

# DIN EN ISO 13503-1:2012-01 (E)

Petroleum and natural gas industries - Completion fluids and materials - Part 1:  
Measurement of viscous properties of completion fluids (ISO 13503-1:2011); English  
version EN ISO 13503-1:2011

---

Inhalt	Seite
Foreword .....	3
Introduction.....	4
1 Scope .....	5
2 Terms and definitions .....	5
3 Measurement and precision .....	6
4 Fluid preparation .....	6
5 Fluid preparation using shear-history simulation (optional).....	6
5.1 General .....	6
5.2 Requirements for proper shear-history simulation .....	7
5.3 Conditions for sample delivery.....	8
5.4 Conditions for standard shear-history simulation.....	8
5.5 Operational considerations .....	8
6 Instrument calibration.....	8
7 Measurement procedures.....	8
7.1 General .....	8
7.2 Non-crosslinked fluids (see 2.6) .....	8
7.2.1 General .....	8
7.2.2 Apparatus .....	9
7.3 Crosslinked polymer and surfactant fluids .....	14
7.3.1 General .....	14
7.3.2 Apparatus .....	14
8 Calculation procedures.....	15
8.1 General concepts .....	15
8.2 Brief review of geometry-independent rheology versus nominal rheology.....	16
8.3 Limitations/problems that can produce erroneous results .....	17
8.4 Calculation method for concentric-cylinder viscometers.....	17
8.4.1 General .....	17
8.4.2 Calculation of shear stress from torque values .....	17
8.4.3 Nominal shear rate from angular velocity .....	18
8.4.4 Consistency index calculation.....	18
8.4.5 Fluid consistency index calculation .....	19
8.5 Calculations for optional shear-history simulation .....	19
8.5.1 Flow rate and tubing length requirement.....	19
8.5.2 Minimum radius of curvature .....	20
9 Test report.....	20
Bibliography.....	23