



TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
Mineral insulated cables and their terminations with a rated voltage not exceeding 750V—
Part 1: Cables
IEC 60702-1 3.Edition (2002-02)

R=Required by Lab
S=May be subcontracted

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
12	Sample tests		
12.2	Voltage test	Voltage power supply (AC); a suitable timer.	R
12.3	Thickness of outer covering	Measuring microscope or profile projector of at least 10 x magnification.	R
12.4	Flame retardance	Propane gas burner: 1 kW pre-mixed flame including system of confirmation of test flame;3-sided metallic screen 1200 mm high, 300 mm wide and 450 mm deep with open front and closed top and bottom; suitable timer; vernier caliper with an accuracy of 1mm;propane gas with prescribed purity.	R
12.5	Emission of acidic and corrosion gases	Tube furnace; fireproof tube made of silica; suitable thermocouple for temperature's control; combustion boats; two wash bottles containing distilled or demineralized water; air supply system; synthetic air or compressed air or ambient air; measuring instruments (analytical	S



		balance of an accuracy of $\pm 0,1$ mg; pH meter to an accuracy of $\pm 0,02$, equipped with a suitable pH electrode; conductivity measuring device with a range of 10^{-2} μ s/mm and a suitable electrode; timer)	
12.6	Smoke emission	Test enclosure with inside dimension of 3000mm and constructed of a suitable material fixed on to a steel angle frame and one side shall have a door with a glass inspection window and the other two opposite sides shall have transparent sealed windows; photometric system (light source: halogen lamp with a tungsten filament with a clear quartz bulb; and receiver); standard fire source: 1,00litre \pm 0,01litre of alcohol; metal tray with bottom base 210mmx110mm,top base 240mmx140mm,height 80mm,thickness 1,0mm; draught screen; table-type fan with flow from 7 to 15m ³ /min;suitable timer.	S
13	Type test		
13.2	Voltage test on completed cable	Voltage power supply (AC); a suitable timer.	R
13.3	Resistance of copper sheath	Measuring bridge or equivalent electrical equipment; thermometer or temperature compensation to 20°C.	R
13.4	Thickness of insulation	Measuring microscope or profile projector of at least 10 x magnification.	R
13.5	Thickness of copper sheath	Micrometer with a flat nose and a ball nose.	R
13.6	Bending test	Bending apparatus; mandrels with different diameter; water tank;	R



		voltage power supply (AC); a suitable timer.	
13.7	Flattening test	Flattening apparatus(press);anvils; vernier caliper; water tank; voltage power supply (AC); a suitable timer.	R
13.8	Fire resistance	Sample supporting system; ribbon type propane gas burner with a nominal burner face of 500mm with Venturi mixer; control system (rotameter-type flowmeter or a mass flowmeter); two 1.5mm mineral-insulated stainless steel sheathed thermocouple type K; a suitable timer continuity checking arrangements(suitable load and an indicating device).	R

Note: The presence of equipment alone does not indicate a satisfactory situation. Assessors must evaluate the equipment design, calibration, uncertainty and documentation to ensure compliance with the directions of the standard. The requirements of ISO/IEC 17025 regarding validation are applicable, as the tests of this standard are not standardised tests.