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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

DL/T 805.2-2016

**Guideline for Cycle Chemistry in Fossil Plants - Part 2:
Phosphate Treatment for Drum Units**

火电厂汽水化学导则 第2部分：锅炉炉水磷酸盐处理

(English Translation)

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Foreword

DL/T 805 Guideline for Cycle Chemistry in Fossil Plant can be divided into the following

5 parts.

- Part 1. Oxygenated Treatment for Feed-Water System of Boiler;
- Part 2. Phosphate Treatment for Drum Units;
- Part 3. Caustic Treatment for Drum Units;
- Part 4. Feedwater Treatment;
- Part 5. All Volatile Treatment for Drum Units.

This Part belongs to Part 2 of DL/T 805. Compared with DL/T 805.2-2004, this Part has the major revisions as follows besides the editorial modifications.

- Modify the pressure rating of the boiler steam drum in the phosphate treatment;
- Modify the definition of the low phosphate treatment.
- Delete the coordinated pH-phosphate treatment (CPT);
- Delete the water quality indicators of the boiler water treatment related to the segmented evaporation boiler;

- Modify the boiler water quality indicator during the phosphate treatment (PT);
- Modify the boiler water quality indicators during the low phosphate treatment (LPT);
- Delete the equilibrium phosphate treatment (EPT);
- Modify the flow chart for selecting the boiler water treatment of steam drum boiler;
- Modify the treatment value when the boiler water quality is abnormal.

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Part was proposed by China Electricity Council.

This Part shall be under the jurisdiction of Technical Committee for Standardization of Power Plant Chemical of Power Industry.

Chief drafting organizations of this Part. Xi'an Thermal Power Research Institute Co., Ltd., and Jilin Electric Power Research Institute Co., Ltd.

Guideline for Cycle Chemistry in Fossil Plants -

Part 2. Phosphate Treatment for Drum Units

1 Scope

This Part of DL/T 805 gives the conditions, principles and control indicators for the boiler water phosphate treatment in fossil plant.

This Part is applicable to the boiler water treatment of steam drum boiler with steam drum pressure of 3.8MPa~18.3MPa in the fossil plant.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 6904 Water Used in Industrial Circulating Cooling System and Boiler - Determination of Ph

GB/T 6908 Analysis of Water Used in Boil and Cooling System-Determination of Electrical Conductivity

GB/T 6913 Analysis of Water Used in Boiler and Cooling System - Determination of Phosphorus

GB/T 12146 Analysis of Water Used in Boil and Cooling System - Determination of Ammonia - Phenol Method

GB/T 12149 Determination of Silica in Water for Industrial Circulating Cooling System and Boiler

GB/T 15453 Water for Industrial Circulating Cooling System and Boiler- Determination of Chloride

DL/T 954 Analysis of Water and Steam in Fossil Fuel Power Plant Determination of Fluoride Acetate Formate Chloride Nitrite Nitrate Phosphate and Sulfate by Ion Chromatography

DL/T 1115 Guide for Chemistry Check - up of Unit Maintenance in Fossil Fuel Power Plant

3 Terms and Definitions

The following terms and definitions are applicable to this Part of DL/T 805.

3.1 Free sodium hydroxide

The total amount of sodium hydroxide in the boiler water exceeds that produced by the hydrolysis equilibrium reaction of trisodium phosphate.

3.2 Phosphate treatment (PT)

The treatment adding appropriate amount of trisodium phosphate to the boiler water to prevent the generation of calcium and magnesium scale in the furnace and reduce the corrosion on the water-cooled wall tube.

3.3 Low phosphate treatment (LPT)

The treatment adding a small amount of trisodium phosphate to the boiler water.

3.4 Caustic treatment (CT)

The treatment adding sodium hydroxide to the boiler water.

3.5 All volatile treatment (AVT)

The treatment only adding ammonia and hydrazine to the boiler, adding no chemicals to the boiler water.

4.1 The role of boiler water phosphate treatment

- a) Prevent the generation of calcium and magnesium scales on the inner wall of the water-cooled wall tube;
- b) Increase the cushioning property of the boiler water to prevent the acid or alkaline corrosion of the water-cooled wall tube;
- c) Reduce the vapor carrying against the silicon dioxide; improve the chemical properties of turbine deposits; and reduce turbine corrosion.

4.2 The problem of boiler water phosphate treatment

The boiler water phosphate treatment can cause the following problems.

- a) Phosphate hiding phenomenon, causing acid phosphate corrosion of water-the length of the steam drum.

For the forced circulation steam drum boiler, the boiler water dosing point can be set at the inlet of the boiler water circulation pump.

10 Treatment Measures when the Quality of the Boiler

Water Deteriorates

10.1 Classification and treatment principles of boiler water quality

deterioration

The quality of boiler water can be divided into three levels according to the degree of deterioration, see Table 5; the treatment values for three levels shall meet the following requirements.

- a) Level-I treatment value. since there is the corrosion possibility caused by impurities; it shall be restored to the standard value within 72h;
- b) Level-II treatment value. there is certain corrosion caused by impurities; it shall be restored to the standard value within 24h;