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PROVISIONAL SPECIFICATION.

A PROCESS FOR MAKING RED LEAD-RED OXIDE PRIMERS.

COUNCIL OF SCIENTIFIC AND 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 describes the nature of this invention.

This is an invention by Kummattithidal Santhanam Rajagopalan, Scientist, and Subbiah Nadar Guruviah, Scientist both from Central Electrochemical Research Institute, Karaikudi-3, Tamil Nadu, India, both Indian citizens.

This invention relates to improvements in or relating to red lead-red oxide primers.

Hitherto it has been proposed to use red lead and red lead-red oxide primers for the protection of steel structures exposed to rural, industrial and marine atmospheres.

This is open to the objection that red lead primer has to be prepared from imported lead and the percentage of red lead in red lead-red oxide primers is high (> 30%).

The object of the present invention is to obtain a red lead-red oxide primer using much lower percentages of red lead than what has been employed hitherto.

To these ends the invention broadly consists in mixing red lead (to IS 102) (10 to 30%) and red oxide (to IS 46) (30 to 50%) with double boiled oil (I.S. 77) (to specification) (25 to 55%) grinding the pigment and vehicle together till the desirable physical properties are obtained and adjusting the consistency of the paint with white spirit (5 to 15%). The following typical example is given to illustrate the invention.

Red lead Red Oxide Paint in D.B.O.

The constituents were mixed in S.S. container and iron balls 1/2" dia., were added. The mixture was ground till the Heghman value 6 is obtaind. Then the paint was discharged from the container and washed with solvent and the consistency of the point was adjusted. The cobalt naphthenate drier was added.

Example 1

Paint	Red lead	Red oxide	Vehicle	Solvent	Drier
Red lead/Red oxide paint	13	47	30	10	0,05

The physical properties of the red-lead red oxide paints prepared above is compared with red lead.

Table 1

Properties of Red lead/Red Oxide Paint

Paint	% Red lead	% Red oxide	Surface Dry Hrs.	Hard Dry Hrs.	Scratch Hardness load in gms.	Mandrel bend Flexibility Tests in 1/4"	Consistency	Sp. G.
1) Red lead primer (IS 102) in Double boiled oil	79	0	6	24	500	passed	Smooth and uniform coating.	3.52
2) Red lead/Red oxide primer	13	47	6	24	500	"	"	186

Price : TWO RUPEES

The corrosion protection given by the primer described in the invention in comparsion with red lead primer is given in Table 2 :

TABLE 2

Corrosion protection given by red lead-red oxide primer

Properties	1	2
1) Vehicle	D.B.O.	D.B.O.
2) Pigment	Read lead 79%	Red lead 13% Iron oxide 47%
3) Paint extract	Inhibitive	Inhibitive
4) Water absorption 15 days	10	11.5
5) Potential of painted metal in 1% NaCl	-400 mV vs Saturated Calomel Electrode	-350 mV vs. Saturated Calomel Electrode.
6) Salt Spray Test 30 days 2" x 3" M.S. panels two coats of primers.	No rust at scratch, no blisters. Bright surface.	No rust at scratch, No blisters. Bright surface.
7) Weatherometer tests 2000 Hrs.	Loss of gloss and chalking after 1500 Hrs. Bright surface.	Loss of gloss and chalking after 1500 Hrs. Bright surface.
8) Immersion tests in 1% NaCl 15 days	No blisters. Bright surface	No blisters. Bright surface.

The following are among the main advantages of the invention :-

1. The use of red lead pigment in red lead red oxide primers is minimised.
2. The corrosion protection given by the primer described in the invention is as much as that of red lead primer.

R. BHASKAR PAI

Patents Officer

Council of Scientific & Industrial Research.

Dated this 5th day of November 1971.

COMPLETE SPECIFICATION.

A PROCESS FOR MAKING RED LEAD-RED OXIDE PRIMERS.

COUNCIL OF SCIENTIFIC AND 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 Kummattithidal Santhanam Raja gopalan, Scientist, and Subbiah Nadar Guruviah, Scientist, both of the Central Electrochemical Research Institute, Karaikudi-3, Tamil Nadu, India, both Indian Citizens.

This invention relates to the improvements in or relating to red lead-red oxide primers.

Hitherto it has been proposed to use Red Lead Primers for protection of all steel structures exposed to the atmosphere. This is open to the objection that red lead primer has to be prepared from imported lead and the percentage of red lead in red lead-dioxide primers is high (greater than 30%).

The object of the present invention is to obtain a red-lead red oxide primer using much lower percentages of red lead than what has been employed hitherto.

The main finding is that when major part of the red lead pigment is replaced by red oxide, the protective value of the primer is maintained.

The new result is that when red lead primers are compared with other lower percentage of red lead primer in laboratory evaluation and exposure tests, it is found that the protection given by the lower percentage of red lead is same as the conventional higher percentage of red lead.

The primer obtained according to the process of the invention is not a mere admixture resulting only in the aggregation of the properties of the components.

