

**General Motors Turbo Coking Test
For dexos[®]
Form 1**

Version

Conducted For

| | |
|--|---|
| | V = Valid |
| | I = Invalid |
| | N = Results cannot be interpreted as representative of oil performance (Non-reference oil) and shall not be used for multiple test acceptance |

| | | | |
|------------------------|--|------------------|--|
| Test Number | | | |
| Formulation/Stand Code | | | |
| Test Stand | | Test Stand Run # | |
| Date Started | | Time Started | |
| Date Completed | | Time Completed | |
| Test Length | | Total Downtime | |

| |
|---|
| <p>In my opinion this test _____ been conducted in a valid manner in accordance with test procedure GMTC and appropriate amendments. The remarks included in the report describe the anomalies associated with this test.</p> |
|---|

Submitted By: _____

Testing Laboratory

Signature

Typed Name

Title

General Motors dexos® Turbo Coking Test

Form 2

Table of Contents

| | | |
|-----|--------------------------------------|---------|
| 1. | Title / Validity Declaration Page | Form 1 |
| 2. | Table of Contents | Form 2 |
| 3. | Test Results Summary | Form 3 |
| 4. | Operational Summary – Soak Stage | Form 4 |
| 5. | Operational Summary – Idle Stage | Form 5 |
| 6. | Operational Summary – 3000 RPM Stage | Form 6 |
| 7. | Operational Summary – 2000 RPM Stage | Form 7 |
| 8. | 100-Cycle Period Averages | Form 8 |
| 9. | Rating Summary | Form 9 |
| 9. | Oil Analysis Part 1 | Form 10 |
| 10. | Oil Analysis Part 2 | Form 11 |
| 11. | Downtime Record | Form 12 |
| 12. | Comment Record | Form 13 |

**General Motors dexos® Turbo Coking Test
Form 3
Test Results Summary**

| | | | |
|------------------------|--|---------------------------|--|
| Test Number | | | |
| Formulation/Stand Code | | | |
| SAE Viscosity Grade | | | |
| | | | |
| Engine Block ID | | Total Engine Block Hours | |
| Cylinder Head ID | | Total Cylinder Head Hours | |
| Turbocharger ID | | Fuel Batch Code | |

| % Change, 100 - 2000 Period Cycle | % |
|--|---------------|
| Turbo Coolant Outside, 3000 rpm | |
| Oil Delta Pressure, 3000 rpm | |
| Turbo rpm at Idle | |
| | |
| Rating Area | Merits |
| Turbine Shaft Area (A) | |
| Turbine Shaft Area (B) | |
| Center Housing Turbine End Hole (C) | |
| Center Housing Turbine Inlet Hole (D) | |
| Center Housing Turbine Outlet Hole (E) | |
| Inlet Pipe (F) | |
| Total Average Merit Rating | |

| Result | Value |
|---------------------------------------|--------------|
| Percent Viscosity Increase at 40°C, % | |
| Oxidation, DIN 51453 | |
| Nitration, DIN 51453 | |
| TAN, D 664 | |
| TBN, D4739 | |

General Motors dexos® Turbo Coking Test
Form 4
Operational Summary – Soak Stage

| | | | |
|--------------|--|-------------------------|--|
| Test Number: | | Formulation/Stand Code: | |
|--------------|--|-------------------------|--|

| Parameter | Average | Std. Deviation | Minimum | Maximum |
|-----------------------------|----------------|-----------------------|----------------|----------------|
| Oil Gallery Temperature, °C | | | | |
| Oil Sump Temperature, °C | | | | |
| Coolant In Temperature, °C | | | | |
| Coolant Out Temperature, °C | | | | |
| Turbo Coolant Inside, °C | | | | |
| Turbo Coolant Outside, °C | | | | |
| Turbo Feed Pipe 3 Temp., °C | | | | |

**General Motors dexos® Turbo Coking Test
Form 5
Operational Summary – Idle Stage**

| | | | |
|--------------|--|-------------------------|--|
| Test Number: | | Formulation/Stand Code: | |
|--------------|--|-------------------------|--|

| Parameter | Average | Std. Deviation | Minimum | Maximum |
|---------------------------------|----------------|-----------------------|----------------|----------------|
| Engine Speed, rpm | | | | |
| Fuel Flow, kg/h | | | | |
| Man. Abs. Pressure(MAP), kPa | | | | |
| Torque, Nm | | | | |
| Fuel Pressure, kPa | | | | |
| Inlet Air Pressure, kPa | | | | |
| Crankcase Pressure, kPa | | | | |
| Exhaust Back Pressure, kPa | | | | |
| Post Turbo Boost Pressure, kPa | | | | |
| Oil Gallery Pressure, kPa | | | | |
| Humidity, g/kg | | | | |
| Fuel Temperature, °C | | | | |
| Oil Gallery Temperature, °C | | | | |
| Oil Sump Temperature, °C | | | | |
| Coolant In Temperature, °C | | | | |
| Coolant Out Temperature, °C | | | | |
| Pre-Turbo Inlet Air Temp., °C | | | | |
| Pre-Intercooler Boost Temp., °C | | | | |
| Turbo Coolant Inside, °C | | | | |
| Turbo Coolant Outside, °C | | | | |
| Turbo Feed Pipe 3 Temp., °C | | | | |
| Turbo Speed, rpm | | | | |
| Turbo Feed Oil Pressure, kPa | | | | |
| Oil Delta Pressure, kPa | | | | |

