

DIN EN ISO 3104:2021-01 (E)

Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:2020)

Contents		Page
European foreword		3
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	6
4	Principle	7
5	Reagents and materials	7
6	Apparatus design and requirements	8
7	Verification	11
7.1	Viscometer	11
7.2	Liquid-in-glass thermometer	11
7.3	Digital contact thermometer	12
7.4	Timer	12
8	Re-calibration	12
9	Quality control	12
10	Sample preparation	12
10.1	Pre-analysis sample conditioning	12
10.2	Visual inspection and filtering	13
11	Procedure A -- Manual equipment	13
12	Procedure B -- Automated equipment	15
13	Cleaning of the viscometer tube	16
14	Calculation	16
14.1	Procedure A -- Manual viscometers	16
14.2	Procedure B -- Automated viscometers	17
15	Expression of results	18
16	Precision of procedure A	18
16.1	Determinability, d	18
16.2	Repeatability, r	19
16.3	Reproducibility, R	19
17	Precision of Procedure B	20
17.1	Determinability, d	20

17.2	Repeatability, r	20
17.3	Reproducibility, R	20
18	Test report	20
Annex A (normative)Viscometertypes,calibrationandverification		22
Annex B (normative) Thermometers for kinematic viscosity test		23
Annex C (normative) Conditioning of samples prior to manual or automated analysis		27
Annex D (normative) Calculation of acceptable tolerance zone (band) to determine conformance with a certified reference material		28
Bibliography		29