

**Ministry of Defence  
Defence Procurement Agency, ADRP2  
Abbey Wood  
Bristol  
BS34 8JH**

## **OBSOLESCENCE NOTICE**

All DTD specifications were declared obsolescent from 1<sup>st</sup> April 1999. All DTD 900 series approvals also lapsed at that time. The standards will no longer be updated but will be retained as obsolescent documents to provide for the servicing of existing equipment.

### **Further Guidance**

The aim in declaring the specifications obsolescent is to recognise that the documents are not being updated and thus should be used with care by both purchaser and supplier. For example, a specification could contain valid technical information but may also contain type approval clauses that contradict procurement policy and/or use materials that do not comply with environmental legislation. The obsolescent specification can still be used as a basis for a purchase provided that the supplier and purchaser agree suitable changes to the specification within the purchase order/contract.

For the DTD 900 system, each specification has provided an MoD approved material and process. For these items, the declaration of obsolescence will constitute the termination of both the extant MoD approval and the continuing MoD assessment that had underpinned those approvals. Again, the technical content of the document remains valid and can be used by both purchaser and supplier as a basis for a contract but an acceptable (to the parties) approval/assessment procedure would be required.

**Process Specification****CHEMICAL CONTOURING OF ALUMINIUM AND  
ALUMINIUM ALLOY SHEET AND PLATE**

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**1. SCOPE**

This specification describes a process for shaping sheet and plate of aluminium and aluminium alloy by chemical means, and lays down standards of acceptance for treated parts. A warning is given that the fatigue properties of parts formed by this process may be appreciably lower than those of similar shapes made by mechanical machining. A method is described whereby fatigue properties can be improved.

**2. RANGE OF USE**

Subject to section 5 below the process may be used on any aluminium base sheet and plate of any initial thickness. There is no limit to the thickness of metal which may be removed. The process may be applied to either or both faces.

**3. PREPARATION**

3. 1 Areas which are not to be treated shall be protected by a suitable masking film.
3. 2 Before application of masking films parts shall be suitably degreased, and may, if desired, be pickled according to D.T.D.915 or by any other process approved for preparing aluminium alloy for painting.
3. 3 The masking operations shall not damage nor appreciably attack the metal surface.

**4. PROCESS**

4. 1 The solution shall consist of 10% to 15% w/v caustic soda in water (100 lb. to 150 lb. per 100 gallons of solution) operated at a temperature selected within the range 70°C. to 85°C. In order to maintain a known and constant rate of dissolution it will be necessary to maintain the temperature within a few degrees of the selected value. A dissolution rate of about 0.04 inch per surface per hour is normally to be expected. Suitable precautions shall be taken to keep the solution reasonably free from aluminium hydroxide sludge.  
Other solutions may be used subject to approval by the Director of Materials and Structures Research and Development.
4. 2 After removal from the caustic soda bath parts shall be washed with water and immersed for several minutes in a dilute nitric acid solution to remove smut and any entrapped alkali; again washed with water, and dried.
4. 3 Agents used for removing the masking material shall not appreciably attack the metal.

**5. CONTOUR AND SURFACE FINISH**

5. 1 The contoured surface shall be satin smooth and free from pinholes, fissures, etc. It has been found that the process leaves a better surface on fully heat treated alloys than on those in the solution treated condition.
5. 2 Radii dimensions shall be in accordance with design requirements. Radii shall be increased by mechanical milling where necessary to achieve this condition.
5. 3 Radii shall be free from cracks, pits, fissures, undercutting and end grain effects. Shallow rounded pits and grooves in the radii are acceptable.
5. 4 The final dimensions and contour of treated parts shall be according to design requirements. Waviness of the untreated surface of sheet or plate should be avoided but a slight bow is not usually objectionable.

## 6. FATIGUE PROPERTIES; REMEDIAL TREATMENTS

6. 1 The fatigue strength of a chemically contoured surface at a given number of cycles may be as much as 30% lower than that of a similar contour made by mechanical machining. On parts whose fatigue properties are important the following remedial treatment shall be applied at the discretion of the Design Authority: —

6. 1. 1 Blasting with non-metallic abrasive —The chemically contoured areas including radii shall be blasted with clean alumina or other harmless material. Blasting agents liable to impress particles of iron or iron oxide into the surface shall not be used. If an ageing treatment is to be given to alloys chemically contoured in the solution heat treated condition the ageing shall be carried out before the blasting, in order that the ageing process shall not relieve beneficial surface stresses introduced by blasting.

(Note. The remedial heat treatment which appeared in earlier issues is now omitted.)

## 7. SUBSEQUENT TREATMENT

After chemical contouring parts shall be given the full appropriate protective treatment as laid down by Design Requirements.

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Approved for issue,

E. W. RUSSELL,

Director of Materials and Structures Research and Development

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