

LEAD ROOFING

1.0 SPECIFICATION OF LEAD SHEETING

Unless otherwise directed, traditionally cast lead sheet is required.

2.0 STRIPPING

Carefully strip old defective lead and existing coverings from roofs where directed, load and transport from site and credit certified weights at rates to be agreed.

3.0 RE-CASTING

- 3.1 Cut out and remove all solder and impurities. Carefully cut out any inscriptions, etc., and set aside for re-use as directed. Re-cast to weights for new work as table below. Include for carriage to and from lead-casting works.
- 3.2 Cast new inscription and date plaque, as directed by the CA. Fix this and salvaged inscriptions on the new roof covering.

4.0 NEW LEAD SHEETING

- 4.1 New lead sheet is to conform to quality laid down in BS1178:
- 4.2 Thicknesses are to conform to the following table.

Flat roofing	Code 8
Parapet Gutters	Code 7
Swept and pitched roofs	Code 6
Vertical cladding	Code 5
Back gutter to chimneys	Code 5
Flashings	Code 5
Soakers	Code 4
Hip and ridge saddles	Code 5
Valley gutters	Code 6
Weathering to cornices, etc.	Code 6

RE-LAYING LEADWORK

Except when otherwise agreed by the CA, the work is to be carried out by registered plumbers. All new lead is to be neatly dressed, without injury, securely fixed with copper nails, joints where necessary being welted or 'burned' and not soldered, and provision made for expansion and contraction.

5.0 SHEET SIZES

New sheet sizes are not to exceed 2.4m (Code 7) in length or 2 sq.m in area. The distance between either hollow roll or timber covered rolls shall normally be a maximum of 600mm.

6.0 SUBSTRUCTURE

- 6.1 New timber for boarding and for repairs to substructure to be of well-seasoned white softwood. Boarding and supporting timbers are to be treated and the moisture content when laid is to be no greater than 14%. Timbers with an average pH less than 5.5 are to be rejected.
- 7.2 The Client may request the taking of 5 No.drilled samples from each batch of timber and sending to a laboratory for testing. The Client will separately pay for the laboratory fee.
- 7.3 All projecting nail heads are to be punched below the supporting surface and projecting edges planed off. Unless otherwise indicated the boarding to be ex 150 × 32mm plain edged, butt jointed, sawn finished on the upper surface and regularised by planing the under side. Boards are to be skew nailed (alternate directions) with 75mm ring-shank stainless steel nails and to be laid with penny gaps (1-2mm apart). All nails are to be punched below the surface before the lead is laid.
- 7.4 Unless otherwise specified it should be assumed that the rolls will be replaced on a like for like basis (timber for timber, hollow for hollow). The rolls on a newly leaded roof are generally to be laid the same way as those on the previous covering, i.e. if the previous rolls were at right angles to the ridge and eaves the relaid sheet should be the same. Similarly, if the previous rolls were at an angle to the ridge and eaves the new lead should be similarly relaid, but the plumber is to get a written confirmation on this from the CA for each roof slope.
- 7.5 In conjunction with the above the roof space must be well ventilated, **throughout**, direct to the outside air.

7.0 LEAD SHEET PREPARATION

- 7.1 Lead is to be laid directly onto the boards, sand face down, and without an isolating layer.

- 8.2 A single coat of chalk enhanced emulsion is to be applied to the underside of all the lead sheets prior to laying. The emulsion is to be based on ICI Dulux Weathershield and/or Mouldshield white external Masonry Paint (smooth). 5 litres of the paint should be mechanically mixed with approximately 1 litre of water and then 5 litres of a fine powdered chalk (SF100 or BM200 grade) should be slowly added to create a uniform thick slurry. After 30 minutes 100 mls of a water based green dye should be added followed by a further 30 minutes of mechanical mixing. The emulsion should then be left to settle for 24 hours before use. Alternatively, a ready mixed version is available from Rowan Technologies Ltd, 216 Church Road, Urmaston, Manchester (0161-748-3644).
- 8.3 The sand-cast underside lead surface should be dry cleaned and roughened using a wire brush and generally bossed into shape. The cleaning should remove any mill scales, oxidation layers or previously formed corrosion products. All the sheets should then be stood up and coated with a, well-stirred, single coat of the chalk-enhanced emulsion to a depth of at least 200 micrometers (coverage of approximately 5m²/litre).
- 8.4 In order to avoid possible capillary attraction of rainwater:
- do not apply chalk to the bottom 70mm on a 60 degrees slope, 160mm on a 30 degrees slope or 220mm on a 10 degrees slope.
 - apply the coating only three quarters of the way around the inside of the roll (with or without splashlaps) leaving a 30mm uncoated allowance on the edge.
 - treat drips and other details similarly.
- 8.5 The lead sheets should be left to fully dry before replacing on the roof and final bossing into shape. Any spillages on the top surfaces should be removed using warm water.
- 8.6 Do not use patination oil.

