2. Shot size;
3. Shot velocity;
b. Post shot peening cleaning parameters;
c. Heat treatment cycle parameters, as follows:
1. Atmosphere parameters, as follows:
a. Composition of the atmosphere;
b. Pressure of the atmosphere;
2. Time-temperature cycles;
d. Post heat treatment visual and macroscopic criteria for acceptance of the coated substrates;
4. Technology for quality assurance techniques for the evaluation of the coated substrates listed in the Table, as follows:
a. Statistical sampling criteria;
b. Microscopic criteria for:
1. Magnification;
2. Coating thickness uniformity;
3. Coating integrity;
4. Coating composition;
5. Coating and substrates bonding;
6. Microstructural uniformity;
c. Criteria for optical properties assessment:
1. Reflectance;
2. Transmission;
3. Absorption;
4. Scatter;
5. Technology and parameters related to specific coating and surface modification processes listed in the Table, as follows:
a. For Chemical Vapour Deposition:
1. Coating source composition and formulation;
2. Carrier gas composition;
3. Substrate temperature;
4. Time-temperature-pressure cycles;
5. Gas control and part manipulation;
b. For Thermal Evaporation - Physical Vapour Deposition:
1. Ingot or coating material source composition;
2. Substrate temperature;
3. Reactive gas composition;
4. Ingot feed rate or material vapourisation rate;
5. Time-temperature-pressure cycles;
6. Beam and part manipulation;
7. "Laser" parameters, as follows:
a. Wave length;
b. Power density;
c. Pulse length;
d. Repetition ratio;
e. Source;
f. Substrate orientation;
c. For Pack Cementation:
1. Pack composition and formulation;
2. Carrier gas composition;
3. Time-temperature-pressure cycles;
d. For Plasma Spraying:
1. Powder composition, preparation and size distributions;
2. Feed gas composition and parameters;
3. Substrate temperature;
4. Gun power parameters;
5. Spray distance;
6. Spray angle;
7. Cover gas composition, pressure and flow rates;
8. Gun control and part manipulation;
e. For Sputter Deposition:
1. Target composition and fabrication;
2. Geometrical positioning of part and target;
3. Reactive gas composition;
4. Electrical bias;
5. Time-temperature-pressure cycles;
6. Triode power;
7. Part manipulation;
f. For Ion Implantation:
1. Beam control and part manipulation;
2. Ion source design details;
3. Control techniques for ion beam and deposition rate parameters;
4. Time-temperature-pressure cycles.
g. For Ion Plating:
1. Beam control and part manipulation;
2. Ion source design details;
3. Control techniques for ion beam and deposition rate parameters;
4. Time-temperature-pressure cycles;
5. Coating material feed rate and vapourisation rate;
6. Substrate temperature;
7. Substrate bias parameters.

1030. ELECTRONICS

1031. Equipment, Assemblies and Components

1031. **NOTES:**
1. The embargo status of equipment, devices and components described in 1031., other than those described in 1031.1.a.3. to 10., which are specially designed or which have the same functional characteristics as other equipment is determined by the embargo status of the other equipment.
2. The embargo status of integrated circuits described in 1031.1.a.3. to 9. which are unalterably programmed or designed for a specific function is determined by the embargo status of the other equipment.

N.B.:
When the manufacturer or applicant cannot determine the embargo status of the other equipment, the embargo status of the integrated circuits is determined in 1031.1.a.3. to 9.

1031. 1. Electronic devices and components:

1031. 1. a. General purpose integrated circuits, as follows:

NOTES:
1. The embargo status of wafers (finished or unfinished), in which the function has been determined, is to be evaluated against the parameters of 1031.1.a.
2. Integrated circuits include the following types:
"Monolithic integrated circuits";
"Hybrid integrated circuits";
"Multichip integrated circuits";
"Film type integrated circuits", including silicon-on-sapphire integrated circuits;
"Optical integrated circuits".

1031. 1. a. 1. Integrated circuits, designed or rated as radiation hardened to withstand a total dose of 5×10^5 rad (Si), or higher;
(For integrated circuits designed or rated against neutron or transient ionizing radiation, see the Munitions List.)

1031. 1. a. 2. Integrated circuits described in 1031.1.a.3 to 10, rated for operation at an ambient temperature below 219 K (-54°C) or above 398 K (125°C);

NOTE:
1031.1.a.2. does not apply to integrated circuits for civil automobiles or railway engines.

1031. 1. a. 3. "Microprocessor microcircuits", "microcomputer microcircuits" and microcontroller microcircuits, having any of the following:

NOTES:
1. 1031.1.a.3. does not embargo silicon-based "microcomputer microcircuits" or microcontroller microcircuits having an operand (data) word length of 8 bit or less and not covered by Note 2 to 1031.
2. 1031.1.a.3. includes digital signal processors, digital array processors and digital coprocessors.

1031. 1. a. 3. a. An external data bus width exceeding 32 bit or an arithmetic logic unit with an access width exceeding 32 bit;
b. A clock frequency exceeding 40 MHz;
c. An external data bus width of 32 bit or more and capable of executing 12.5 million instructions per second (MIPS) or more; *or*

Technical Note:
If MIPS are not specified, the inverse of the average instruction cycle time (in microseconds) should be used.

d. More than one data or instruction bus or serial communication port for external interconnection in a parallel processor with a transfer rate exceeding 2.4 Mbyte/s;

1031. 1. a. 4. Storage integrated circuits, as follows: