Non-conductive Measuring Tapes – Type Test and Before Use Inspection

Document no.	Work description
SMS-06-SW-0272	Type testing, and inspecting before use, of non-conductive measuring tapes.
	Scope This instruction describes the type testing procedure, and before-use inspection of fibreglass or other types of non-conductive measuring tapes, intended for use in the vicinity of live exposed electrical equipment.
Review date 08/09/12	**Reference** • SMS-06-GD-0268 Working Around Electrical Equipment

Responsible supervisor *Insert name in BLOCK letters*	PPE and precautions	Competencies or qualifications	Licences or permits required
	N/A	Electrical background with demonstrated competency in the use of an insulation resistance tester (for type test only)	N/A

Tools and equipment required

Insulation resistance tester (for type test only)

SMS-06-FM-0281 Non-conductive Measuring Tapes – Type Test Record Sheet

IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT.

Type test	This test is only carried out at the initial introduction of the particular brand and model of the tape to make sure of its non-conducting properties.	
	Competency	The test is to be carried out by a person with an electrical background having a demonstrated competency in the use of an insulation resistance tester.
	Hazards	This testing procedure is to be strictly followed to avoid the possibility of electric shock. Other physical injuries may result from an extended measuring tape retracting, if it is not effectively secured throughout the test.
	Equipment required	• insulation resistance tester with 5kV DC output voltage and associated leads, • stopwatch or clock for time measurement, • clean dry cloth, and • electrical insulating tape or plastic clamps.
		***Warning*** *Cables used with an insulation resistance tester are to be of sufficient length that the person performing the test is able to maintain a distance of at least 100mm from the test bed.*

Test procedure	This instruction outlines the testing procedures using an insulation resistance tester (e.g. a “Megger”) to complete a dry and a wet test.	
	Testing procedure – dry test	This procedure tests the measuring tape’s properties in dry conditions. The following testing procedure are to be complied with: 1. Select a test bed that is: - **not** in close proximity to any conductive material - constructed from non-conducting material, such as a wooden bench or tabletop, or a surface covered with an sheet of insulating material - clean and free of any water, dirt, grease, or other contaminants. 2. Make sure that the insulation resistance tester is in good working order. (As this is a test instrument, it is to be tagged and within its due retest date.). 3. Make sure that both the insulation resistance tester clamps and surfaces of the measuring tape to be tested are free of any water, dirt, grease, or other contaminants by wiping them with a clean dry cloth.

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Test procedure cont		4. Check that the insulation resistance tester is in the **OFF** position. 5. Extend the desired length of the measuring tape and make sure that the tape will not move or retract during testing by securing it to the test bed using insulating tape or plastic clamps. 6. Connect the negative/earth clamp to the tape near the 'zero' end but clear of any reinforcement. 7. Connect the positive clamp to the measuring tape **300mm** away from the negative/earth clamp. 8. The person undertaking the test should then stand not less than **0.7m** away from the exposed clamps and the non-conductive tape being tested.
		9. Switch on the insulation resistance tester ensuring that the output voltage is set to 5kV. 10. Apply this voltage to the equipment being tested for **one minute**. Record results on the SMS-06-FM-0281 Non-conductive Measuring Tapes – Type Test Record Sheet. 11. Switch off the insulation resistance tester. 12. Remove the insulation resistance tester's positive clamp from the measuring tape being tested. 13. Remove the insulation resistance tester's negative/earth clamp from the measuring tape being tested. 14. Complete the type test sheet and send it to Electrical Safety & Training Group of Electrical Systems to enable the register to be updated.
	Testing procedure – wet test	This test is designed to check the non-conductive properties of the measuring tape being used in the rain or rolled up while still wet. • First, the tape or portion of it to be tested is to be fully submerged in a container of clean tap water and left submerged for a minimum of 3 hrs. • Then the same procedure as for the dry test should be followed, except that the tape should be shaken to remove any excessive moisture from the surface.
		 ***Note*** *Some surface moisture is expected with this test.*
	Criterion for pass	For non-conductive measuring tapes, a reading of greater than 50MΩ is required for passing the test, for both the dry and wet tests
	Criterion for fail	If a reading of less than or equal to 50MΩ is observed on either test, the measuring tape has failed the type test. If a measuring tape fails the type test, all tapes that are of the same make and model as the one that failed the test cannot be used in the vicinity of live exposed electrical equipment. If the non-conductive measuring tape fails, the tape and the test results are to be sent to the Electrical Safety & Training Group of Chief Engineers Division for further testing.
		 ***Warning*** *Any tape failing the test is not to be used in the vicinity of exposed live electrical equipment.*

Register for approved non-conductive measuring tapes	Relevant details of non-conductive measuring tapes that have passed the type test described above are to be entered into a Non-conductive Measuring Tapes – Type Test Record Register. Details recorded in the register is to include: • name of supplier and/or manufacturer, • brand and model number of the tape, • date of the type test, • who carried out the type test, • location of non-conducting information – packaging/case, (need to include an extra column in the table), and • result of the test.

Non-conductive Measuring Tapes – Type Test and Before Use Inspection

Register for approved non-conductive measuring tapes	People undertaking the testing of a new non-conductive measuring tape are to send the completed and signed test sheet, either electronically or by post, to Electrical Safety & Training Group of Chief Engineers Division (to enable the Register to be updated). The register must be updated before the tapes can be used in the vicinity of exposed electrical equipment. It should be noted that manufacturers might imply that the tape is non-conductive and the information is only contained on the packaging which is discarded at the first use of the tape. The identity of the non-conducting feature of the tape is then lost. Some manufacturers duplicate the non-conducting feature on the tape case. The identification of the non-conducting feature is maintained. Tapes that appear to be non-conductive and do not identify the non-conducting feature either on the packaging or case will not be accepted and tested for use in the vicinity of live exposed electrical equipment.

Before use inspection	The following checks are to be carried out before any non-conductive measuring tape is used in the vicinity of any live exposed electrical equipment: • The tape brand and model must have previously passed the type test as recorded in the Non-conductive Measuring Tapes – Type Test Record Register, and • An inspection is to be conducted to make sure that the tape is basically free from any contamination or excessive moisture ingress that would reduce its non-conductive property.
	***Warning*** *Do not use a tape if its condition is doubtful.* *Retest or destroy doubtful tapes.*

Additional controls
Nil.

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