8.0 FIXING

- 8.1 New sheets are to be fixed at the head with two staggered rows of copper nails with 10mm flat heads at 75mm centres and 75mm apart. Drips at the joint between the top of each sheet and the next are to be provided, each of 50mm depth (with an anti-capillary groove) or 75mm splayed, as directed by the CA.
- 8.2 The sides of all sheets are to be fixed with 0.6mm thick copper tingles at least 50mm wide by 150mm long, securely fixed using 2no. brass or stainless steel screws and turned into hollow rolls. Alternatively, where directed, joints can be formed by dressing around wooden rolls with bossed ends.

9.0. VERTICAL ABUTMENTS

- 9.1. Against all vertical abutments, form 150mm min. upstands and protect with cover flashing inserted 25mm into walling, new grooves being cut for the purpose where necessary.
- 9.2. Cover flashings are to be secured with lead wedges at 450mm centres pointed with hydraulic lime mortar (NHL 3.5) and dressed down at least 100mm over upstands. Sheets are not to exceed 1.8m length, to be lapped at least 100mm, and supported at intervals of not more than 750mm by means of stainless steel clips securely fixed to walling behind flashings, and dressed up 25mm over outer face.

10.0 VALLEYS

- 10.1 Valley boarding, adapted and repaired as directed, is to be re-covered with Code 6 lead, dressed to slope of boarding. Tilting fillets are to be provided, fixed to the boarding to trim the roof battening and in a position to give a distance of a minimum 125mm between the raking edges of the roof covering and an overhang of 25 – 50mm (depending upon covering) from the fillet to the raking edge.
- 10.2 The lead lining is to be dressed over the fillet and finished with a welted edge. The lining is to be taken up the roof slope on each side, adequately supported, to give 150mm min. measures vertically between the sole of the gutter and the edge of the sheet.
- 10.3 Sheets should not exceed 2.25m between joints in length (Code 6) or 1.8m between joints (Code 5). Sheets should be secured with a row of copper clout nails at the head of each piece and a third of the way down each edge, 150mm apart. Over-nailing is to be avoided. Sheets are to be lapped 150mm minimum.

11.0. RIDGES AND HIPS

To be covered with Code 5 lead in sheets not exceeding 1.8m in length (or 1.5m in the case of hips) with 150mm lap at joints (100mm for hips) dressed over rolls and 150mm to 165mm down slates on each side. All dressings to be firmly held at 600mm intervals by double lead clips 50mm wide (copper clips hot-dip coated with high lead content solder to be used for exposed situations) fixed under rolls and carried down under wings, then dressed back 25mm along upper face.

12.0. GUTTERS

Tapered gutters are to be formed in accordance with the CA's detailed site instructions, with drips at intervals as specified above, and from width at least 225mm at lowest point. Before re-fixing of slating/tiling, re-dress gutters with Code 7 lead carried 150mm up slope and over continuous tilting fillet and form welted edge. Form upstands and cover flashings at abutments as specified above.

13.0 DORMERS

- 13.1 Boarding to be made good by General Contractor, all as directed.
- 13.2 Cheeks to be recovered with Code 5 lead sheet dressed over top board and nailed thereto a reverse and also supported by wiped lead 'dots' as specified above. The front edge to be dressed around the corner post, securely copper nailed and welted back over nail heads. Tops of dormers to be recovered with 5lb lead as for flats, with lead or copper fixing tabs at all exposed edges.
- 13.3 Dormer and chimney aprons to be dressed at least 100mm around angles and to have 230mm inclined apron supported by lead clips at not more than 750mm intervals. Soakers against dormers and chimneys to be 25mm longer than slates and turned up under cover flashings and dormer cheek leadwork.

14.0 DRESSINGS TO CORNICES AND LEDGES

Copper clips incorporated into the welted joints and clips to retain front edges. The amount of fixing required will depend upon exposure and is to be agreed with the CA. Traditional dot intermediate fixings are to be avoided wherever possible.

15.0 REPAIRS

- 15.1 Thoroughly inspect and check over all remaining existing leadwork to roofs throughout and repair as directed in detail by the CA.
- 15.2 Cut out all soldered or inadequate patching; repair by lead-brazing on new pieces all of weight to match existing. Re-dress and refix all loose and displaced leadwork as directed, making up with new lead or copper clips and copper nails where these are deficient or inadequate.

16.0. COMPLETION

All roof plumbing works are to be inspected in detail by the CA before the plumbers leave the site. Leave all leadwork in a sound and weather-tight condition and remove all tools, plant and equipment and unused materials. Carefully clean out all gutters, wash down and leave tidy on completion.