SMPTE 225M-2003
Revision of
ANSI/SMPTE 225M-1996

# SMPTE STANDARD

## for Television Digital Component Recording — 19-mm Type D-1 — Magnetic Tape



## 1 Scope

This standard specifies the principal properties of the magnetic tape used for 19-mm type D-1 television digital component recording.

## 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: 90 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 Video 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.

---





Approved
February 7, 2003

**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 0.8 N.

### 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 the second guide, and 115 mm from the second to the third guide. Edge measurements are averaged over 10-mm lengths and are made at a point 5 mm from the mid-point between the first and second guide which is 52.5 mm from the first guide.

### 3.5 Tape thickness

Use of tapes with various thicknesses is permitted within the following values:

- Nominal 16-µm tape shall have a thickness between 13.5 µm and 16 µm.
- Nominal 13-µm 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 improved metal oxide or equivalent.

**3.8.1** The coating coercivity shall be a class 850 oersted (68,000 A/m). For measurement techniques, refer to IEC Publication 60735.

**3.8.2** The oxide particles shall be longitudinally oriented.

## **Annex A** (informative)
## **Bibliography**

ANSI/SMPTE 226M-1996, Television Digital Recording - 19-mm Tape Cassettes

ANSI/SMPTE 227M-1996, Television Digital Component Recording - 19-mm Type D-1 - Helical Data and Control Records

ANSI/SMPTE 228M-1996, Television Digital Component Recording - 19-mm Type D-1 - Time and Control Code and Cue Records

SMPTE 224M-2003, Television Digital Component Recording - 19-mm Type D-1 - Tape Record

SMPTE EG 10-2003, Tape Transport Geometry Parameters for 19-mm Type D-1 Television Digital Component Recording

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

IEC 60735 (1991-11), Measuring Methods for Video Tape Properties

ITU-R BT. 601-5 (10/95), Studio Encoding Parameters of Digital Television for Standard 4:3 and Wide-Screen 16:9 Aspect Ratios