-ethylpentane | | 0.065 | 0.065 |
| 2-methylheptane | | 2.363 | 2.433 |
| 4-methylheptane | | 0.544 | 0.555 |
| 3-methyl-3-ethylpentane | | 0.060 | 0.060 |
| 3,4-dimethylhexane | | 0.064 | 0.063 |
| 1c,2c,4-trimethylcyclopentane | | 0.027 | 0.025 |
| 1c,3-dimethylcyclohexane | | 0.025 | 0.023 |
| 3-methylheptane | | 1.215 | 1.237 |
| 1c,2t,3-trimethylcyclopentane | | 2.682 | 2.502 |
| 3-ethylhexane | | 0.083 | 0.084 |
| 1t,4-dimethylcyclohexane | | 0.920 | 0.867 |
| 1,1-dimethylcyclohexane | | 0.468 | 0.430 |
| 2,2,5-trimethylhexane | | 0.041 | 0.042 |
| 3c-ethylmethylcyclopentane | | 0.149 | 0.139 |
| 3t-ethylmethylcyclopentane | | 0.135 | 0.127 |
| 2t-ethylmethylcyclopentane | | 0.272 | 0.254 |
| 1,1-methylethylcyclopentane | | 0.054 | 0.049 |
| 1t,2-dimethylcyclohexane | | 1.135 | 1.051 |
| 1t,3-dimethylcyclohexane | | 0.010 | 0.009 |
| n-octane | | 9.392 | 9.607 |
| i-propylcyclopentane | | 0.068 | 0.063 |
| N1 | | 0.038 | 0.035 |
| 2,2,3,4-tetramethylpentane | | 0.037 | 0.036 |
| N2 | | 0.035 | 0.033 |
| N3 | | 0.116 | 0.107 |
| 1c,2-dimethylcyclohexane | | 0.190 | 0.172 |
| 2,3,5-trimethylhexane | | 0.175 | 0.174 |
| 1,1,4-trimethylcyclohexane | | 1.558 | 1.450 |
| 2,2,3-trimethylhexane | | 0.925 | 0.929 |
| 2,4-dimethylheptane | | 0.011 | 0.011 |
| 4,4-dimethylheptane | | 0.294 | 0.295 |
| ethylcyclohexane | | 0.087 | 0.079 |
| 2,5-dimethylheptane | | 0.378 | 0.379 |
| 3,3-dimethylheptane | | 0.082 | 0.081 |
| 3,5-dimethylheptane | | 0.025 | 0.025 |
| n-propylcyclopentane | | 0.048 | 0.045 |
| 1,1,3-trimethylcyclohexane | | 0.027 | 0.025 |

## Detailed Hydrocarbon Analysis

| Boiling Range | °C | C5 - 140 | |
|---|---|---|---|
| Yield | mass % | 19.89 | |
| | vol % | 21.89 | |
| Component | | mass % | vol % |
| N8 | | 0.014 | 0.013 |
| ethylbenzene | | 0.434 | 0.360 |
| 1c,2t,4t-trimethylcyclohexane | | 0.150 | 0.138 |
| 1,3-dimethylbenzene | | 1.365 | 1.135 |
| 1,4-dimethylbenzene | | 0.345 | 0.288 |
| 3,4-dimethylheptane | | 0.106 | 0.105 |
| N14 | | 0.010 | 0.010 |
| I5 | | 0.037 | 0.036 |
| 4-methyloctane | | 0.203 | 0.203 |
| 2-methyloctane | | 0.340 | 0.343 |
| 1c,2t,3c-trimethylcyclohexane | | 0.015 | 0.014 |
| 3-ethylheptane | | 0.046 | 0.045 |
| 3-methyloctane | | 0.245 | 0.244 |
| 1,1,2-trimethylcyclohexane | | 0.016 | 0.015 |
| 1,2-dimethylbenzene | | 0.372 | 0.304 |
| N19 | | 0.099 | 0.091 |
| I8 | | 0.026 | 0.026 |
| n-nonane | | 0.682 | 0.683 |
| i-propylbenzene | | 0.010 | 0.009 |
| 2,6-dimethyloctane | | 0.014 | 0.014 |
| | | | |
| **Class Summary** | | | |
| n-Paraffins | | 30.961 | 32.967 |
| Iso-Paraffins | | 23.690 | 25.156 |
| Naphthenes | | 39.720 | 37.153 |
| Aromatics | | 5.292 | 4.379 |
| Olefins | | 0.000 | 0.000 |
| Unidentified | | 0.336 | 0.345 |

| | |
|---|---|
| Average Molecular Weight : | 95.545 |
| Relative Density : | 0.719 |
| Vapor Pressure (cal. EPA method): | 2.0198 @100F |
| Octane Number (calculated) : | 59.74 |
| Mon (calculated); | 56.71 |
| Percent Carbon : | 85.102 |
| Percent Hydrogen : | 14.898 |

## Totals by Group Type & Carbon Number (in Mass Percent)

| | Paraffins: | paraffins: | Olefins: | hthenes: | Aromatics: | Total: |
|---|---|---|---|---|---|---|
| C1: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C3: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C4: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C5: | 4.646 | 2.762 | 0.000 | 0.499 | 0.000 | 7.907 |
| C6: | 7.139 | 6.426 | 0.000 | 11.501 | 0.723 | 25.789 |
| C7: | 9.103 | 5.345 | 0.000 | 18.639 | 2.043 | 35.130 |
| C8: | 9.392 | 6.171 | 0.000 | 7.206 | 2.516 | 25.285 |
| C9: | 0.682 | 2.972 | 0.000 | 1.875 | 0.010 | 5.540 |
| C10: | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.014 |
| C11: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C12: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C13: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total : | 30.961 | 23.690 | 0.000 | 39.720 | 5.292 | 99.664 |

| Oxygenates : | Total C14+ : | Unknowns : | Grand Total : |
|---|---|---|---|
| 0.000 | 0.000 | 0.336 | 100.000 |

## Totals by Group Type & Carbon Number (in Volume Percent)

| | Paraffins: | paraffins: | Olefins: | hthenes: | Aromatics: | Total: |
|---|---|---|---|---|---|---|
| C1: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C2: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C3: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C4: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C5: | 5.331 | 3.203 | 0.000 | 0.481 | 0.000 | 9.015 |
| C6: | 7.779 | 7.031 | 0.000 | 10.734 | 0.591 | 26.135 |
| C7: | 9.567 | 5.618 | 0.000 | 17.486 | 1.693 | 34.363 |
| C8: | 9.607 | 6.316 | 0.000 | 6.711 | 2.086 | 24.720 |
| C9: | 0.683 | 2.975 | 0.000 | 1.742 | 0.009 | 5.409 |
| C10: | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.014 |
| C11: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C12: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| C13: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total : | 32.967 | 25.156 | 0.000 | 37.153 | 4.379 | 99.655 |

| Oxygenates : | Total C14+ : | Unknowns : | Grand Total : |
|---|---|---|---|
| 0.000 | 0.000 | 0.345 | 100.000 |