SMPTE 246M-2003
Revision of
ANSI/SMPTE 246M-1993

SMPTE STANDARD

for Television Digital Recording — 19-mm Type D-2 Composite Format — Magnetic Type

1 Scope

This standard specifies the principal properties of the magnetic tape used for the 19-mm type D-2 composite digital television format.

2 Measurement environment

2.1 Dimensions are in the metric system.

2.2 Tests and measurements made on magnetic tape to check the requirements of this standard shall be made under the following atmospheric conditions unless otherwise stated:

- Temperature: 20°C ± 1°C
- Relative humidity: (50 ± 2)%
- Barometric pressure: 96 kPa ± 10 kPa

2.3 Conditioning of the tape stock before recording and testing shall be as follows:

- Storage conditioning: Not less than 24 hours
- Environmental: Stabilized to the conditions specified in 2.2
- Tape tension: Wound on a reel at a tension of 0.6 N to 1.5 N

3 Television tape specifications

3.1 Base

The base material shall be polyester or equivalent.

3.2 Width

The tape width shall be 19.010 mm ± 0.015 mm.

3.2.1 The tape, covered with a glass plate, shall be measured without tension at a minimum of five different positions along the tape using a calibrated microscope or profile projector having an accuracy of at least 2.5 µm. Tape width is defined as the average of the five readings.

3.3 Delta width

Delta width (width fluctuation) shall not exceed 6 µm p-p.

3.3.1 Measurement of delta width shall be over a tape length of 230 mm with a tension of 0.7 N.

Approved
February 7, 2003

3.4 Reference edge straightness

The reference edge straightness maximum deviation is 6 µm p-p.

3.4.1 Edge straightness fluctuation is measured at the edge of a moving tape guided by three guides having contact to the same edge and having a distance of 115 mm from the first to second guide and 115 mm from the second to third guide. Edge measurements are averaged over 10-mm lengths and are made 5 mm from the midpoint between the first and second guide, towards the first guide.

3.5 Tape thickness

Tape shall have a thickness between 11 µm and 13 µm.

3.6 Transmissivity

Transmissivity shall be less than 5%, measured over the range of wavelengths 700 nm to 900 nm.

3.7 Offset yield strength

Offset yield strength shall be greater than 15 N.

3.7.1 The force to produce 1% tangential elongation of a 200 mm test sample with a pull rate of 100 mm per minute shall be used to confirm the offset yield strength.

3.7.2 The initial tangential slope is extended and read at 1% elongation.

3.8 Magnetic coating

The magnetic tape used should have a coating of metal particles or equivalent.

3.8.1 The coating coercivity shall be a class 1500 oersted (120,000 A/m), as measured by a 50- or 60-Hz BH meter or vibrating sample magnetometer (VSM).

3.8.2 The magnetic particles shall be longitudinally oriented.

Annex A (informative)
Bibliography

ANSI/SMPTE 245M-1993, Television Digital Recording — 19-mm Type D-2 Composite Format — Tape Record

SMPTE 244M-2003, Television — System M/NTSC Composite Video Signals — Bit-Parallel Digital Interface

SMPTE 247M-2003, Television Digital Recording — 19-mm Type D-2 Composite Format — Helical Data and Control Records

SMPTE 248M-2003, Television Digital Recording — 19-mm Type D-2 Composite Format — Cue Record and Time and Control Code Record

SMPTE EG 20-1997, Tape Transport Geometry Parameters for 19-mm Type D-2 Composite Format for Television Digital Recording

SMPTE EG 21-1997, Nomenclature for Television Digital Recording of 19-mm Type D-1 Component and Type D-2 Composite Formats

ITU-R BT.470-6 (11/98), Conventional Television Systems