PURPOSE OF THE INVENTION

In practice, it has emerged that the solutions proposed in WO 2005/073433, e.g., Example 5 with the main constituents 20g/l NaOH and 20g/l $KMnO_4$, are not optimal for modern AlCrN films such as Balinit Alcrona known to the market. Since these films allow a maximum application temperature of more than 1000°C, it is surmised, depending on the actual use, that oxygen is included in the AlCrN film and this is then compressed. A noticeable deterioration in the stripping action then occurs.

Essentially the same problem occurs with AlCrO films (aluminium-chrome oxide) which cannot be stripped at all with a solution as described in Example 5 above.

Furthermore, it was also known that on account of the sensitivity of hard metals to highly alkaline solutions it was not possible to obtain an economical, universal stripping solution for steels and hard metals for this area of hard films.

The purpose of the invention is to describe a stripping process or a stripping solution which allows the removal in an economical manner of hard films of at least AlCr, AlCrN and/or AlCrO from a workpiece without substantially damaging the actual workpiece.

SUMMARY

In an aspect, there is provided a process for the stripping of a film system from a workpiece whereby the film system on the workpiece comprises at least one film comprising an oxide of AlCr, TiAlCr and other AlCr alloys; and aluminium oxides, characterized in that the workpiece is placed in a stripping solution and remains there for treatment for a predetermined time suitable to substantially remove the film system from the workpiece without damaging the workpiece, wherein the stripping solution comprises: an aqueous, alkaline solution with potassium permanganate $KMnO_4$, characterized in that the solution comprises between 3 and 8 percent in weight $KMnO_4$ and at the same time an alkaline content of the solution is between 6 and 15 percent in weight.

DESCRIPTION OF THE INVENTION

In accordance with the invention, this problem is solved by a mixture of substances for the stripping of a film system from a workpiece whereby the mixture of substances can be prepared as an aqueous, alkaline solution with 3 to 8 per cent in weight $KMnO_4$, preferably between 3 and 5 per cent in weight $KMnO_4$, and at the same time displays an alkaline proportion between 6 and 15 per cent in weight, preferably between 6 and 12 per cent in weight. In a preferred version, the solution contains 4 per cent in weight $KMnO_4$, whereby at the same time the alkaline proportion is between 8 and 11 per cent in weight and preferably at 10 per cent in weight. The alkaline proportion in one version is formed by KOH or NaOH whereby the pH-value

CLAIMS:

1. Mixture of substances for the stripping of a film system from a workpiece in the form of an aqueous, alkaline solution with potassium permanganate $KMnO_4$, **characterized in that** the solution contains between 3 and 8 per cent in weight $KMnO_4$, preferably between 3 and 5 per cent in weight $KMnO_4$ and at the same time the alkaline content is between 6 and 15 per cent in weight, preferably between 6 and 12 per cent in weight.

2. Mixture of substances as in claim 1, **characterized in that** the solution contains 4 per cent in weight $KMnO_4$ and at the same time the alkaline content is between 8 and 11 per cent in weight, preferably at 10 per cent in weight.

3. Mixture of substances as in claims 1 to 2, **characterized in that** the alkaline content is formed by KOH or NaOH.

4. Mixture of substances as in claims 1 to 3, **characterized in that** the pH-value of the solution is above 13, preferably above 13.5.

5. Process for the stripping of a film system from a workpiece whereby the film system on the workpiece comprises at least one film which in turn displays at least one of the following materials: metallic AlCr, TiAlCr and other AlCr alloys; or one of their nitrides, carbides, borides, oxides or a combination of such, and aluminium oxides, **characterized in that** the workpiece is placed in a stripping solution as in claim 1 and remains there for treatment for a predetermined time.

6. Process as in claim 5, **characterized in that** the stripping solution is at room temperature between 15 and 30°C.

7. Process as in claims 5 to 6, **characterized in that** in addition at least one postprocessing step is provided after the stripping

of the film system that also comprises a surface treatment of the workpiece.

8. Process as in claims 5 to 7, **characterized in that** in design at least one pretreatment step before the stripping of the film system is provided that also comprises a surface treatment of the workpiece.

9. Process as in claims 7 to 8, **characterized in that** the surface treatment is at least one of the following possible treatments: rinsing, cleaning, ultrasound, drying, irradiation, brushing, heat treatment.

What is claimed is:

1. Process for the stripping of a film system from a workpiece whereby the film system on the workpiece comprises at least one film comprising an oxide of AlCr, TiAlCr and other AlCr alloys; and aluminium oxides, characterized in that the workpiece is placed in a stripping solution and remains there for treatment for a predetermined time suitable to substantially remove the film system from the workpiece without damaging the workpiece, wherein the stripping solution comprises: an aqueous, alkaline solution with potassium permanganate $KMnO_4$, characterized in that the solution comprises between 3 and 8 percent in weight $KMnO_4$ and at the same time an alkaline content of the solution is between 6 and 15 percent in weight.

2. Process as in claim 1, characterized in that the stripping solution is at a temperature between 15 and 30°C.

3. Process as in claim 1 or 2, characterized in that in addition at least one postprocessing step is provided after the workpiece is placed in the stripping solution, wherein the postprocessing step comprises a surface treatment of the workpiece.

4. Process as in claim 1 or 2, characterized in that in design at least one pretreatment step before the workpiece is placed in the stripping solution, wherein the at least one pretreatment step comprises a surface treatment of the workpiece.

5. Process as in claim 3, characterized in that the surface treatment is at least one of the following possible treatments: rinsing, cleaning, ultrasound, drying, irradiation, brushing, heat treatment.

6. The process of claim 3, wherein the workpiece is a metallic workpiece, the process being characterized in that the film system is exposed to the stripping solution applied to the metallic workpiece.