

OBD-II Diagnostic Analysis Report

Vehicle Information:

- **Make/Model:** Toyota Corolla
 - **Year:** 2024
 - **Engine Type:** 1.8L 4-cylinder
 - **VIN:** JTNBK3DE8K0123456
 - **Mileage:** 72,500 miles
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Scan Summary

- **Total DTCs (Diagnostic Trouble Codes):** 2
 - **Emission Readiness Status:** Not Ready
 - **Freeze Frame Data:** Captured for P0420
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Diagnostic Trouble Codes (DTCs):

1. **P0420 - Catalyst System Efficiency Below Threshold (Bank 1)**
 - **Description:** The catalytic converter is not performing as efficiently as expected.
 - **Potential Causes:**
 - Faulty catalytic converter
 - Oxygen sensor failure
 - Exhaust leak
 - Engine misfire or fuel mixture issues
 2. **P0302 - Cylinder 2 Misfire Detected**
 - **Description:** Misfire detected in cylinder 2.
 - **Potential Causes:**
 - Faulty spark plug or ignition coil
 - Vacuum leak near cylinder 2
 - Fuel injector issues
 - Compression loss
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Live Sensor Data

Parameter	Current Value	Normal Range
Engine RPM	720 rpm (Idle)	600–900 rpm
Engine Coolant Temperature	88°C (190°F)	80–100°C
Vehicle Speed	0 mph (Idle)	0 mph (Idle State)
Throttle Position Sensor	9.8%	0–15% (Idle)
Fuel System Status	Closed Loop	Closed Loop
Short Term Fuel Trim (STFT)	4.2%	±10%
Long Term Fuel Trim (LTFT)	6.5%	±10%
Intake Air Temperature	32°C (89.6°F)	10–50°C
Mass Air Flow Rate	2.8 g/s	2–5 g/s (Idle)
Oxygen Sensor Voltage (O2)	0.75 V (Bank 1)	0.1–0.9 V

Emission Readiness Monitor

Monitor	Status
Misfire	Complete
Fuel System	Complete
Comprehensive Components	Complete
Catalyst	Incomplete
Heated Catalyst	N/A
Evaporative System	Complete
Secondary Air System	N/A
Oxygen Sensor	Complete
Oxygen Sensor Heater	Complete
EGR System	N/A

Freeze Frame Data (P0420)

Parameter	Value
Engine RPM	2450 rpm
Vehicle Speed	45 mph
Short Term Fuel Trim	3.8%
Long Term Fuel Trim	5.1%
Oxygen Sensor Voltage (B1S1)	0.68 V
Catalyst Temperature	590°C (1094°F)

Recommendations:

1. Inspect and replace the catalytic converter if necessary (DTC P0420).
2. Check spark plugs and ignition coils, focusing on cylinder 2 (DTC P0302).
3. Perform a fuel injector test to rule out fuel delivery issues.
4. Verify for vacuum leaks around intake manifold and cylinder 2.
5. Clear the trouble codes and conduct a road test.

End of Report

Generated by: *OBD-II Diagnostic Tool*

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