

# Cummins M-11 EGR

## SPECIFICATIONS

This test is part of API CI-4 and Cummins CES 20078.

## OBJECTIVE

The objective of this test is to determine the effectiveness of lubricating oils at reducing "soot" related wear of overhead components in engines with exhaust gas recirculation (EGR).

## FIELD SERVICE SIMULATED

Heavy-duty on-highway trucking operations after 2002 are simulated.

## TEST FIXTURE

The test engine is a modified Cummins ISM 425 engine rated at 425 bhp and 1800 rpm, with EGR.

## TEST PARAMETERS

The test is a 300-hour engine test evaluating ring wear, overhead wear, filter plugging, and sludge. One hundred-fifty hours are spent at 1600 rpm overfueled and one hundred-fifty hours at 1800 rpm, overfueled and retarded timing, in alternating 50-hour segments

## TEST PARTS EVALUATED

Test parts evaluated include:  
Engine crossheads - weight loss  
Engine oil filter - plugging via delta pressure  
Engine valve cover and oil pan - sludge rating

## USED LUBRICANT ANALYSIS

Used lubricant analysis includes viscosity at 40°C and 100°C, TBN, TAN, wear and additive metals, samples every 25 hours.

## PASS/FAIL CRITERIA

Average crosshead weight loss: 20 mg max  
Oil filter plugging: 275 KPO @ 250 hours  
Average sludge: 7.8 min  
Average top ring weight loss: Uses Mack T-10 @ 140 mg max  
Uses Mack EON-PP @ 12 mg max



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