



AMPEX / QUANTEGY / IRISH TAPE TYPES

REVISED LISTING 9/2020



Irish / Ampex / Quantegy and Shamrock / Emerald Reel to Reel Tape list -- Compiled by Scott Dorsey, NASA Langley Research Center

Revised and Expanded specifically for Reel to Reel Tapes as many formulations were missing and descriptions incomplete - Gene Bohensky 9/2020

Shamrock / Emerald Low Cost / Off-Spec Stock

- 011—1.5 mil low cost / rejected NB acetate tape (sold as Shamrock or Emerald) (1960s)
- 021-- 1 mil low cost / rejected NB acetate tape (sold as Shamrock or Emerald) (1960s)
- 031-- 1.5 mil low cost / rejected polyester tape (Was available in 2500' pancakes as well as 7" reels in 1983) – 1960s to 1980s (sold as Shamrock or Emerald)
- 041-- 1 mil version in 7" only - low cost / rejected polyester tape – 1960s to 1980s
 - Note: The 041 was used as the code for Shamrock worldwide, and the formulations sold under this number changed over time. The same code was found on the tabs for Concertape sold by Radio Shack in the 1980s.
- 051-- 0.5 mil low cost / rejected polyester tape – 1960s to 1980s

Effort is currently underway to identify these formulations for archival purposes. Formulations sold under this number changed over time as Ampex's tape production changed. We have identified 7 versions of tape so far:

1: Early generation acetate / mylar tapes are based on the standard (type 1) tapes sold by Ampex in the 1950s through the early 1970s, without back coating. These are still playable and have no sticky shed. You can identify them through their oxide color (brown) and that they have no back coating.

2: Grey oxide tapes based on Low Noise formulations, also without sticky shed or back coating, in 031, 041 and 051 versions. They have been identified as 034, 044, and 054 in some instances.

3: Grey oxide tapes without back coating WITH sticky shed, we did not play or test these tapes but discovered them during processing.

4: Back coated brown-grey oxide tape sold as 041 with a more favorable performance characteristic, but with light sticky shed properties. Some batches might not be sticky. These tapes are identifiable in that they are also partially translucent, like Acetate tapes, although they are not. This formulation was also commonly found in mid-1970s Concertape (with the old style box).

5: Brown oxide tapes with a graphite backing, tape otherwise used for 8-track cartridges. No sticky shed, they can be played without problems, performance is unknown.

6 Back coated master tapes with brown oxide in 031 and 041, especially popular in Europe as they were sold alongside BASF tapes in European department stores through the 1980s. These tapes have a light green or blue box and suffer greatly from sticky shed just like the master tapes do. Sometimes back coating was featured on the packaging.

7: Back coated instrumentation tape sold as 041. This has a shiny grey oxide, and the tape is thinner - you can identify this tape in that it looks like the reel is not filled with tape. This tape suffers from sticky shed. Also, it has a very low output and a strange bias characteristic that made it good for 3-3/4 ips and a noise reduction system at the time. This formulation was commonly found in mid-1980s Concertape.

8: Back coated grey oxide tape sold as 041 with a more favorable performance characteristic, but similar sticky shed properties. These tapes are identifiable in that they almost fill the reel, unlike type 6. They also have a distinctive pungent smell. This formulation was also commonly found in mid-1980s Concertape.

Irish Economy Tapes – 1950s-1960s, brown oxide

- 195 – 1.5 mil Acetate Economy Tape
- 196 – 1.0 mil Acetate Economy Tape
- 197 – 1.0 mil Polyester Economy Tape
- 198 – 0.5 mil Polyester Economy Tape

First Irish Long Play Tapes (1950s)

- 601 – The first 1.0 mil polyester “Standard” Long Play tape to compete with Scotch 150 with the Ferrosheen process
- 602 – The first 1.0 mil acetate “Standard” Long Play tape to compete with Scotch 190 with the Ferrosheen process

First Irish Double Play Tapes (1950s)

- 400 – 0.5 mil Double Play tape

200 Series – Irish brand standard tapes with the Ferrosheen process, brown oxide

- 211-- 1.5 mil Acetate Irish Brand
- 221 – 1.0 mil Acetate Irish Brand
- 231 – 1.5 mil Polyester Irish Brand
- 241 – 1.0 mil Polyester Irish Brand
- 251 – 0.5 mil Polyester Irish Brand, same coating thickness as 231/241

