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"PROCESS FOR THE PREPARATION OF WATER DISPLACING RUST PREVENTIVE OIL FOR PROTECTION OF METAL FROM CORROSION"

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, Hafi Marg, New Delhi - 1, an Indian Registered body incorporated under the Registration of Societies Act,. (Act XXI of 1860)

The following specification describes the nature of this invention.

PRICE: TWO RUPEES

150416

This is an invention by Kummattithidal Santhanam Rajagopalan, Subbaiah Guruvaiah, Meyyappa Sundaram and Chakravarthi Rajagopal, Scientists, all from Central Electrochemical Research Institute, Karaikudi-623006, Tamilnadu, India,-all Indian citizens.

This invention relates to the "Improvements in or relating to water displacing rust preventive oil for temporary corrosion protection"

Hitherto it has been the practice to pickle metal components in acid solutions, rinsing in water and dried before the application of temporary corrosion preventives. But, in this process of operation, because of the time lag involved between drying and oiling the components develope yellow rust stains on the surface which is not desirable for subsequent applications. The dewatering property of the available composition is not effective in removing water completely from the surface and also the corrosion resistance is not satisfactory.

This is open to the objection that the available commercial composition has the following disadvantage, viz; i. it is not effective in removing water completely from surface, ii. The corrosion resistance property is not satisfactory.

The object of this invention is to obviate these disadvanrages by developing a water displacing rust preventive oil which will eliminate the step of drying and also the formation of yellow stains.

To these ends the invention broadly consists in formulating a water displacing rust preventive composition

containing 150-200 ml of n-Butyl alcohol, 150-200ml of inter neutral mineral oil, 10-20ml of triethanol-amine, and 100-150mgs of Calcium stearate. The resultant composition can be used as a temporary corrosion protective, having water displacing properties.

The following typical examples are given to illustrate the invention:

EXAMPLE I

200ml of Butanol (n-Butyl alcohol) is taken in a beaker, added 150ml of inter neutral mineral oil, stirred well till the oil is completely dispersed in the solvent. Then 15ml of triethanol-amine is added following by the addition of 150mgms of calcium stearate. The whole solution is stirred well to get a homogeneous, water displacing rust preventive oil.

EXAMPLE II:

150ml of Butanol (n-Butyl alcohol) is taken in a beaker, added 150ml of interneutral mineral oil, stirred well till the oil is completely dispersed in the solvent. Then 10ml of triethanol-amine is added followed by the addition of 150mgs of aluminium stearate/Magnesium stearate. The whole solution is stirred well to get a homogeneous, water displacing rust preventive oil.

The specification of the inter neutral oil is given below:

Viscosity at 37.5°C	280-350 SSV
Pour point	-6°C
Flash point (min)	226°C
Colour ASTM(max)	3.0

(a)Ferrous components, phosphated or pickled in Hydrochloric acid(11%) containing inhibitor, washed with water and treated in the above compositions for a minute and left in the open atmosphere for 1 hr and subjected to saturated sodium carbonate test for 72 hours.

(b)Ferrous components, phosphated or pickled in hydrochloric acid (11%) containing inhibitor, washed with water, and then dipped in 3% sodium chloride solution for 2 minutes and treated in the water displacing rust preventive oil for 1 minute and left in the open atmosphere for 1 hour and then subjected to saturated Na_2CO_3 test for 72 hrs(BS 1133). After the above tests, it was observed that there was no rusting on the surface of the component, which indicated the complete removal of water from the surface and the formation of oil film.

The developed composition has been tested for various physical and chemical properties as per BS 1133 and found that the composition passes all the tests. The results obtained are given in the table.

Sl No	Name of the product	Water displacing property	Test in the open atmosphere after dipping in 3%NaCl solution & in dewatering liquid	Saturated Na_2CO_3 test
1	CECRI composition	No water droplets on the surface.Only oil film is retained.	Good	Free from rust even after 1 week
2	Commercial	Scattered water globules are seen throughout the surface	Light yellow stain is formed	Few rust spots within 24 hours

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The following are the main advantages of the invention:

1 Removes water from the surface, thereby eliminating the drying step

2 Prevents the formation of yellow stains

3 The oil film thus formed gives adequate corrosion protection during storage

4 All the raw materials are available indigenously

[redacted]

Dated this 12th day of December, 1978.

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THE PATENTS ACT, 1970

COMPLETE SPECIFICATION

(Section - 10)

" PROCESS FOR THE PREPARATION OF WATER DISPLACING RUST PREVENTIVE OIL FOR PROTECTION OF METAL FROM CORROSION "

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH, Rafi Marg, New Delhi - 1, India. an Indian Registered 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 Kumattithidal Santhanam RAJAGOPALAN, Subbiah GURUVIAH, Meyyappa SUNDARAM and Chakravarthy RAJAGOPAL, Scientists all from Central Electrochemical Research Institute, Karaikudi and all are Indian Citizens.

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This invention relates to the process for the preparation of water displacing, rust preventive oil for temporary corrosion protection.

Hitherto it has been the practice to pickle metal components in acid solutions, rinsed in water and dried before the application of temporary corrosion preventives. But in this practice because of the time lag involved between drying and oiling, the components developed yellow rust stains on the surface which is not desirable for subsequent applications and use of the metals.

The available commercial compositions have also the following disadvantages viz. it is not effective in removing water completely from surface and the corrosion resistance is not satisfactory.

The main object of this invention is to obviate these disadvantages by developing an improved water displacing, rust preventive oil which will eliminate the step of drying and also the formation of yellow stains.

