**All articles classified with the following 2 designations:**

Source Community:

1. Archivists
2. Conservators
3. Chemists and Polymer Scientists
4. Historians (film historians and chemistry/polymer science historians)
5. Film Industry Practitioners
    a. Film Stock Manufacturers
    b. Lab Technicians
    c. Projectionists/Theater Managers
6. Safety or Standards Organizations
7. Government Agencies
8. General Public

Source type:

1. Peer reviewed or academic article
2. Historical overview/account
3. Literature review
4. Anecdote
5. Popular Press article
6. Email or forum posting
7. Website
8. Conference proceedings
9. Trade article
10. Practitioner handbook
11. Safety standards
12. Government Publication

**All articles classified with following designations as applicable:**

Type of cellulose nitrate:

1. Pyroxylin
2. Xylonite/Ivoride/Parkesine
3. Collodion
4. Cellulose nitrate film stock
    a. Moving image film
    b. Sheet film
    c. X-Ray film
5. Cellulose nitrate object
6. Cellulose nitrate adhesive
7. Cellulose nitrate lacquer
8. Cellulose nitrate spray paint

Nitration Level:

1. Mention/discussion of nitration level

2. Connection between nitration level and flammability
3. Connection between nitration level and decomposition

Plasticizers:

1. Type of plasticizer
    a. Camphor
    b. Phthalate
    c. Phosphate ester
    d. Other (glycerol, caster oil)
2. Plasticizers and flammability
3. Loss of plasticizer
4. Retention of plasticizer

Film Processing/Handling:

1. Production of film stock
2. Development
    a. Metol (Elon, Rhodol)
    b. Borax
    c. Edinol
    d. Glycin
    e. Hydroquinone
    f. Ortol
    g. Phenidone
    h. Pyro
    i. Rodinal
    j. Serchol
3. Hardeners
4. Stop Bath
    a. Chromium potassium sulfate (chrome alum)
    b. Potassium alum
5. Fixing
    a. Sodium thiosulfite (“Hypo”)
    b. Ammonium thiosulfate
    c. Borax
    d. Glycerin
6. Washing
7. Drying
8. Post-development treatment
    a. Glycerin bath
    b. Waxing
    c. Lacquering
    d. Waterproofing
    e. Cleaning
9. Sepia Toning
10. Tinting/toning color process
11. Metallic Toning process

12. Damage to film during processing
13. Damage to film during use

Film Fires

1. Unspecified/minor fires
2. Bazar de la Charite Fair, Paris, 1897
3. Market Place, Bilston, Stafford, UK, 1898
4. Ferguson Building, Pittsburgh PA, 1909
5. Thanhouser, New Rochelle NY, 1913
6. Lubinville Studio, Philadelphia PA, 1914
7. Edison Factory, West Orange NJ, 1914
8. Inceville, Santa Monica CA, 1916
9. *SS Duilio*, Atlantic Ocean, 1928
10. Cleveland Clinic, Cleveland OH, 1929
11. Consolidated Film Industries, Hollywood CA, 1929
12. Glen Cinema, Paisley, Scotland, UK, 1929
13. Basement Laboratory, Salt Lake City, UT, 1929
14. University of California Hospital, San Francisco CA, 1930
15. Esmeralda Theater, Talcahuano, Chile, 1932
16. Warner Bros. Studio, Burbank CA 1934
17. Fox Film Corp, Little Ferry NJ, 1937
18. New York/New Jersey Area, 1949
19. Cinematheque Francaise, Paris, 1959
20. National Film Board of Canada, Beaconsfield, Quebec, 1967
21. National Archives, Suitland, MD, 1977
22. George Eastman House, Rochester NY, 1978
23. National Archives, Suitland, MD, 1978
24. Cinematheque Francaise, Le Pontel, Villiers Saint-Frederic, 1980
25. New York Historical Society, New York City, 2003

Chemical Study Parameters:

1. CN sample recast
2. CN sample tested intact
3. CN sample produced for study
4. Emulsion removed
5. Emulsion intact
6. Plasticizer removed
7. Plasticizer included
8. Film sample “stabilized” with something like Tris-stuff
9. Non-film CN product studied
10. Acetate film studied

Analytical Techniques Used:

1. Fluorescence
2. X-Ray fluorescence spectroscopy
3. Gas Chromatography

4. Aqueous Extraction
5. Aqueous Extract of Emulsion
6. Emulsion flow/melting point
7. Molecular Weight
8. Solubility of Base
9. Mechanical/Tensile Strength
10. Scratch resistance / scratch testing
11. pH Changes
12. IR or FTIR
13. UV or UV-Vis
14. Colorimetry
15. NMR (Nuclear Magnetic Resonance)
16. Thermomechanical Analysis
17. TGA (Thermogravimetric Analysis)
18. Gravimetric analysis
19. Dynamic Mechanical Analysis
20. Accelerated Aging
21. Ion Chromatography
22. Gel permeation chromatography
23. Elemental Analysis or Combustion Analysis
24. ICP (Inductively Coupled Plasma Spectroscopy)
25. AA (Atomic Absorption) or AE (Atomic Emission) Spectroscopy
26. Profilometry
27. Optical Densitometry
28. XPS (X-ray Photoelectron Spectroscopy) or Auger Spectroscopy
29. Density of Image Measured
30. Visual Examination
31. Microscopy (light, optical, polarized light, etc.)
32. X-Ray Diffraction
33. Viscometry
34. Testing for Residual Hypo (mercuric chloride)
35. Ashing

Mechanisms for decomposition:

1. O-N cleavage or nitrate ester hydrolysis
2. Chain scission (chain breaking at the C-O-C bonds)
3. Ring disintegration
4. Autocatalytic
5. Reactions involving NO, $NO_2$ or $HNO_3$
6. Secondary decomposition involving UV
7. Underlying cause unknown

Variables affecting decomposition: **(tag to indicate whether degradation theory is linked or not linked to the idea that decomposition of the film leads to combustion)**

1. Acids
2. Alkalis

3. Temperature
4. Relative humidity
5. Light
6. Age
7. Storage containers
    a. Iron catalyzes decomposition
    b. Vented
    c. Not vented
8. Physical damage
    a. Abrasion
    b. Overuse
    c. Changes in sorption behavior
    d. Biological degradation (mold or bacterial growth)
9. Product manufacturing
    a. Inadequate removal of sulfuric acid
    b. Inadequate removal of hypo
    c. Addition of basic stabilizers
    d. Addition of other stabilizers (neutral, antioxidants, etc.)
    e. Presence of dyes or fillers
10. Interactions between emulsion and base
    a. Physical integrity of emulsion
    b. Image density
    c. Gelatin
    d. Base decay as primary trigger
    e. Emulsion as primary trigger
    f. Emulsion and abrasion

Variables affecting combustibility

1. Decomposition
    a. Direct correlation
        i. Linear
        ii. Non-linear
    b. Inverse correlation
        i. Linear
        ii. Non-linear
2. Nitration level
    a. Direct correlation
    b. Inverse correlation
3. Relative Humidity
    a. Direct correlation
    b. Inverse correlation
4. Temperature

Brown powder stage

1. Most dangerous
2. Shock-sensitive

3. Inert

Release of Gases

1. Build up of gases creates explosion hazard
2. Trapped gases catalyze decomposition
3. Effect of heat on production of gases
4. Respiratory hazard
5. Composition of gases
6. Explosive nature of gases generally

Public relations

1. Emphasizes risk
2. Deemphasizes risk