300 Series – Second Generation Ferrosheen tapes, brown oxide, standard bias

- 311—Irish / Ampex standard tape, 1.5 mil acetate (1962)
- 321-- Irish / Ampex standard tape, 1.0 mil acetate (1962)
- 331-- Irish / Ampex standard tape, 1.5 mil polyester (1962)
- 341-- Irish / Ampex standard tape, 1.0 mil polyester (1962)
- 351-- Irish / Ampex standard tape, 0.5 mil polyester (1962)
- 361 – 0.5mil with thinner oxide coating for Ampex’s first TP (Triple play) tape

900 Series – Brown Oxide Ferrosheen tapes, similar to 300 Series, “Collector’s Library”, standard bias

- 911-- 1.5 mil acetate (1962)
- 921-- 1 mil acetate (1962)
- 931-- 1.5 mil NB Mylar 5", 7" (1962)
- 941-- 1.0 mil mylar base version of 931 (1962)
- 951-- 0.5 mil mylar base version of 931 (1962)

400 Series – 1960s “Master” tape, Ferrosheen process, look like 541/641 tapes, relatively rare, standard bias

- 411—Ampex professional master tape, 1.5 mil acetate (1962)
- 421-- Ampex professional master tape, 1.0 mil acetate (1962)
- 431-- Ampex professional master tape, 1.5 mil polyester (1962)
- 441-- Ampex professional master tape, 1.0 mil polyester (1962)

500 Series - Third Generation Ferrosheen tapes - "premium tape for semi-professional and home use" – might be similar or the same as the 300 Series, but includes new “Slow Speed” oxide versions, standard bias

- 511-- 1.5 mil acetate version of 531 (1962)
- 521-- 1 mil acetate version of 531 (1962)
- 531-- 1.5 mil NB Mylar 5", 7" (1962). Red oxide
- 541-- 1.0 mil mylar base version of 531 (1962) Looks like later 641 tape.
- 546-- 1.0 mil mylar base version of 531 (1962) Looks like later 641 tape, “slow speed oxide” optimized for 1-7/8 and 3-3/4 speeds
- 551-- 0.5 mil mylar base version of 531 (1962)
- 556—0.5 mil mylar base version of 531 (1962) Looks like later 641 tape, “slow speed oxide” optimized for 1-7/8 and 3-3/4 speeds

Note: RRW Tests have shown negligible performance differences between the 300, 400, 500 and 900 Series Ferrosheen tapes in terms of noise level, frequency response and bias characteristics, except for the slow speed oxide tapes. The 600 Series appears to require a slightly higher bias and offers better extended frequency response by a few dB. All of these should be considered “Standard” oxide tapes.

600 Series – Last generation brown oxide Ferrosheen tapes, higher s/n ratio compared with Series 500 tapes (1963-1990s), standard bias

- 611-- 1.5 mil brown oxide acetate (7" samples dated to 1963-1971)
- 621-- 1 mil version of 611
- 631-- 1.5 mil non-backcoated "red oxide" audio tape (185 nW/m)
- 641-- 1 mil version of 631 (1960s-present)
- 651-- 0.5 mil version of 641 with the same oxide coating as 631/641
- 661-- 0.5 mil version of 641 with thinner oxide (1968-present) (cassette or 1/4)
- 671-- 0.75 mil LNER non-backcoated extended-length tape (cassette or 1/4) with a thinner oxide coating optimized for slower speeds

Other Tapes

- 292-- 1.0 mil polyester 1/4" audio backcoated on 7" reel, black oxide.
- 300 – Irish Sound Plate 1.5 mil Deluxe tape (1950s)
- 301-- General purpose audio NB tape available on reel or cassette (1968-?)
- 304-- Tape optimized for low speed logging use (1968-?)
- 401-- 1.5 mil mastering tape.... probably pre-1965

Grand Master / Back Coated tapes, brown oxide

- 356 – 1.5 mil Grand Master tape (forerunner to 456) – Sticky Shed Candidate
- 357 – 1.0 mil Grand Master tape (forerunner to 457) – Sticky Shed Candidate
- 372-- Ampex 406 on 7" reels for consumer use (mid/late 70s), 1.5 mil "20-20 series" – Sticky Shed Candidate
- 373—Ampex 407 on 7" reels for consumer use (mid/late 70s), 1.0 mil "20-20 series" – Sticky Shed Candidate

