

## Microwave and Infrared for Ceramic

Ceramic materials have different properties because of different components. As a structural material, ceramic materials have been widely used in various industries.



Far infrared ceramics are characterized by their ability to emit more far infrared radiation (higher infrared emissivity) than normal objects. Using this special property, the application of far infrared ceramics can be divided into two aspects: the application in high temperature zone and the application in normal temperature zone. It is mainly used in heating of boilers, baking paint, heating and drying of wood and food in high temperature zone, and in manufacturing various far-

infrared thermal insulation materials in normal temperature zone, such as far-infrared ceramic powder, far-infrared ceramic fibers, far-infrared ceramic polyester, and far-infrared functional ceramics. For example, some far-infrared ceramic materials have been applied in sports training and rehabilitation, energy saving of oil-fired stoves, indoor air purification and human health care. Infrared radiation from far infrared ceramics can reduce the viscosity and surface tension of fuel, which is beneficial to atomization and full combustion. Far-infrared ceramic coatings (including nano-titanium oxide coatings) have catalytic oxidation function. OH-, which can effectively remove benzene, formaldehyde, sulfide, ammonia and odorous substances indoors, can be produced under sunlight (especially ultraviolet radiation), and have bactericidal function. All kinds of far-infrared ceramic coatings will improve people's living environment by popularizing and applying in living rooms, public buildings and transportation.



[Far-infrared ceramics](#) are a kind of artificial light radiation source. They can radiate light in a specific band according to the wavelength people need. Moreover, they have strong penetration and little loss when they penetrate the atmosphere. In all aspects of health care and medical treatment, a variety of products have been developed, such as Far Red Outer Health Care Garments, Heart-saving Cards, Patches and so on. They are used to promote human blood circulation, regulate physical health and treat many chronic diseases. They have been verified and marketized in many ways. The electromagnetic wave it emits is also called "life wave" and the Japanese also call it "nurturing light-line". In recent years, the application of far infrared ceramic materials has extended to many aspects of environmental protection.



With the further development of [microwave and infrared for ceramic](#), many new preparation methods are emerging. Such as: coprecipitation method, hydrolysis precipitation method, hydrothermal method, sol gel method, microemulsion method (reverse micelle method), etc. Some researchers even explored new ideas for preparing far-infrared ceramic ultrafine powders, such as high-temperature spray pyrolysis, spray induced coupling ion method, etc. The production process of these methods is quite different from the traditional chemical pulverizing process. It is an efficient way to combine the decomposition, synthesis, drying and even calcination processes. However, these methods are not yet mature and need further research and exploration.