



D.1.6. Développement de câbles sans halogène retardateurs d'incendie pour centrales nucléaires

AIDA F., YOSHIDA, MINAMI M., NAKAYA K., TAMUKAI K., Showa Electric Wire & Cable, Kawasaki, Japon

Résumé

Au sein d'une partie de l'industrie, du point de vue de la prévention des accidents secondaires tels que les entraves à l'évacuation des personnes ou à la lutte contre l'incendie, ou tel que la corrosion des tableaux de distribution, on a vu, ces dernières années, s'accroître rapidement la demande de câbles sans halogènes retardateurs d'incendie ne produisant que peu de fumées toxiques ou de gaz corrosifs, même dans le cas d'une éventuelle combustion vive. C'est également le cas en ce qui concerne les centrales nucléaires pour lesquelles est fortement souhaitée la mise au point de câbles sans halogènes retardateurs d'incendie présentant non seulement les propriétés requises dans la plupart des industries, mais aussi une résistance à l'environnement propre aux centrales nucléaires.

A la suite de nombreuses études effectuées sur les résistances des matériaux à l'environnement, telles que la résistance aux radiations et la résistance à la vapeur d'eau chaude, les auteurs ont mis au point divers types de câbles sans halogènes retardateurs d'incendie destinés aux centrales nucléaires.

Introduction

In most industries, with the occurrence of great fires, the requirement of cable for fireproofing tends to be generalized. In order to meet this requirement, usual methods such as using have been applied, halogen containing polymers such as polyvinyl chloride and chloroprene rubber as jacketing material and adding a flame-retardancy agent of halogen base. Flame-retardant cables comprising such sorts of materials, however, present high flame-retardancy but on the other hand it is considered that they pose problems such as hindrances of refuge and fire extinction activities in fire and corrosions of various metals due to fumes and corrosive gases (hydrogen halide gas) generating in flaming. This results in the recent increase in the use of halogen-free flame-retardant cable in view of avoiding such secondary disasters.

On the other hand, though the cable for nuclear power plant was immediately subjected to measures for obtaining flame-retardancy so far, the basis of flame-retardant method depends on the use of flame-retardant materials and though measures are taken for reducing hydrogen halide, there exists likewise said secondary disasters,

D.1.6. Development of halogen-free flame-retardant cables for nuclear power plants

AIDA F., YOSHIDA, MINAMI M., NAKAYA K., TAMUKAI K., Showa Electric Wire & Cable, Kawasaki, Japan

Abstract

In part of general industries, from the view point of avoiding secondary accident such as hindrance of refuge from fires or that of fire fighting activities and corrosion of switchboards, there arises a high and rapid demand in recent years for halogen-free flame-retardant cables which generate little toxic smokes or corrosive gases even in the case of an emergency of flaming. It is also the case with cables for nuclear power plant, where it is highly expected that halogen-free, flame-retardant cable presenting not only properties required in most industries, but also environmental resistances peculiar to nuclear power plant. The authors, as a result of many examinations on environmental resistance of materials such as radiation resistance and high temperature steam resistance, developed various types of halogen-free, flame-retardant cables for nuclear power plant.

which results in the demand for the development of halogen-free flame-retardant cable having environmental resistances peculiar to nuclear power plant, for nuclear power plant.

The present report introduces flaming properties of halogen-free flame-retardant materials for nuclear power plant which the authors have developed recently, along with the evaluation of results of various performances including environmental resistances of a cable comprising the materials.

Development of materials

Performances required of cables for nuclear power plant

Cables for nuclear power plant must have a sufficient flame-retardancy along with environmental resistances (thermal resistance for long time, radiation resistance and high temperature steam resistance) not to mention electric and physical properties required in most industries. These are summarized as follows.