

## **IS 44:1991 Iron oxide pigments for paints – Specification (second revision) (with 1 Amendment)**

Iron oxide pigments are generally inorganic compounds, non-toxic, heat resistant and chemically stable. These pigments can form different tones of colours. Due to their anti-rusting properties, durability and transparency, they are used in outdoor paintings, including traffic paints.

In 1950, the standards IS 44 for black oxide of iron for paints, IS 45 for manufactured red oxide of iron for paints, IS 46 for natural red oxide of iron for paints, IS 47 for ochre for paints, IS 48 for natural sienna ( raw and burnt ) for paints and IS 49 for natural umber ( raw and burnt ) for paints were first issued. In 1969, all the above standards were amalgamated into IS 44, stipulating requirements for all the classes of the material.

It was subsequently revised in 1991, and includes the requirements, sampling and test methods for the grades and types of iron oxide pigments, as mentioned below:

- Grade 1 Black oxide (synthetic),
- Grade 2 Synthetic red oxide,
- Grade 3 Natural red oxide,
- Grade 4 Ochre
  - Type A -Red, and
  - Type B- Yellow,
- Grade 5 Natural sienna
  - Type C — Raw, and
  - Type D — Burnt,
- Grade 6 Natural umber
  - Type C — Raw, and
  - Type D — Burnt, and
- Grade 7 Synthetic iron oxide yellow hydrated

The standard was drafted while considering the available standards, internationally. The material shall be supplied in the form of dry powder or in such a condition that it may be reduced to powder form by crushing, without grinding action, under palette knife, so that it becomes user-friendly. The material is tested for the requirements of total iron, ferrous iron, carbonates, calcium compounds and manganese content to assess its composition, which effects the colour and texture of the material. Performance requirements like volatile matter, residue on sieve, staining power, water solubility, acidity, pH and loss on ignition are also prescribed in the standard. Requirement of lead is also mentioned to control its emissions as per the regulation of lead contents in household and decorative paints Rules, 2016, issued by Ministry of Environment, Forest and Climate change, Government of India.