

SMPTE RECOMMENDED PRACTICE

RP 48-1999

Revision of RP 48-1995

Lubrication of 16- and 8-mm Motion-Picture Prints



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1 Scope

This practice recognizes that surface treatment of 16- and 8-mm motion-picture prints to reduce the film surface friction coefficient is needed to promote good projection performance. The use of such treatment should result in increased steadiness, reduction of noise in the projector gate, and less tendency toward perforation damage during projection.

2 Specifications

2.1 Some type of lubricant or treatment to reduce the film surface friction coefficient should be applied to the full width of the film on both the emulsion and support sides prior to the first projection.

2.2 Unless directed toward specific uses, as noted in 2.3, the lubricant or treatment should be removable by certain film-cleaning operations. If removed, the film should be relubricated or retreated prior to the next projection.

2.3 For specific types of projection equipment, particularly where cartridges or endless loops of film are involved, the manufacturer may

recommend or require special methods, lubricants, or treatments especially suited to that equipment. In such cases, it is suggested that any nonrecommended lubricant or treatment which may be on the film be removed prior to application of the special lubricant or treatment.

2.4 The lubricant and solvent used should have no adverse effect on the film, and should be effective in prolonging the projection life of the print. Mineral oils (motor oil, projector oil) may dissolve and leach out the oil-soluble dyes in the film, and should not be used. Nonvolatile oils (mineral or silicone) may cause mottle or undesirable sticking together of the film surfaces, which may cause dirt particles to adhere to the film. Some materials may attack the film base or emulsion, or have an adverse effect on image stability or projection life. Avoid using solvents that are flammable or explosive, or that pose a health or environmental hazard (e.g., benzene or carbon tetrachloride).

3 Measurement

The method of measurement of the degree of lubrication shall be in accordance with ANSI/NAPM IT9.4.

Annex A (informative) Lubrication

The coefficient of friction measured as specified in ANSI/NAPM IT9.4 does not necessarily correlate with actual projection life. To determine the efficiency of the lubricant, projection life (wear and tear) tests are recommended.

Overall lubrication of the film must be restricted to amounts of lubricant below the limit at which mottle, streaks, and other coating defects become visible upon projection. Film

treatment by lubrication should not interfere with the normal projection properties of the film.

Projection performance of processed motion-picture film is improved by lubrication when the coefficient of friction is controlled within the range that gives steady reproducible positioning of successive frames with the least strain on the perforations. Printer effectiveness can also be improved by

lubricating the negative to facilitate a constant pitch relationship to the raw stock, and to minimize minor abrasions.

The tutorial paper by Frederick J. Kolb, Jr. and Edward M. Weigel, "Lubrication of Motion-Picture Film," published in

the April 1965 issue of the Journal of the SMPTE (vol. 74; pp. 297-307), reviews the pertinent background, examines the processes and materials for lubrication, and describes several procedures or proven effectiveness.

Annex B (informative)

Bibliography

ANSI/NAPM IT9.4-1993 (R1996), Imaging Materials — Processed Films — Method for Determining Lubrication