Technical Data Audio Duplicator Tape

(01) · 04/ 05

Fe Plus 60
Fe Plus 100

The Fe Plus range has been formulated in order to meet the high quality demands in high speed duplication.
Fe Plus 100 provides a playing time of up to 100 minutes in cassette, making it the ideal product for all kinds of music and voice recording.
The tapes continue to uphold our manufacturing tradition of combining good quality performance and consistency.

Audio Duplication

RMG International

Technical Data Fe Plus 60 / Fe Plus 100

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1. Test Conditions

				see note
Environmental conditions		20 5 °C, 60 ± 15 % r.h.		
Tape speed		4,76 cm/s		
Recording head IEC Reference Head	Gap length	4,0 µm		1.1
	Track width	0,6 mm		
Calibration tape According to IEC Publication 94, part 2		120 + 3180 µs		1.2
Reference level		250 nWb/m		1.3
Reference tape Batch		R 723 DG (BASF)		
Bias definition IEC I reference bias		0,0 dB = MOL 4,3 dB		1.4
Bias setting IEC I reference bias	0,0 dB	ΔS6,3	5,0 dB	
Recommended bias	–1,0 dB	ΔS6,3	3,0 dB	1.5

2. Recording Performance Specifications

The table below presents the main parameters both in the IEC-I and the recommended bias settings.

Bias setting		0,0 dB		– 1,0 dB	
MOL_{315}	Maximum output level at 315 Hz	4,0 dB		4,0 dB	2.1
SOL_{10k}	Saturation output level at 10 kHz	– 6,5 dB		– 4,5 dB	
SOL_{14k}	Saturation output level at 14 kHz	– 15,0 dB		– 12,0 dB	2.2
S_{315}	Relative tape sensitivity at 315 Hz	– 0,2 dB		0,0 dB	
	Max. deviations from batch to batch		± 0,5 dB		
$S_{3,15k}$	Relative tape sensitivity at 3,15 kHz	0,0 dB		0,2 dB	
$S_{6,3k}$	Relative tape sensitivity at 6,3 kHz	0,3 dB		0,5 dB	2.3
S_{10k}	Relative tape sensitivity at 10 kHz	0,6 dB		1,0 dB	
	Max. deviations from batch to batch		± 1,0 dB		
S_{14k}	Relative tape sensitivity at 14 kHz	1,0 dB		1,5 dB	
THD_{250}	Third harmonic distortion ratio at 250 nWb/m	0,6 %		0,7 %	2.4
BN_{IEC}	Bias noise level (A-curve, RMS)		– 55,0 dB		2.5
MOL_{315}/BN_{IEC}	Signal to bias noise ratio at 315 Hz		59,0 dB		2.6
SOL_{10k}/BN_{IEC} S	ignal to bias noise ratio at 10 kHz	48,5 dB		0,5 dB	2.7
P	Print through Fe 60		57,0 dB		
	Fe 100		55,0 dB		2.8

3. Magnetic Properties

H_C	Coercivity	30 kA/m	380 Oe	3.1
B_{RS}	Saturation retentivity	165 mT	1650 G	3.2
Φ_{RS}	Remanent saturation flux	740 nWb/m	74 mM/mm	3.3

4. Physical Properties

	Fe Plus 60		**Fe Plus 100**	
Base material		Polyester		
Tape width		3,81 mm		
Tolerances of tape width		+0,00/– 0,05 mm		
Coating thickness		4,5 µm		
Total thickness	16,0 µm		11,5 µm	4.1
Yield strength (F3)		≧5 N		4.2
Breaking strength		≧9 N		4.3
Electrical resistance of magnetic coating		≤4 GΩ		

All data represent nominal values and are subject of change without prior notice due to technical progress.

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The data in this publication are based on test methods of IEC Publication 94, part 4 and 5.

1.1 Measurement method according to IEC 94, using the IEC Reference Heads.

1.2 Playback equalization on the tape testing equipment is aligned to provide a flat frequency response of the output voltage when playing back the frequency response section of the IEC I Calibration Tape 4,76 cm/s, time constants 120+3180 µs.

1.3 The reference level 250nWb/m corresponds to the reference level section of the IEC I Calibration Tape.

1.4 IEC I reference bias definition: Using the IEC Reference Heads and the IEC I Reference Tape, the reference bias is defined as that bias, at which the maximum output level at 315 Hz and 3 % third harmonic distortion (MOL_{315}) equals 4,3 dB relative to reference level (Ref. 1.3).

1.5 Bias setting by means of a recommended sensitivity drop is common practice. Setting the recording level to about 20 dB below reference level (using a signal frequency of 6,3 kHz) the bias current is raised to such an extent that the playback level is reduced to the given value relative to maximum sensitivity.

2.1 MOL_{315}: Maximum output level at 315 Hz relative to reference level (Ref. 1.3), characte-rized by a third harmonic distortion of 3 %.

2.2 SOL_{10k}, SOL_{14k}: Output level at 10 kHz or 14 kHz respectively, at which saturation occurs, relative to reference level (Ref. 1.3).

2.3 S_{315}, $S_{3,15k}$, $S_{6,3k}$, S_{10k}, S_{14k}: Relative tape sensitivities are compared to those of the reference tape. All sensitivities are measured with an audio current, which at 315 Hz produces an output of about 20 dB below reference level (Ref. 1.3).

2.4 THD_{250}: Third harmonic distortion ratio of a 315 Hz signal at reference level (Ref. 1.3).

2.5 BN_{IEC}: The bias noise level is measured after operational erasure and biasing have been applied. Measurement of BNIEC is made using a RMS meter and a weighting network according to curve "A" of IEC Publication 651.

2.6 MOL_{315}/BN_{IEC}: The signal to bias noise ratio results from the addition of the maximum output level at 315 Hz (Ref. 2.1) and the bias noise level BNIEC (Ref. 2.5).

2.7 SOL_{10k}/BN_{IEC}: The signal to bias noise ratio results from the addition of the saturation output level at 10 kHz (Ref. 2.2) and the bias noise level (Ref. 2.5).

2.8 P: Print through is the highest signal level transferred from a reference level recording to an adjacent tape layer after 24 h storage at 20 °C.

3.1 H_C: Coercivity is that strength of a magnetic field under whose influence the magnetization of a tape is reduced to zero after the sample has been magnetised to saturation.

3.2 B_{RS}: Saturation retentivity specifies the remanent magnetic flux, after the tape has been subjected to saturation magnetisation.

3.3 $Ø_{RS}$: Remanent saturation flux is the retentivity multiplied by the coating thickness.

4.1 Thickness: Values given are mean value.
4.2 Yield strength (F3) is defined according to IEC Publication 735 as that force which is necessary to stretch the tape by 3 %.

4.3 Breaking tensile strength is the force to get the breaking point of a tape sample, according to IEC Publication 735.

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