

# ABOUT CELLULOSE NITRATE FILM



## **When was cellulose nitrate film, often referred to as nitrate film, in use?**

From 1895 to the early 1950s all commercially available 35mm film and some 16mm film, still negatives and X-ray films were all made from cellulose nitrate. The last stocks of nitrate film in Britain were used up by the mid-1950s although it is just possible that some were in use even after this date.

## **Why is it dangerous?**

One of the characteristics of cellulose nitrate is that it is an unstable compound which is highly inflammable. If nitrate film catches fire it burns extremely quickly. The fire is not only difficult to extinguish but the smoke it produces is toxic and contains poisonous gases. Once lit a piece of nitrate can continue to produce these gases even under water. The smoke itself can also spontaneously combust producing a very destructive fire of intense heat.

## **How should nitrate film be stored?**

Nitrate film should be kept cool and away from any heat source. It is important to keep it in a well-ventilated area away from human habitation and away from any easily flammable materials.

## **How do I identify a film as nitrate?**

A silent film is almost certainly nitrate. Amateur 16mm and 8mm films are almost certain to be safety film.

Sound films may have a hyphen after the fourth sprocket hole on each frame and often the words NITRATE FILM, NITRATE or simply the letter N along the edge of the film.

Always treat any unidentified film as if it were nitrate to avoid getting into difficulties.

## **What are the signs of decay in a nitrate film?**

The first signs of decomposition are a yellowish colour change of the film with image fading. This is followed by a change in texture of the film with it becoming sticky to the touch and going soft. At this stage it may still be possible, with great care, to make a preservation copy. Blistering or bubbling on the surface of the film is followed by a pronounced chemical odour which may be mildly irritating or extremely acrid. The final stage of decomposition is when the film changes into a brittle residue, unrecognisable as film.

### **How does the BFI look after its nitrate films?**

The majority of the BFI National Archive's nitrate holdings are stored in small bunkers under climatically controlled conditions. The BFI has storage and preservation facilities in Hertfordshire and Warwickshire. We are currently developing new storage as part of the Screen Heritage UK project. The stored film will benefit from a sub-zero and low humidity environment which will keep nitrate film in good condition potentially for hundreds of years.

### **Why are the cinemas at BFI Southbank the only public venue licenced to screen nitrate film?**

The projection boxes are specially adapted to ensure that a full range of precautionary measures are in place to enable us to screen nitrate film. Our projectionists are trained in handling nitrate film and if a fire should break out, metal shutters and fire extinguishers can be activated within seconds to ensure that the fire is contained and put out with minimum damage.

### **Why does the BFI retain nitrate prints and negatives?**

Looking after nitrate film elements is essential for preserving our film heritage. The high quality of many recent restorations such as Powell and Pressburger's *The Red Shoes* and Anthony Asquith's *Underground* – was only possible due to access to the nitrate materials held by the BFI. Nitrate gives us the opportunity to get closest to the original elements created for films made before c. 1951 – to achieve the best possible picture we want to avoid materials that have been repeatedly duplicated. We do not currently know the long term viability of digitised film materials, so cannot rely up them as the major preservation format for titles shot on film.

### **What was burned at BFI Southbank today?**

The piece of film burned at was a nitrate print of a Ministry of Information film called *The Nose Has It* (1942). Disposal was signed off after it was compared to all other existing copies due to the poor condition of the print, which was riddled with punch holes, heavy scratches and other damage. Disposal only takes place once we are sure that we hold other nitrate materials that are (i) in better condition throughout and (ii) more complete. The BFI National Archive retains several other much better and more complete nitrate materials for *The Nose Has It* – including the nitrate negatives - which means that this film is preserved for the nation.

### **What should I do if I think I have a nitrate film?**

It is not recommended that any individual should keep their own nitrate films given the dangers that they can present in a domestic environment.

Contact the BFI National Archive or your local archive to discuss whether this is material that these organisations would be interested in accepting.

The Health and Safety Executive, whose work on cellulose nitrate has informed this note, recommend that on no account should nitrate film be sent by post, carried on public transport or disposed of as refuse. For further information see the HSE leaflet *The dangers of cellulose nitrate film*.