

The
United
States
of
America



**The Director of the United States
Patent and Trademark Office**

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extensions.

A handwritten signature in black ink that reads "Jon W. I. Dudas". The signature is written in a cursive style with a large, looped initial 'J'.

Director of the United States Patent and Trademark Office



US007375060B2

(12) **United States Patent**
Kuzmin et al.

(10) **Patent No.:** **US 7,375,060 B2**
(45) **Date of Patent:** **May 20, 2008**

(54) **PLATING CONCENTRATE**

RU 2202600 C2 * 4/2003
SU 1011676 A * 4/1983

(75) **Inventors:** **Vasily Nikolaevich Kuzmin,**
Saint-Petersburg (RU); **Leongard**
Ivanovich Pogodaev, Saint-Petersburg
(RU)

OTHER PUBLICATIONS

Grodzinski, P., Brit J. Appl. Phys., 1950, 2(S1), p. 86-90.*

* cited by examiner

Primary Examiner—Glenn Caldarola

Assistant Examiner—James Goloboy

(74) *Attorney, Agent, or Firm*—Banner & Witcoff, Ltd.

(73) **Assignee:** **VMPAUTO,** Saint Petersburg (RU)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 431 days.

(57) **ABSTRACT**

(21) **Appl. No.:** **11/038,774**

(22) **Filed:** **Jan. 21, 2005**

(65) **Prior Publication Data**

US 2005/0181956 A1 Aug. 18, 2005

(30) **Foreign Application Priority Data**

Jan. 23, 2004 (RU) 2004102069

(51) **Int. Cl.**

C10M 125/04 (2006.01)

C10M 169/00 (2006.01)

C10M 137/10 (2006.01)

(52) **U.S. Cl.** **508/136; 508/172; 508/371;**
508/150

(58) **Field of Classification Search** **508/136,**
508/150, 172, 371

See application file for complete search history.

The object of the present invention is to provide a protective metal-ceramic film having a heterogeneous structure and possessing higher density, wear resistance, a high adhesion to a friction surface and a friction coefficient after running in not higher than 0.03-0.07.

The above object is solved by providing a plating concentrate comprising a powdered metallic filler, surfactants, oil soluble dialkyl dithiophosphoric acid metal salts and a basic oil, a mineral filler based on silicates and cyclohexanol at the following ratio of components in % by weight:

a powdered metallic filler	0.05-20.0
surfactants	0.5-11.0
dialkyl dithiophosphoric acid metal salts	1.0-45.0
a mineral filler based on silicates	1.2-20.0
cyclohexanol	0.05-2.0

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,284,322 B1 * 9/2001 Nazaryan et al. 427/386
6,569,816 B2 * 5/2003 Oohira et al. 508/107
2003/0164205 A1 * 9/2003 Prince et al. 148/29

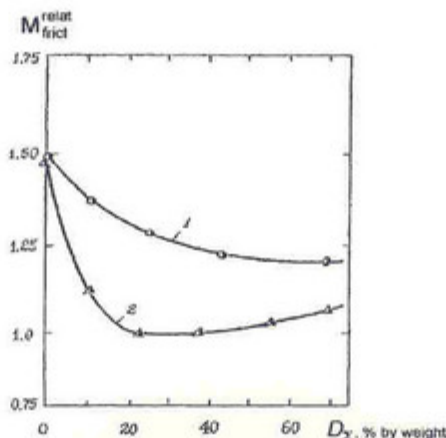
FOREIGN PATENT DOCUMENTS

RU 2124556 C1 1/1999
RU 2185422 C1 * 7/2002

A mineral filler based on silicates comprises natural minerals from a series of layered hydro silicates such as serpentinite and/or chlorite.

Salts of zinc and/or tin and/or molybdenum and/or aluminum and/or copper and/or cadmium are used as dialkyl dithiophosphoric acid metal salts.

2 Claims, 2 Drawing Sheets



1 - addition of the concentrate according to RU 2,202,800
2 - addition of the claimed concentrate