According to the present invention, there is provided a process for making red lead-red oxide primer by mixing red lead and red oxide pigment in a vehicle, namely, double boiled oil and grinding the pigment and the vehicle with white spirit characterised in that (a) the ingredients are mixed in the following proportions namely,

Ingredients	Proportions
Red lead	10-30%
Red oxide	30-50%
Double boiled oil	25-35%

b) the pigment and the vehicle are ground together till the desired finess (e.g., Heghman value of the order of 6) is obtained and (c) the consistency of the paint is adjusted with white spirit 5-15%.

The mixing is done in a jar mill, iron balls 1/2" dia., are added and ground in the jar mill, followed by the addition of white spirit and driers, e.g., lead and cobalt naphthenates.

For example, the ingredients may be used in the following proportions :

Red lead	10	—	15%
Red oxide	45	—	50%
Double boiled oil	25	—	30%
White spirit	10	—	15%

The proportion of red lead used may be beyond 15%.

Red lead and red oxide pigment is mixed in different ratio in double boiled oil and the pigment and the vehicle are ground with white spirit. Thus red lead (10-30%) and red oxide (30-50%) are mixed with double boiled oil (25-35%); the pigment and the vehicle together are ground till the desired physical properties are obtained and the consistency of the paint is adjusted with white spirit (5-15%).

The pigment, vehicle and small quantity of the solvent are mixed in stainles steel container and iron balls (1/2" dia.,) are added. The mixture is ground till the Heghman value 6 is obtained. Then the paint is discharged from the container, washed with solvent and made up with remaining solvent.

EXAMPLE

Paint	Red lead	Red oxide	Vehicle	Solvent	Drier
Red lead/ Red oxide paint	13	47	30	10	0.05

The physical properties of the red-lead red oxide paints prepared above is compared with red lead (Table 1).

The following are the main advantages of the invention :

1) The use of red lead pigment in red lead red oxide primers is minimised.

(2) The corrosion protection given by the primer described in the invention is as much as that of red lead primer (Table 2).

Noteworthy features

(1) It is most economical to use red lead/red oxide primer to this specification than red lead primer I.S. 102 since the corrosion protection described in this invention is as much as that of red lead primer.

(2) The use of red lead which is imported is minimised.

TABLE 1

Properties of Red lead / Red Oxide Paint

Paint	% Red lead	% Red oxide	Surface Dry Hrs.	Hard Dry Hrs.	Scratch Hardness load in gms.	Mandrel Flexibility Tests in 1/4"	Consistency	Sp. gr.
1) Red lead primer (IS 102) in D.B.O.	79	0	6	24	500	passed	Smooth and unifrom coating	3.52
2) Red lead/ Red oxide primer	13	47	6	24	500	"	"	1.86

TABLE 2

Corrosion protection given by red lead red oxide primer

Properties	1	2
1) Vehicle	D.B.O.	D.B.O.
2) Pigment	Red lead 79%	Red lead 13% Iron Oxide 47%
3) Paint extract	Inhibitive	Inhibitive
4) Water absorption 15 days	10	11.5
5) Potential of painted metal in 1% NaCl	-400 mV vs Sat. Cal. Electrode.	-350 mV vs. Sat., Cal., Electrode.
6) Salt Spray Test 30 days 2" × 3" M.S. panels, two coats of primers.	No rust at scratch, no blisters. Bright surface.	No rust at scratch. No blisters. Bright surface.
7) Weatherometer tests 200 Hrs.	Loss of gloss & chalking after 1500 Hrs., Bright surface	Loss of gloss and Chalking after 1500 Hrs., Bright surface.
8) Immersion tests in 1% NaCl 15 days.	No blisters. Bright surface.	No blisters. Bright surface.

We claim :

1. A process for making red lead-red oxide primer by mixing red lead and red oxide pigmer in a vehicle, namely, double boiled oil and grinding the pigment and the vehicle with white spirit characterised in that (a) the ingredients are mixed in the following proportions, namely,

Ingreedients	Propotions
Red lead	10 — 30%
Red oxide	30 — 50%
Double boiled oil	25 — 35%

b) the pigment and the vehicle are ground together till the desired fineness (e.g., Hoghman value of the order of 6) is obtained and (c) the consistency of the paint is adjusted with white spirit 5-15%.

2. A process as claimed in Claim 1 wherein the mixing is done in a jar mill, iron balls 1/2" dia., are added and ground in the jar mill, followed by the addition of white spirit and driers, e.g., lead and cobalt naphthenates.

3. A process as claimed in Claim 1 or 2 wherein 10-15% white spirit is used.

4. A process as claimed in any of the preceding claims wherein the ingredients are used in the following proportions :

Red lead	10	—	15%
Red oxide	45	—	50%
Double boiled oil	25	—	30%
White spirit	10	—	15%

5. A process as claimed in any of the preceding claims wherein the proportion of red lead used is beyond 15%.

6. A process for making red lead-red oxide primer substantially as herein before described.

R. BHASKAR PAI

Patent Officer

Council of Scientific & Industrial Research.

Dated this 2nd day of August 1972.

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