

# ISO 5164:2014-06 (E)

## Petroleum products - Determination of knock characteristics of motor fuels - Research method

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Principle .....	3
5	Reagents and reference materials .....	3
6	Apparatus .....	5
7	Sampling and sample preparation .....	6
8	Basic engine and instrument settings and standard operating conditions .....	6
8.1	Installation of engine equipment and instrumentation .....	6
8.2	Engine speed .....	6
8.3	Valve timing .....	7
8.4	Valve lift .....	7
8.5	Intake valve shroud .....	7
8.6	Carburettor venturi .....	7
8.7	Direction of engine rotation .....	7
8.8	Valve clearances .....	7
8.9	Oil pressure .....	7
8.10	Oil temperature .....	8
8.11	Cylinder jacket coolant temperature .....	8
8.12	Intake air temperature .....	8
8.13	Intake air humidity .....	8
8.14	Cylinder jacket coolant level .....	8
8.15	Engine crankcase lubricating oil level .....	9
8.16	Crankcase internal pressure .....	9
8.17	Exhaust back-pressure .....	9
8.18	Exhaust and crankcase breather system resonance .....	9
8.19	Belt tension .....	9
8.20	Rocker arm carrier support basic setting .....	9
8.21	Rocker arm carrier basic setting .....	9
8.22	Rocker arm and push rod length basic settings .....	9
8.23	Basic spark setting .....	10
8.24	Basic ignition timer control arm setting .....	10
8.25	Basic ignition timer transducer to rotor vane gap setting .....	10
8.26	Spark-plug gap .....	10
8.27	Basic cylinder height setting .....	10
8.28	Fuel-air ratio .....	11
8.29	Carburettor cooling .....	12
8.30	Knockmeter reading limits .....	12
8.31	Detonation meter spread and time constant settings .....	12

9	Engine calibration and qualification .....	12
9.1	General .....	12
9.2	Engine fit-for-use qualification .....	12
9.3	Fit-for-use procedure in the 87,1 RON to 100,0 RON range .....	13
9.4	Fit-for-use procedure below 87,1 RON and above 100,0 RON .....	14
9.5	Checking performance on check fuels .....	14
10	Procedure .....	15
10.1	General .....	15
10.2	Start-up .....	15
10.3	Calibration .....	15
10.4	Sample fuel .....	16
10.5	Primary reference fuel No. 1 .....	16
10.6	Primary reference fuel No. 2 .....	17
10.7	Additional measurement readings .....	17
10.8	Special instructions for ratings above 100,0 RON .....	17
11	Calculation .....	18
12	Expression of results .....	18
13	Precision .....	19
13.1	General .....	19
13.2	Repeatability, r .....	19
13.3	Reproducibility, R .....	19
13.4	Precision for ratings at barometric pressures below 94,6 kPa .....	19
13.5	Precision for fuels containing 15% to 25% (V/V) ethanol .....	20
14	Test report .....	20
Annex A (informative) Test variable characteristics .....		21
Bibliography .....		24