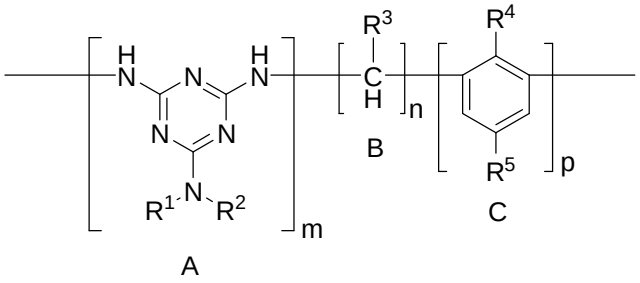
What is claimed is:

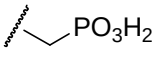
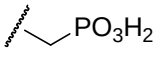
1. A phosphorylated polycondensate high-performance water-reducing agent, having a molecular structure represented by the following formula I:

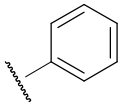


A B C

I

;

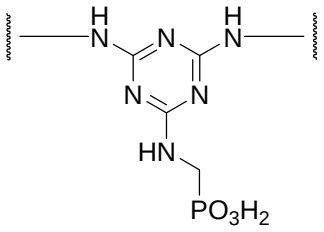
R^1=H, R^2=  ,or R^1=R^2= 

R^3=H or  or  ;

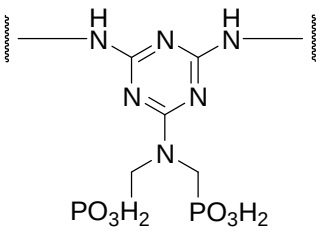
wherein the molecular structure of the polymer comprises three building blocks, formed by condensation of phosphorylated melamine A, an aldehyde B and an aryl alkoxy compound C, and the molecular structure is a comb-like structure;

the three monomers A, B and C has a mole ratio of m : n : p = 1.5 to 4.5 : 1.8 to 3.2 : 1;

the monomer A is phosphorylated melamine having a structure selected from the following monodentate compound II and bidentate compound III;



II



III

the monomer B is one of formaldehyde, acetaldehyde and benzaldehyde compounds, or a mixture thereof in any ratio;

the monomer C is aryl alkylene polyether as a polyether side chain of the polycondensate, with a molecular weight of 2000 to 5000; and corresponds to the structural formula I where R^4 and R^5 are H, OH, NH_2 or phenoxypolyoxyalkylene ether or phenylaminopolyoxyalkylene ether,

provided that R^4 and R^5 cannot both be H, OH or NH_2, and at least one of R^4 and R^5 is phenoxypolyoxyalkylene ether or phenylamino polyoxyalkylene ether; and the polyoxyalkylene ether is formed by ring opening polymerization of an aromatic alcohol or amine with active hydrogen and ethylene oxide/propylene oxide;

the phosphorylated polycondensate high-performance water-reducing agent has a weight average molecular weight of 10000 to 50000.

2. The phosphorylated polycondensate high-performance water-reducing agent of claim 1, the phosphorylated melamine A, aldehyde B and aryl alkoxy compound C has a mole ratio of m : n : p = 2.0 to 3.0 : 2.4 to 2.8 : 1.

3. The phosphorylated polycondensate high-performance water-reducing agent of claim 1 or 2, wherein the monomer A is prepared by the Mannich reaction of melamine, phosphorous acid, and respectively, formaldehyde, acetaldehyde or benzaldehyde as key raw materials in the presence of an acid catalyst;

wherein a molar ratio of the materials is melamine : phosphorous acid : aldehyde : acid (H^+) = 1 : 1.0 to 1.2 : 1.1 to 1.5 : 0.2 to 1.2.

4. The phosphorylated polycondensate high-performance water-reducing agent of claim 1 or 2, wherein the monomer B is formaldehyde.

5. A method for preparing the phosphorylated polycondensate high-performance water-reducing agent of any one of claims 1-4, comprising

subjecting the three monomers to polycondensateization in a presence of an acid catalyst at a pH of 1 to 3 to obtain the phosphorylated polycondensate high-performance water-reducing agent;

wherein the reaction temperature is 100 to 150°C, the reaction time is 1 to 10 h, and the reaction

system uses water as solvent; the apparatus is equipped with a condenser (tube) for reflux so as to prevent dissipation of water or the aldehyde in the system to affect the reaction conditions; and

the acid catalyst is one of sulfonic acid, sulfuric acid, trifluoroacetic acid (TFAA), 4-toluene sulfonic acid (pTSA), monochloroethanoic acid (MCAA), glacial acetic acid, hydrochloric acid, and formic acid and other acids, or a mixture thereof in any ratio.

6. The method of claim 5, wherein the preparation specifically comprises three steps: preparation of the monomer A, condensation and neutralization, wherein the neutralization uses a pH adjusting agent selected from sodium hydroxide and potassium hydroxide.