**General Motors dexos® Turbo Coking Test
Form 8
100-Cycle Period Averages**

| | |
|------------------------|--|
| Test Number | |
| Formulation/Stand Code | |

| 100-Cycle Period | End of Period Test Time | Turbo Coolant Outside 3,000 rpm 60 - 150 seconds | Oil Delta Pressure 3,000 rpm | Turbo rpm at Idle 18 seconds |
|-----------------------------|------------------------------------|---|---|---|
| 100 | | | | |
| 200 | | | | |
| 300 | | | | |
| 400 | | | | |
| 500 | | | | |
| 600 | | | | |
| 700 | | | | |
| 800 | | | | |
| 900 | | | | |
| 1000 | | | | |
| 1100 | | | | |
| 1200 | | | | |
| 1300 | | | | |
| 1400 | | | | |
| 1500 | | | | |
| 1600 | | | | |
| 1700 | | | | |
| 1800 | | | | |
| 1900 | | | | |
| 2000 | | | | |
| % Change, 100 - 2000 | | | | |

**General Motors dexos® Turbo Coking Test
Form 9
Rating Summary**

| | |
|------------------------|--|
| Test Number | |
| Formulation/Stand Code | |

| ASTM Manual 20 Non-Rubbing Carbon Method | | | | | |
|---|---------------|--------------|--|---------------|--------------|
| Turbine Shaft Area (A) | | | Turbine Shaft Area (B) | | |
| Area % | Rating | Merit | Area % | Rating | Merit |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Merit: | | | Total Merit: | | |
| | | | | | |
| Center Housing Turbine End Hole (C) | | | Center Housing Turbine Inlet Hole (D) | | |
| Area % | Rating | Merit | Area % | Rating | Merit |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Merit: | | | Total Merit: | | |
| | | | | | |
| Center Housing Turbine Outlet Hole (E) | | | Inlet Pipe (F) | | |
| Area % | Rating | Merit | Area % | Rating | Merit |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Merit: | | | Total Merit: | | |
| | | | | | |
| | | | Rating Date: | | |
| | | | Rater: | | |

| | |
|-----------------------------------|--|
| Total Average Merit Rating | |
|-----------------------------------|--|

**General Motors dexos® Turbo Coking Test
Form 10
Oil Analysis Part 1**

| | | | |
|---------------------|--|--------------------------------|--|
| Test Number: | | Formulation/Stand Code: | |
|---------------------|--|--------------------------------|--|

| Oil Analysis | | | | | | | |
|----------------------|-----------|--|--|--|--|--|-----|
| Test Hours | Fresh Oil | | | | | | EOT |
| Viscosity 40°C, cSt | | | | | | | |
| Vis. Increase, % | | | | | | | |
| Oxidation, DIN 51453 | | | | | | | |
| Nitration, DIN 51453 | | | | | | | |
| TAN, D 664 | | | | | | | |
| TBN, D4739 | | | | | | | |

| Oil Consumption Summary | |
|--------------------------------|--|
| Oil Charge (g) | |
| Oil Drain Weight (g) | |
| Oil Consumption (g) | |
| Oil Consumption Rate (g/h) | |

**General Motors dexos® Turbo Coking Test
Form 11 - Oil Analysis Part 2**

| | | | |
|--------------|--|-------------------------|--|
| Test Number: | | Formulation/Stand Code: | |
|--------------|--|-------------------------|--|

| Test Hours | Fresh Oil | 100 | 200 | 300 | 400 | 500 | EOT |
|-----------------|-----------|-----|-----|-----|-----|-----|-----|
| Aluminum (Al) | | | | | | | |
| Boron (B) | | | | | | | |
| Calcium (Ca) | | | | | | | |
| Chromium (Cr) | | | | | | | |
| Copper (Cu) | | | | | | | |
| Iron (Fe) | | | | | | | |
| Potassium (K) | | | | | | | |
| Magnesium (Mg) | | | | | | | |
| Manganese (Mn) | | | | | | | |
| Molybdenum (Mo) | | | | | | | |
| Sodium (Na) | | | | | | | |
| Nickel (Ni) | | | | | | | |
| Phosphorus (P) | | | | | | | |
| Lead (Pb) | | | | | | | |
| Sulfur (S) | | | | | | | |
| Silicon (Si) | | | | | | | |
| Tin (Sn) | | | | | | | |
| Titanium (Ti) | | | | | | | |
| Zinc (Zn) | | | | | | | |

