# ATR Master Tape Specifications

| **Magnetic Characteristics:** | | **Test Notes:** |
|---|---|---|
| Coercivity $H_C$: | 365 Oe, BH | Nominal |
| Retentivity $B_{rs}$ | 1590 Gs | |
| Particle orientation: | Longitudinal | |

**Recording Performance Test Reference:**

| | | |
|---|---|---|
| Recorder model | Ampex-Aria ATR-102 | |
| Record head gap length | 1 mil | |
| Reproduce head gap length | 0.12 mil | |
| Track width | 200 mils nominal | |
| Tape Speed | 30 ips, 76.2 cm/sec | |
| Playback equalization | 17.5 us, AES | |
| Recording bias | 1.4 dB over @ 20 kHz | See Recommended Bias chart below [1] |
| Bias osc. frequency | 438 kHz | |
| Recording Level Reference | 185 nWb/m = 0 VU | Ampex operating level |
| Frequency Pass Band | 20Hz-20Khz | Equivalent wave length of 1.5 inches to 0.0015 mils |

**Recording Performance:**

| | | |
|---|---|---|
| Maximum Output Level<br>1 kHz at 3% 3rd harmonic distortion | 18 dB | |
| Saturation Output Level | | |
| 1 kHz | 23.5 dB | Level at which linearity exceeds 1 dB of input signal |
| 10 kHz | 16.1 dB | |
| 16 kHz | 15.2 dB | |
| Maximum linear operating level | 10 dB | Linear frequency vs output -0.5 dB level through pass band. |

| | | |
|---|---|---|
| 3rd Harmonic Distortion | | 1 kHz fundamental frequency |
| 0 dB - Reference operating level | 0.032 % | |
| +6 dB over operating level | 0.096 % | |
| +10 dB over operating level | 0.28 % | |
| +12 dB over operating level | 0.49 % | |
| Signal to Noise ratio (Bias noise) | -68 dB | ASA , NAB A weighted |
| Peak Dynamic Range | 86 dB | |
| Dynamic range ref to 1% 3rd harmonic distortion | 82 dB | 1 kHz fundamental |
| Linear dynamic range | 78 dB | Range in which frequency / wavelength response is linear ±0.3 dB tolerance |
| Print-through characteristic | -60 dB | 1KHz tone on preceding wrap of tape stored for 24 hours on NAB reel at 72º F |

**Physical Specifications:**

| | | |
|---|---|---|
| Yield Strength | 12 Lbs on ½” | Produces 3% elongation of a 6” test sample |
| Breaking strength | 24 Lbs on ½” | Force that will break a 6” test sample |
| Coating thickness | 0.73 mils | |
| Backcoating | 0.040 mils | |
| Polyester base film | 1.42 mils | |
| Total | 2.28 mils | |
| Standard widths: | | |
| ¼” | 0.246 inches | Tolerance +0.0 / -0.002” |
| ½” | 0.496 inches | |
| 1” | 0.996 inches | |
| 2” | 1.996 inches | |
| Backcoating resistance | ≤ 30K Ohms | Per linear inch by pin probe |
| Oxide coating resistance | >10M Ohms | |

| Bias Current Recommendation[1] | 10 kHz signal, 15 ips | 10 kHz signal, 30 ips |
|---|---|---|
| 1 mil gap length (ATR-Aria) | 1.4 dB | 0.6 dB |
| .5 mil gap length (Ampex) | 3.0 dB | 1.4 dB |
| .25 mil gap length (Studer) | 4.5 dB | 2.0 dB |

[1]Note: ATR Master Tape has a wide acceptable bias current vs. distortion tolerance. The above recommendations are to be used as a guide only.