DIN EN ISO 5165:2020-11 (E)

Petroleum products - Determination of the ignition quality of diesel fuels - Cetane engine method (ISO 5165:2020)

Contents

Page

European foreword ... **4**

Foreword ... **5**

1 Scope ... **6**

2 Normative references ... **6**

3 Terms and definitions ... **7**

4 Principle ... **8**

5 Reagents and reference materials ... **9**

6 Apparatus ... **10**
6.1 Test engine assembly ... 10
6.2 Instrumentation ... 10
6.3 Reference fuels dispensing equipment ... 12
6.4 Injector nozzle tester ... 12
6.5 Special maintenance tools ... 13

7 Sampling and sample preparation ... **13**

8 Basic engine and instrument settings and standard operating conditions ... **13**
8.1 Installation of engine equipment and instrumentation ... 13
8.2 Engine speed ... 13
8.3 Valve timing ... 13
8.4 Valve lift ... 14
8.5 Fuel pump timing ... 14
8.6 Fuel pump inlet pressure ... 14
8.7 Direction of engine rotation ... 14
8.8 Injection timing ... 14
8.9 Injector nozzle opening pressure ... 14
8.10 Injection flow rate ... 14
8.11 Injector coolant passage temperature ... 14
8.12 Valve clearances ... 14
8.13 Oil pressure ... 14
8.14 Oil temperature ... 14
8.15 Cylinder jacket coolant temperature ... 15
8.16 Intake air temperature ... 15
8.17 Basic ignition delay ... 15
8.18 Cylinder jacket coolant level ... 15
8.19 Engine-crankcase lubricating oil level ... 15
8.20 Crankcase internal pressure ... 15
8.21 Exhaust back-pressure ... 15
8.22 Exhaust and crankcase breather system resonance ... 15
8.23 Piston over-travel ... 15
8.24 Belt tension ... 15
8.25 Injector opening or release pressure ... 16
8.26 Injector spray pattern ... 16
8.27 Indexing handwheel reading ... 16
8.27.1 General ... 16
8.27.2 Basic setting of variable compression plug ... 16
8.27.3 Setting handwheel micrometer drum and scale ... 16
8.27.4 Setting handwheel reading ... 16

8.28 Basic compression pressure 17
8.29 Fuel pump lubricating oil level 17
8.30 Fuel pump timing gear-box oil level 17
8.31 Setting instrumentation reference pickups 18
8.32 Setting injector pickup gap 18

9 Engine qualification 18
9.1 Engine conformity 18
9.2 Checking performance on check fuels 18
9.3 Check in the case of nonconformity 18

10 Procedure 19
10.1 General 19
10.2 Sample introduction 19
10.3 Fuel flow rate 19
10.4 Fuel injection timing 19
10.5 Ignition delay 19
10.6 Equilibration 19
10.7 Handwheel reading 19
10.8 Reference fuel no. 1 19
10.9 Reference fuel no. 2 20
10.10 Number of blends of reference fuels 21
10.11 Repeat readings 21

11 Calculation 21

12 Expression of results 23

13 Precision 23
13.1 General 23
13.2 Repeatability, *r* 23
13.3 Reproducibility, *R* 23
13.4 Precision basis 23

14 Test report 24

Bibliography 25