METALS (FERROUS)

GLOSSARY

Ferrous: metals which contain iron and are magnetic (unless completely corroded).

Galvanic (bimetallic) corrosion: electro-chemical process where one metal corrodes preferentially when in contact with another.

STORAGE

Ideally, ferrous metals should be x-rayed before storage.

- Store small metal objects in bags and boxes (polyethylene or polypropylene). Bag large iron objects. Silica gel should be used to reduce humidity inside a box or bag.
- Separate actively corroding iron from the rest of the collection and (if possible) store below 35% humidity.
- Store fragile or complex objects (e.g. Roman brooches) in crystal boxes with sculpted Plastazote support. Tyvek layers can help with lifting a fragile item in and out of its support.
- Vapours released by wood can damage all metals, some more than others.

Padlock © The Portable Antiquities Scheme
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Iron shield boss © Hampshire Cultural Trust & Portable Antiquities Scheme CC BY attribution licence

LABELLING AND MARKING

Most ferrous metals can be given surface marking.

- Undertake a documentation check to ensure that the information is correct before remains are marked.
- Ensure that marking is clear and legible.
- Use a layer of Paraloid B72, then ink, then a layer of Paraloid B72 to seal.
- Label bags or boxes or use archive labels for severely corroded objects.

ENVIRONMENTAL DATA

- Temperature: 10–25°C.
- Humidity: 35–55% (over 65% RH causes rust; below 35% RH causes active corrosion).
- Illuminance: 300 lux maximum.
- UV Radiation: 0–10 microwatts per lumen ideal. 75 microwatts per lumen maximum.

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INDICATORS OF DECAY

- Fine longitudinal cracks in corrosion layers.
- Disintegration and detached parts.
- Lamination of corrosion layers to reveal the core.
- Orange spots.
- Water droplets on surface.

WHERE YOU WILL COME ACROSS FERROUS METALS

- In statues, carvings and architectural features.
- In archaeological excavation archives.
- In archaeological objects from Iron Age and later.

HANDLING

- Support iron objects well when handling. Move fragile items on padded trays or boxes if possible.
- Use nitrile gloves. Cotton gloves can catch or leave fibres, and chlorides (from corrosion) can penetrate through them after a single use.

LOOK OUT FOR

- Past treatment does not prevent an iron object being susceptible to corrosion, as no treatment lasts forever.
- Objects that have been made with multiple metals (alloys) or have metal inlays are composite objects and can be susceptible to galvanic corrosion.
- Be aware that metal corrosion products can preserve or mineralise materials such as textiles or wood. Handle with care as these can be fragile and ephemeral.

Roman hipposandal ©West Yorkshire Archaeology Advisory Service & Portable Antiquities Scheme

HEALTH AND SAFETY

Use nitrile gloves and wear an appropriate facemask, as needed.

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SOURCES OF FURTHER INFORMATION

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