SCHEDULE 2

Essential Safety Requirements

PART 6

SPECIFIC QUANTITATIVE REQUIREMENTS
FOR CERTAIN PRESSURE EQUIPMENT

35.—(1) The following provisions apply as a general rule, but where they are not applied, including in cases where materials are not specifically referred to and no harmonised standards are applied, the manufacturer must demonstrate that appropriate measures have been taken to achieve an equivalent overall level of safety.

(2) The provisions laid down in this Part supplement the essential safety requirements of Parts 1 to 5 in relation to the pressure equipment to which they apply.

Allowable stresses

36.—(1) In paragraph 37, the following symbols have the following meanings—

(a) $R_{e/t}$, yield limit, indicates the value at the calculation temperature of—

(i) the upper flow limit for a material presenting upper and lower flow limits,

(ii) the 1.0 % proof strength of austenitic steel and non-alloyed aluminium,

(iii) the 0.2 % proof strength in other cases.

(b) $R_{m/20}$ indicates the minimum value of the ultimate tensile strength at 20°C.

(c) $R_{m/t}$ designates the ultimate tensile strength at the calculation temperature.

37. The permissible general membrane stress for predominantly static loads and for temperatures outside the range in which creep is significant must not exceed the smaller of the following values, according to the material used—

(a) in the case of ferritic steel including normalised (normalised rolled) steel and excluding fine-grained steel and specially heat-treated steel, $^2/_3$ of $R_{e/t}$ and $^5/_{12}$ of $R_{m/20}$,

(b) in the case of austenitic steel—

(i) if its elongation after rupture exceeds 30%, $^2/_3$ of $R_{e/t}$

(ii) or, alternatively, and if its elongation after rupture exceeds 35%, $^5/_6$ of $R_{e/t}$ and $^1/_3$ of $R_{m/t}$,

(c) in the case of non-alloy or low-alloy cast steel, $^{10}/_{19}$ of $R_{e/t}$ and $^1/_3$ of $R_{m/20}$,

(d) in the case of aluminium, $^2/_3$ of $R_{e/t}$,

(e) in the case of aluminium alloys excluding precipitation hardening alloys $^2/_3$ of $R_{e/t}$ and $^5/_{12}$ of $R_{m/20}$.

Joint coefficients

38.—(1) For welded joints, the joint coefficient must not exceed the following values—

(a) for equipment subject to destructive and non-destructive tests which confirm that the whole series of joints show no significant defects: 1;

(b) for equipment subject to random non-destructive testing: 0.85;

(c) for equipment not subject to non-destructive testing other than visual inspection: 0.7.

(2) If necessary, in addition to the factors referred to in sub-paragraph (1), the type of stress and the mechanical and technological properties of the joint must also be taken into account.

Pressure limiting devices, particularly for pressure vessels

39. The momentary pressure surge referred to in paragraph 16 must be kept to 10% of the maximum allowable pressure.

Hydrostatic test pressure

40. For pressure vessels, the hydrostatic test pressure referred to in paragraph 27 must be no less than whichever is greater of the following—

(a) that corresponding to the maximum loading to which the pressure equipment may be subject in service taking into account its maximum allowable pressure and its maximum allowable temperature, multiplied by the coefficient 1.25;

(b) the maximum allowable pressure multiplied by the coefficient 1.43.

Material characteristics

41. Unless other values are required in accordance with other criteria that must be taken into account, a steel is considered as sufficiently ductile to satisfy paragraph 31(3)(a) if, in a tensile test carried out by a standard procedure, its elongation after rupture is no less than 14% and its bending rupture energy measured on an ISO V test-piece is no less than 27 J, at a temperature not greater than 20°C but not higher than the lowest scheduled operating temperature.