

Abstract Submitted  
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**Electrical Conduction at High Fields**<sup>1</sup> ANIL KUMAR SINHA<sup>2</sup>,  
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PRASOON TEAM — The study of electrical conduction mechanism under high  
D.C. electric fields of the order of  $10^5$  volt/meter and above in the sheet of insu-  
lating glass of thickness 1.00mm was carried out at room temperature(22.5°C) The  
conduction process was ohmic at low D.C. electric fields but as the field strength  
increased the conductivity became field dependent and at high fields it exhibited  
some conductivity and variation in conduction current was non-ohmic. The current-  
voltage(I-V) characterstic showed the non-ohmic behavior in sample started at an  
electric fields  $7.5 \times 10^5$  volt/meter. The log I-log V characterstic obtained two slopes in  
ratio 1:2(One and square) of values 1.13 and 1.74. The observed slopes in log I-log V  
characterstic suggested that the space charge limited conduction was operative. The  
current density and running temperature ranging from 40°C to 100°C(log  $\sigma$ -log  $1/T$   
characterstic) at fixed voltage 1500 volt. The value of activation energy was calcu-  
lated from obtained slope and which was found to be 0.231 eV, i.e. much less than  
1 eV. This suggested the predominance of Electronic Conduction.

<sup>1</sup>Conduction Mechanism

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