United States Patent Office 2,882,184
Patented Apr. 14, 1959



2,882,184

# PARAFFINIC ANTI-CORROSIVE COATINGS IN THE FORM OF A STRIP OR TAPE

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No Drawing. Application January 17, 1955
Serial No. 482,421

2 Claims. (Cl. 117—122)

My present invention relates to a paraffinic anticorrosive coating in the form of a strip or tape comprising a strip- or tape-shaped core of polyethylene or other similar synthetic macromolecular paraffin hydrocarbon of high molecular weight e.g. having a molecular weight between 500 and 30,000, preferably between 8000 and 20,000, said core having on at least one side a layer consisting of a solution of the hydrocarbon of high molecular weight in a paraffin hydrocarbon of lower molecular weight than the particular polyethylene or other similar synthetic macromolecular paraffin hydrocarbon used.

This application is a continuation-in-part of application 222,751, filed April 25, 1951, now U.S. Patent 2,702,256.

It is an object of this invention to avoid completely the drawbacks of cellulosic carriers or of carriers having a basis of cellulose derivatives, while retaining the advantages of using solid or semi-solid, saturated hydrocarbons, which latter are perfect protecting agents, and to provide a wholly paraffinic cold-applied coating in the shape of a strip or tape, which shape is extremely convenient as it allows of easy application to any type or surface, such as pipes, shaped members and the like.

All solid or semi-solid paraffin hydrocarbons are suitable.

These hydrocarbons may include both crude products, which may include traces of unsaturated compounds, and also refined products.

Hydrocarbons of so-called "protoparaffin" type can also be employed. In fact in crude petroleum the paraffin wax is in an amorphous state known under the name of "Protoparaffin." This protoparaffin is transformed into pyroparaffin or crystalline wax by the action of high temperatures (see Bulletin No. 25, Kansas City Testing Laboratory—Roy Cross, Handbook of Petrolatum, Asphalt and Natural Gas).

The invention takes advantage of the property of polyethylene or other similar synthetic macromolecular paraffin hydrocarbons of high molecular weight of being capable, without any intermediate carrier, of being applied to the surface to be protected and of forming thereon a coat adapted to retain the shape given to it, even when submitted to certain mechanical stresses (which is not the case with paraffin hydrocarbons of comparatively low molecular weight), and of the adhesive properties possessed by solid or semi-solid paraffin hydrocarbons, but not possessed by polyethylene or other similar synthetic macromolecular paraffin hydrocarbons of high molecular weight.

The expressions "synthetic paraffin hydrocarbon of high molecular weight" and "high synthetic paraffinic polymers" are intended to cover synthetically produced hydrocarbons of the general structural formula

$$CH_3(CH_2)_nCH=CH_2$$

with probably a double link at the end of each molecular chain.

Synthetic products of this type are manufactured at



the present time by polymerisation of ethylene under high pressure, and they are generally defined as "polyethylenes"; these are sold under various trade names in different forms, such as granules, moulding powders or moulded bodies and films. Polyethylenes are an example of the synthetic paraffin hydrocarbons which can be employed in carrying out the invention, but other synthetic paraffin hydrocarbons can be employed.

The polyethylene has a wide scale of molecular weights from 500 to 30,000 but for the embodiment of the present invention use is made preferably of molecules of median molecular weights.

However polyethylene existing in the commerce contains fractions the molecular weight of which varies from 500 to 30,000. For instance a product the median molecular weight of which is 14,000 contains 0.5 to 5% of molecules having a median molecular weight of 1,000.

Whilst the fractions of median molecular weight=14,000 are insoluble at cold state in the hydrocarbons, the fractions of median molecular weight=1,000 are soluble at cold state in the same hydrocarbons.

If a film of polyethylene is put into contact on both sides with hydrocarbons obtained from the distillation of petroleum (mineral oils, petrolatum, Vaseline) it will be observed that at the ambient temperature (15° C.–20° C.) polyethylene will slowly absorb the petrolatum or Vaseline oils because the fractions of low molecular weight (=1,000) are responsive or sensitive to the action of said products. The absorption will stop when an equilibrium of circa 5% will be reached.

When it is operated at a higher temperature (60° C. and more) the molecules of higher molecular weight will be dissolved into the components with which they are put into contact. The high polymer will collaborate with a better efficiency to the formation of a continuous coating: Polyethylene—solution of polyethylene into hydrocarbons—hydrocarbons.

In the first case the continuous coating is obtained during a slow absorption.

In the second case the coating is formed in a few seconds and in more distinct manner.

The coating making the subject matter of the invention may be obtained:

(*a*) By rolling at cold state or at 60° C. of a paraffinic hydrocarbon (petrolatum, Vaseline, etc.) on a film of polyethylene. The continuity of the coating will be obtained only after some hours (absorption, f.i. 0.2% per hour).

In some cases, no continuity will be obtained.

(*b*) By causing the polyethylene film to pass through a bath of paraffinic hydrocarbons melted above 60° C.

In this case, the continuity of the coating is obtained in a direct manner.

For instance a strip made of polyethylene having a molecular weight of 12,000 to 14,000 and of hydrocarbon having a molecular weight of 350 to 400 has acted very satisfactorily as cold applied anti-corrosive coating agent.

What I claim is:

1. An adhesive tape adapted for use as an anti-corrosive cold state coating on metallic objects comprising a base layer of a synthetic paraffinic hydrocarbon of the general formula $CH_3(CH_2)_nCH=CH_2$ and having a molecular weight between 8,000 and 20,000, and a second layer of a paraffinic hydrocarbon of lower molecular weight and having adhesive properties, said base and second layers being united by dissolution to form a continuous coating having an inter-layer zone in which the base layer is dissolved into the second layer.

2. An adhesive tape adapted for use as an anti-corrosive cold state coating on metallic objects comprising a

base layer of polyethylene having a molecular weight between 12,000 and 14,000, and a second layer of a paraffinic hydrocarbon having a molecular weight between 350 and 400 and having adhesive properties, said base and second layers being united by dissolution to form a continuous coating having an inter-layer zone in which the base layer is dissolved into the second layer.

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