



IEC 61010-1 Edition 2
TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

R=Required by Lab; W= Can be witnessed in MTL situations; S=May be subcontracted

| Clause | Measurement/testing | Testing / measuring equipment / material needed | Subcontracting |
|-------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 4.3.1 | Temperature Humidity Air pressure | Temp indicator/recorder Humidity indicator/recorder Air pressure indicator/recorder | R R R |
| 4.3.2.4 5.1.3 | Input Voltage Input Current/Power Input frequency | suitable devices for the voltage, current/power and frequency | R R R |
| 4.4.4.2/ 10.4 | Temperature measurements | Temperature indicator/recorder suitable for this function with thermocouples | R |
| 4.4.4.3 | Single fault tests | White Tissue-paper, soft wood and cheesecloth | R |
| 5.3 | Durability of markings | Cloth, specified agent, Isopropyl alcohol & a suitable timer/stop watch | R |
| 6.1.1/6.3/ 6.10.3 | Residual Energy | Suitable oscilloscope recorder /set-up & RCL meter | R |
| 6.2 | Accessibility | Suitable Test fingers as per annex B (with suitable means to evaluate the application force), 100mm long test pin (Ø4mm) and a Ø3mm test pin. | R |
| 6.3.1/6.3.2 | Accessible voltage/current/capacitance/stored energy | Measuring circuits/filter networks of annex A, Multimeters, RCL meter Oscilloscope & Timer | R |
| 6.5.1.2/ 6.5.1.3/ 6.5.1.4/6.5.2/ 6.5.3 | Bonding impedance/earth continuity test | Current source, multimeter, Timer Torque gauge for screw assemblies | R |
| 6.6.2 6.10.3b) | Terminals for external circuits (capacitive discharge test) | Multimeter, Oscilloscope, Isolation transformer, timer, measuring circuits/filter networks of annex A | R |



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| 6.7/10.5.1 | Clearance & creepage distances | Micrometer/ callipers, force gauge, multimeter, oven | R |
| 6.7.1.2 | Test equipment for tracking index | CTI Tester, test solution A | S |
| 6.8.2 | Humidity chamber | T 0 - 100°C, RH 0 - 99% | R |
| 6.8.4 | Dielectric strength tests | Suitable ac/dc tester and impulse tester | R |
| 6.10.2.1 | Cord entry test | Micrometer/Calliper | R |
| 6.10.2.2 | Cord anchorage test | Suitable Force Scale & Torque gauge | R |
| 7.3 | Stability tests | Tape measure, suitable weight scale, torque gauge & 10° inclinometer [0-45°] (trigonometry to measure the angle can also be acceptable) | R |
| 7.4 | Strength of handles | Weight scale, timer, weights, 70 mm wide strap | R |
| 8.1.1 | Static test | 12mm diameter hemispherical end rod, force gauge, oven, timer, high voltage tester | R |
| 8.1.2 | Dynamic test | Ø50 mm hardened steel ball of 500 grams as specified | R |
| 8.2.1 | Drop test | Smooth, hard, rigid surface, 10 mm & 20 mm wooden studs | R |
| 8.2.2 | Hand-held equipment | 50mm thick hard wood, density > 700Kg/m ³ | R |
| 9.2.1/14.8 | Flammability tests | Bunsen burner, gas, oven | S |
| 9.3 | Limited Energy Circuits | Multimeters, suitable electronic loads or resistors | R |
| 10.4.1 | Heating Equipment | Test Corner, Plywood 20mm thick, black | R |
| 10.4.2 | Heating Equipment, Fixed Installation | Black 10mm, thick plywood walls | R |
| 10.5.2 | Enclosures | Oven 200°C, temperature recorder, thermocouple | R |
| 10.5.3 | Insulating materials | Ball pressure apparatus (with suitable means to evaluate the application force), heating cabinet. | R |
| | | Vicat (ISO 306 method A) [set-up consist of heating chamber, heat transfer liquid, weight, penetration indicator, needle, temperature recorder, calliper, dielectric tester] | S |
| 11.2 | Cleaning/decontamination | As per instructions | R |



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| 11.3 | Spillage | Water, 0.2 litre measure, tape & timer/stop watch | R |
| 11.4 (6.8.4) | Overflow | Water (or appropriate fluid), volume indicator & ac/dc high voltage tester | R |
| 11.6 | Specially protected equipment (IP rated) | See IEC 60529 for test equipment | R* |
| 11.7 | Fluid pressure & leakage | Suitable pressure & volume measurement devices | S |

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|-------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------|---|
| 12.2.1 | Ionizing radiation | Suitable ionization meter (limit 5 μ Sv/h, indicative) | S |
| 12.3 | UV Radiation | UV meter (compliance/limit according IRPA guidelines) | S |
| 12.4 | Microwave Radiation | Suitable measuring device | S |
| 12.5.1 | Sound pressure level | Sound level meter | S |
| 12.5.2 | Ultrasonic pressure | Suitable indicator/measuring device | S |
| 12.6 | Laser sources | As per IEC60825-1 | S |
| 13.3 | High vacuum devices | As per IEC60065 | S |
| 14.2 | Motors | Temperature recorder, suitable Multimeter, | R |
| | | | |
| 14.3 | Over temperature protection devices | Multimeters, oscilloscope, temperature recorder, high voltage tester | R |
| 14.9 | Transient over voltage | Impulse tester to IEC 60060 | R |
| 4.4.2.6.1/ 4.4.2.6.2 | Mains transformers (sc/overload) | Electronic loads, multimeters, temperature recorder with thermocouples or a suitable resistance measuring device | R |
| 15.3 | Reliability (Interlocks) | Suitable multimeters | R |
| 16.1/16.2 | Measuring circuits | Suitable current measuring device, timer | R |
| Annex A | Measurement Circuits | A.1 to A.4 | R |
| General | 3 phase power supply | | W |
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IEC SYSTEM FOR CONFIRMITY TESTING AND
CERTIFICATION OF ELECTRICAL EQUIPMENT

COMMITTEE OF TESTING LABORATORIES

R*= Registration of the Laboratory capabilities is necessary to indicate to which level of the IEC 60529 can be tested for accepting it's results. The capability is dependant on the test equipment present in the laboratory.

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 Guide 25 regarding validation are applicable, as the tests of this standard are not standardised tests.