300/400 Series Low Noise Tapes

- 342-- 1.5 mil "Plus Series" NB consumer 1/4" tape, grey oxide (185 nWb/m) (1970s-1980s)
- 344-- 1 mil PE, low noise, grey oxide 1/4" tape. (available in 1973)
- 345-- 1.5 mil red oxide tape (recommended for B&K 7004 recorder) (av in 1976)
- 404-- low-noise NB mastering tape (1965-?)
- 434-- 1.5 mil non-backcoated high-output brown-oxide consumer tape (1960s)
- 444-- 1 mil version of 434

400 Series Grand Master / Back Coated High Output tapes, brown oxide

- 406-- 1.5 mil mastering tape (260 nWb/m), brown oxide, backcoated – Sticky Shed Candidate
- 407-- 1 mil version of 406 brown oxide, backcoated – Sticky Shed Candidate
- 408-- 406 wound slightly differently for Nagra recorders. (Intro 1997) – Sticky Shed Candidate
- 456-- 1.5 mil mastering tape (370 nWb/m) – Sticky Shed Candidate
- 457-- 1 mil version of 456 (available only in 7" 1/4" reel) – Sticky Shed Candidate
- 478-- 1.5 mil low-print mastering tape (250 nWb/m)
- 480-- 1.5 mil Quantegy equiv. of 3M 908, modified 478 coat w/ smoother B (1997) for Nagra
- 499 – Ultra High Output mastering tape, 1.5 mil.
- GP9-- 1/2", and 2" backcoated 320 nW/m high output mastering tape (1998)

- 467-- U-Matic oxide tape for digital audio, now called DAU (1998)
- 467-- oxide 1/4" NAGRA-D, 1" for Pro-Digit, 1/2" for DASH tape for digital audio

Low Noise High Output Series (1980s-early 2000s)

- 632-- 1.5 mil non-backcoated "brown oxide" Low Noise High Output tape (185 nW/m)
- 642-- 1 mil equivalent of 632
- 652 – 0.5mil equivalent to 632, same oxide coating as 642.
- 642 was private labeled for Radio Shack during the 1990s as their sole reel to reel tape

700 Series – Instrumentation and Logging Tape

- 700-- 1 mil NB low speed logging with very thick coating (1978)
- 701-- 1 mil NB low speed logging tape (replaced by 704) (1978)
- 702-- 1 mil backcoated tape with same coating as 701 (1978)
- 703-- 0.5 mil version of 702 (1978)
- 704-- 1 mil non-backcoated low speed logging tape

705-- 1 mil backcoated low speed logging tape (same coating as 704)
706-- 0.5 mil backcoated low speed logging tape (same coating as 704)
721-- 1 mil Digital PCM instrumentation tape (cobalt)
722-- 0.8 mil Double Density digital PCM instrumentation tape (cobalt)

724 – 0.5 mil fortified double play

756-- 1 mil Intermediate band NB instrumentation- replaced by 766 in 1984
760-- Wideband instrumentation tape, NB (1966)
761-- 1 mil standard coat 1" or 1/2" NB low band FM instrumentation (1965)
762-- 1 mil thin coating 1" or 1/2" NB low band FM instrumentation (1965)
763-- 1.5 mil standard coat 1" or 1/2" NB low band FM instrumentation (1965)
764-- 1.5 mil thin coating 1" or 1/2" NB low band FM instrumentation (1965)
766-- 1 mil Intermediate band NB instrumentation- replaced by 767 in 1986
767-- 1 mil Intermediate band instrumentation tape
770-- Wideband instrumentation tape, NB (1966)
771-- Tape for FR-1800 instrumentation recorder (1965)
775-- 2" transverse scan instrumentation tape (probably selected 175)
782-- 1 mil wideband NB instrument tape (1972 or so) (replaced by 787)
786-- 1 mil NB High Resolution (1978)
787-- 1 mil backcoated High Resolution (1978) (replaced by 797)
795-- High Resolution (intermediate band with low drop-outs) instrumentation
79A-- Variant of 797 made for government use only
797-- 1 mil wideband instrumentation tape
799-- 1 mil High bit density digital PCM tape

8206-- 1 mil backcoated low speed logging tape (a 3M design), similar to 705.

638-- Empty 7" 1/4" accessory reel (not tape)

Notes:

Note that many instrumentation tapes come on rugged Precision reels rather than normal NAB reels; they will fit on the same hubs but you cannot exchange flanges.

LNER= Low Noise Extended Range

LNHO= Low Noise High Output

NB= Non-Backcoated

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Sept. 1963: "'A' and 'B' oxide instrumentation tapes, two new heavy duty tapes offering higher performance and longer life than

previously available Ampex tapes, offered at standard prices."

July 1965: "Ampex 770 series tapes for extended bandwidth instrumentation recording."

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