

The info comes from a tube manufacturer service bulletin (Ken-Rad?, Raytheon?) in the 1940's.

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Glow In Radio Tubes

The Phenomena of gas ionization within a radio tubes has always been the subject of discussion and interest, among all who are familiar with radio tubes. It is a well known fact that certain types of tubes are more apt to show a slight blue glow between the internal elements than to other tubes, the reason being, in some cases, due to the material employed within the tubes, which allows the phenomena to be observed more readily. However, such materials do not mean inferiority because of this inherent characteristic. Another condition of gas ionization might be caused by an inert gas due to a chemical reaction between the "getter" and another agent, manifesting itself by a glow between those elements farthest from the filament or cathode. Other types of glow are classified as fluorescent, mercury vapor base and gas.

The fluorescent glow is usually violet in color and is noticeable around the inside surface of the glass bulb. This glow is a phenomenon caused by electronic bombardment taking place within the tube, and changes in intensity with that of the signal. It may at times be quite brilliant. Fluorescent glow has absolutely no effect on the operation of the tube. In fact, tubes with this characteristic are particularly good as regards gas content.

Mercury vapor haze is a blue glow which is noticeable between plate and filament in mercury vapor rectifier tubes, the perfect operation of which is dependent upon a mercury vapor that has been placed in the bulb during the exhaust period. Therefore this kind of blue haze is in no way detrimental to the operation of these tubes.

Naturally, we are prone to believe that tubes which show a glow within their elements are apt to be of inferior quality and do not represent the present day high standard of manufacture which has been attained within the industry. Nevertheless, there are marked distinctions between those tubes which are actually defective and those which are inclined to possess such a phenomena as explained above. The defective can invariably be detected by a pinkish-blue or extremely pale-blue color, which is generally visible throughout the entire tube or in some cases, between the filament and plate. Its presence, when of large content, affected the performance of the tube to the extent that erratic performance is noticeable. Gassy tubes should always be replaced with new tubes. Many tubes that show a distinct blue or violet color, which generally appears very close to the plate in most types of tubes and confines itself within a definite region, are perfectly good tubes for circuits in which they are designed to operate.

When in doubt as to the glow content of tubes, a sure test can be made by bringing a magnet close to the bulb. A gassy tube will not be affected, while the fluorescent glow which has no effect on the operation of the tube will shift about as the magnetic field is moved.

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