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Index at acceptance—68D [LVII(3)].

PROVISIONAL SPECIFICATION

NON-LINEAR DISCS FOR USE IN LIGHTNING ARRESTER/SURGE DIVERTERS.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTRATION BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification describes the nature of this invention.

This is an invention by :

1. Dr. Michael Angelo Vincent Devanathan, Scientist, Central Electrochemical Research Institute, Karaikudi 3 (Madras State) (Citizen of Ceylon).
2. Shri Venkatachari Rengachari, Senior Scientific Assistant, Central Electrochemical Research Institute, Karaikudi 3 (Madras State) (Citizen of India).
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4. Prof. Kadarunkalige Siarama Gururaja Doss, Director, Central Electrochemical Research Institute, Karaikudi 3 (Madras State) (Citizen of India).
5. Shri John Paul Nityanandan, Senior Scientific Assistant, Central Electrochemical Research Institute, Karaikudi 3 (Madras State) (Citizen of India).

This invention relates to improvements in or relating to Lightning Arresters/Surge Diverters.

Hitherto it has been customary to use Silicon Carbide for making the non-linear type lightning arrester discs and surge diverters. This has several disadvantages such as

- (i) only a special grade of silicon carbide is useful for this purpose;
- (ii) at present large scale production of silicon carbide in India is not known and therefore the material is to be imported;

(iii) the processing conditions are severe involving high temperature and high pressure treatments

and (iv) the cost of the material is comparatively very high.

The present invention broadly consists in replacing silicon carbide by ilmenite material which is available naturally, abundantly in India and is very cheap.

The following examples illustrate the nature of the invention :

The non-linear type lightning arrester discs are made by mixing ilmenite of suitable mesh sizes, with a calculated quantity of binder of suitable composition and form, pressed into blocks of specified sizes and then heat treated in furnaces at a temperature of not exceeding 1000°C. for a time not exceeding about 2-3 hours.

The cured samples are metalised on the conducting surfaces by the well-known spraying method.

The main advantages of this invention are :

1. Ilmenite is comparatively very cheap and easily available to any large desired quantity.
2. The processing conditions by this method are very easy and possible even in small workshops.

R. BHASKAR PAI

PATENTS OFFICER,

Council of Scientific & Industrial Research.

Dated this 26th day of October 1966.

COMPLETE SPECIFICATION.

NON-LINEAR DISCS FOR USE IN LIGHTNING ARRESTER/SURGE DIVERTERS.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTRATION BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed.

THIS IS AN INVENTION BY DR. MICHAEL ANGELO VINCENT DEVANATHAN, SCIENTIST (CITIZEN OF CEYLON), VENKATACHARI RENGACHARI, SENIOR SCIENTIFIC ASSISTANT (CITIZEN OF INDIA), RENGASWAMY RADHAKRISHNAN, ELECTRICAL AND MECHANICAL ENGINEER (CITIZEN OF INDIA), PROF. KADARUNKALIGE SITARAMA GURURAJA DOSS, DIRECTOR (CITIZEN OF INDIA) AND JOHAN PAUL NITYANANDAN, SENIOR SCIENTIFIC ASSISTANT (CITIZEN OF INDIA), ALL OF THE CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE, KARAUKUDI-3 (MADRAS STATE), INDIA.

This invention relates to improvements in or relating to lightning arresters/surge diverters.

Hitherto it has been customary to use silicon carbide for making the non-linear type lightning arrester discs and surge diverters. This has several disadvantages.

(i) Only a special grade of silicon carbide is useful for this purpose; (ii) At present large scale production of silicon carbide in India is not known. The material or the components are at present being imported; (iii) Processing conditions utilising silicon carbide as raw material are severe, involving high temperature and high pressure treatments; and (iv) The cost of the product is rendered high.

The main object of this invention lies in substituting silicon carbide by a cheaply, abundantly and naturally

available indigenous material, ilmenite, in the production of lightning arrester discs/surge diverters.

According to the present invention, non-linear discs for use in lightning arrester/surge diverters comprising metal sprayed flat discs comprising a raw material and a binder are characterised in that the raw material consists of naturally occurring ilmenite.

The invention includes a process for making non-linear discs by mixing ilmenite particles with binder, pressing into blocks, and heat treating in a furnace at a temperature not exceeding 1000°C. for 3 hours or less.

A binder such as kaolin, sodium silicates, plaster of Paris, kieselguhr or the like, either alone or mixed with one another is used.

Price : TWO RUPEES.

The invention includes within its scope the invented non-linear discs when used in a lightning arrester/surge diverters.

Thus, naturally occurring ilmenite is proved a suitable material for the production of non-linear lightning arresters and surge diverters. Whereas this process comprises of an operation in common with the older processes, namely the metal spraying of the flat surfaces of the finished products for the purpose of making good electrical contacts, all other factors such as the utilization of a new raw material, binder, composition and the mode and technique of production are all entirely new and different.

The non-linear type lightning arrester discs are made by mixing ilmenite of suitable particle size with a calculated amount of binder of suitable composition and form, pressed into blocks of specified sizes and then heat treated in furnace at a temperature not exceeding 1000°C. for three hours or less. Among the inorganic binders suggested are kaolin, sodium silicates, plaster of paris, keisulghur, etc. either alone or mixed with one another. The composition and processing conditions depend on particle size type and size of disc produced. Particle size used may vary between 40 and 180 mesh and the typical binder composition as 5 to 10 per cent. sodium silicate or 5-13 per cent. plaster of paris, with or without 0.5 to 1 per cent keisulghur or kaolin. The pressure applied varies from 5-60 tons per square inch and the curing temperature does not exceed 1000°C. for a period less than three hours. The cured samples are metal sprayed on the flat surfaces by metal spraying gun.

The main advantage of the invention are :

(i) Utilisation of indigenously, abundantly and cheaply available ilmenite occurring as raw material

with or without further treatment ; (ii) The processing conditions are less severe, very cheap and using less expensive equipment ; (iii) The binders are also available in plenty and variety and cheap.

We claim :

1. Non-linear discs for use in lightning arrester/surge diverters comprising metal sprayed flat discs comprising a raw material and a binder characterised in that the raw material consists of naturally occurring ilmenite.

2. A process for making the non-linear discs claimed in Claim 1 which consists in mixing ilmenite particles with binder, pressing into blocks, and heat treating in a furnace at a temperature not exceeding 1000°C. for 3 hours or less.

3. A process as claimed in Claim 2 wherein a binder such as kaolin, sodium silicates, plaster of paris, keisulghur or the like, either alone or mixed with one another is used.

4. Non-linear discs as claimed in Claim 1 when used in a lightning arrester/surge diverters.

5. A process for making non-linear discs for use in lightning arrester, surge diverters substantially as hereinbefore described.

R. BHASKAR PAI,

PATENTS OFFICER,

Council of Scientific & Industrial Research.

Dated this 2nd day of September, 1967.