This invention accordingly provides a process for the preparation of a water displacing, rust preventive oil for the protection of metals from corrosion comprising admixing butanol, inter neutral mineral oil, triethanolamine and calcium stearate to obtain the water displacing, rust preventive oil.

The oil prepared according to the process of the present invention not only removes water completely from the metal surface which has been pickled or phosphated but also gives protection from corrosion.

The water displacing, rust preventive oil prepared according to this invention is not a mere admixture having in aggregation the properties of its components but has distinct and remarkable water displacing and rust preventive properties not possessed by any of its components.

A preferred process of preparing the water displacing, rust preventive oil according to this invention consists in adding gradually 150-170 ml of inter neutral mineral oil to 150-200 ml of butanol with stirring to obtain a clear solution, adding 10-15 ml of triethanolamine followed by addition of 125-150 mg of calcium stearate with stirring to obtain a clear solution yielding the water displacing, rust preventive oil.

A further preferred process of preparing the oil according to this invention consists in admixing 150-200 ml of n-butyl alcohol, 150-200 ml of inter neutral mineral oil, 10-20 ml of triethanolamine and 100-150 mg of calcium stearate to obtain a clear and homogenous solution. The resultant oil can be used as a temporary protective having water displacing properties.

The developed oil composition has been tested for various physical and chemical properties as per BS 1133 and found that the composition passes all the tests.

The following are the main advantages of the invention:

1. Completely removes water from the surface thereby eliminating the drying step.
2. Prevents the formation of yellow stains.
3. The oil film thus formed gives adequate corrosion protection during storage.
4. All the raw materials are available indigenously.

The present invention consists of water displacing, rust preventive oil composition containing 200 ml of butanol, 150 ml of inter neutral mineral oil, 15 ml of triethanolamine and 150 mg of calcium stearate. The resultant oil composition can be used as temporary corrosion protective having water displacing properties.

The following typical examples are given to illustrate the invention.

EXAMPLE I

200 ml of Butanol (n-Butyl alcohol) is taken in a beaker. 150 ml of inter neutral mineral oil is gradually added and stirred well till a homogeneous clear solution of the rust preventive composition in Butanol is obtained. Then 15 ml of triethanolamine is added gradually till a clear solution is obtained. This solution is stirred and 150 mgms of calcium stearate is added to get a clear solution. The clear homogeneous solution thus obtained can be used as water displacing rust preventive fluid.

EXAMPLE II

150 ml of Butanol (n-Butyl alcohol) is taken in a beaker. 150 ml of interneutral mineral oil is gradually added and stirred well till a homogeneous clear solution of the rust preventive composition in Butanol is obtained. Then 10 ml of triethanolamine is added gradually till a clear solution is obtained. This solution is stirred and 150 mgms of Aluminium stearate/Magnesium stearate is added to get a clear solution. The clear homogeneous solution thus obtained can be used as water displacing rust preventive fluid. The specification of the interneutral oil is given below.

Viscosity at 37.5°C	280 - 350 SSV
Pour point	60°C
Flash point (min)	226°C
Colour (ASTM (Max)	3.0

(a) Ferrous components, phosphated or pickled in Hydrochloric acid (11%) containing inhibitor, washed with water and treated in the above compositions for a minute and left in the open atmosphere for 1 hr and subjected to saturated sodium carbonate test for 72 hours.

(b) Ferrous components, phosphated or pickled in Hydrochloric acid (11%) containing inhibitor, washed with water and then dipped in 3% sodium chloride solution for 2 minutes and treated in the water displacing rust preventive oil for 1 minute and left in the open atmosphere for 1 hour and then subjected to saturated Na_2CO_3 test for 72 hours (BS 1133). After the above tests, it was observed that there was no rusting on the surface of the component, which indicated the complete removal of water from the surface and the formation of oil film.

A comparative test report of the oil of the invention is tabulated here in

Sl. No.	Name of the product	Water displacing property	Test in the open atmosphere after dipping in 3% NaCl solution and in dewatering liquid.	Saturated Na_2CO_3 test
1.	CECRI composition	No water droplets on the surface only oil film is retained	Good	free from rust even after 1 week
2.	Commerical	Scattered water globules are seen throughout the surface	Light Yellow stain is formed	Few rust spots within 24 hours.

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We Claim :

1. Process for the preparation of a water displacing, rust preventive oil for protection of metals from corrosion comprising admixing butanol, inter neutral mineral oil, triethanolamine and calcium stearate to obtain the water displacing, rust preventive oil.

2. Process as claimed in claim 1 wherein the inter neutral mineral oil is gradually added to butanol with stirring to obtain a clear solution and then triethanolamine is added to obtain a clear solution and finally calcium stearate is added with stirring to obtain a clear solution.

3. Process as claimed in claims 1 and 2 wherein 150-200 ml of butanol, 150-200 ml of inter neutral mineral oil, 10-20 ml of triethanolamine and 100-150 mg of calcium stearate are admixed.

4. Process as claimed in claims 1 to 3 wherein 150-200 ml of butanol, 150-170 ml of inter neutral mineral oil, 10-15 ml of triethanolamine and 125-150 mg of calcium stearate are admixed.

5. Process for the preparation of water displacing, rust preventive oil for protection of metals from corrosion substantially as herein described and illustrated in the foregoing examples.

Dated the 3rd day of December, 1979.

(A.N.NAGPAUL)
Of NAGPAUL & ASSOCIATES
Agent for the applicants.