

# **IS 19058 : 2024**

## **Ultrafine Fly Ash — Specification**

Ultrafine fly ash (UFFA) is a very fine pozzolanic material (pulverized fuel ash) consisting of ultrafine, glassy, spherical particles (of average size 3 micron to 5 micron) produced through multistage classification of selected fly ash conforming to IS 3812 (Part 1) : 2013 'Pulverized fuel ash — Specification: Part 1 For use as pozzolana in cement, cement mortar and concrete (third revision)'. Due to the fine size of ultrafine fly ash particles, it has more reactive surface area, which helps to achieve higher early strength and lower permeability to the concrete mix due to mechanical packing effect of well graded fine particles.

The use of finer pozzolanic materials in production of concrete especially of higher grades (M 60 and above) is progressively increasing in India. Keeping this trend in view and to meet the requirement of the construction industry, the standard on silica fume, IS 15388 : 2003 'Silica fume — Specification' was formulated earlier. The standard for another ultrafine material, metakaolin was also formulated as IS 16354 : 2015 'Metakaolin for use in cement, cement mortar and concrete — Specification'. The advancements made during the last decade in grinding and classification technologies aided in yet another standard on ultrafine slag namely IS 16715 : 2018 'Ultrafine ground granulated blast furnace slag — Specification'. This standard is also in line with the above.

The ultrafine slag as well as ultrafine fly ash, both are indigenously produced in India while majority of silica fume is imported. The performance of these ultrafine materials when used as part replacement of cement in concrete or mortar in the range of 5 percent to 10 percent is comparable and found to enhance the properties and durability of concrete especially its permeability.

This standard covers the chemical and physical requirements of ultrafine fly ash for use in concrete, mortar and other systems containing hydraulic cement.