

SAFETY AND HYGIENE REGULATIONS

PRESSURE EQUIPMENT: REGULATIONS AND INSPECTIONS

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A SUMMARY OF REGULATIONS AND PERIODIC INSPECTIONS OF PRESSURE EQUIPMENT

TYPE OF EQUIPMENT	FIELD OF APPLICATION	APPLICABLE REGULATIONS	PERIODIC INSPECTIONS	TYPES OF TESTS
Equipment in which pressure builds up (no complementary technical instruction)	From $P > 0.5 \text{ kg/cm}^2$ (If $P \leq 2 \text{ kg/cm}^2$ and $V < 10 \text{ dm}^3 \rightarrow$ excluded)	<ul style="list-style-type: none"> ▪ Pressure equipment regulations (Royal Decree 769/1999 and Royal Decree 1244/1979) ▪ Articles 6, 12, 13, 15, 18, 19 and 30, Appendix VIII, Pressure vessels regulations (Royal Decree 2443/1969) 	Every 5 years If $P \cdot V \geq 10$ (by an inspection and monitoring body)	<ul style="list-style-type: none"> ▪ Hydrostatic test ▪ Interior inspection ▪ Exterior inspection ▪ Safety valve seal
Pipes for fluids (no complementary technical instruction)	Pipes when: $P(\text{kg/cm}^2) \cdot D$ (interior diameter in cm) ≥ 100 and, in addition, $P > 4 \text{ kg/cm}^2$	<ul style="list-style-type: none"> ▪ Pressure equipment regulations (Royal Decree 769/1999 and Royal Decree 1244/1979) ▪ Articles 6, 12, 13, 15, 18, 19 and 30, Appendix VIII, Pressure vessels regulations (Royal Decree 2443/1969) 	Every 10 years (by an inspection and monitoring body - maintenance company)	<ul style="list-style-type: none"> ▪ Hydrostatic test ▪ Interior inspection ▪ Exterior inspection ▪ Safety valve seal
Containers subjected to pressure (no complementary technical instruction) Autoclaves, etc.	From $P > 1 \text{ kg/cm}^2$ (If $P \leq 2 \text{ kg/cm}^2$ and $V < 10 \text{ dm}^3 \rightarrow$ excluded)	<ul style="list-style-type: none"> ▪ Pressure equipment regulations (Royal Decree 769/1999 and Royal Decree 1244/1979) ▪ Articles 6, 12, 13, 15, 18, 19 and 30, Appendix VIII, Pressure vessels regulations (Royal Decree 2443/1969) 	Every 10 years If $P \cdot V \geq 10$ (by an inspection and monitoring body)	<ul style="list-style-type: none"> ▪ Hydrostatic test ▪ Interior inspection ▪ Exterior inspection ▪ Safety valve seal

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TYPE OF APPARATUS	FIELD OF APPLICATION	APPLICABLE REGULATION	PERIODIC INSPECTIONS	TYPE OF TESTS
Boilers Economisers Preheaters Superheaters Reheaters	<ul style="list-style-type: none"> ▪ Superheated water or steam boilers with $P > 0.5$ bar and $P(N/mm^2) \cdot V(m^3) \geq 0.005$ ▪ Hot water boilers for industrial use with power $> 200,000$ kcal/h ▪ Hot water boilers for non-industrial use when $P(bar) \cdot V(m^3) > 10$ ▪ Thermal fluid heaters with a power of $> 25,000$ kcal and a pressure < 10 bar (forced circulation) or a pressure < 5 bar (the rest) ▪ Economisers and preheaters ▪ Steam superheaters and reheaters 	ITC-MIE-AP01 Boilers, economisers, preheaters, superheaters and reheaters	At 5, 10, 13, 16,... years If $P \cdot V \geq 25$ (by an inspection and monitoring body)	<ul style="list-style-type: none"> ▪ Hydrostatic test ▪ Interior inspection ▪ Exterior inspection ▪ Tests when running with the safety valve seal
Pipes for fluids associated with boilers	<ul style="list-style-type: none"> ▪ Saturated steam and boiler with power $> 200,000$ kcal/h ▪ Superheated water and boiler with power of $> 200,000$ kcal/h ▪ Hot water and boiler with power $> 500,000$ kcal/h ▪ Heat transfer fluid and heater with power $> 25,000$ kcal/h ▪ Liquid and gas fuels 	ITC-MIE-AP02 Pipes for fluids associated with boilers	Every 5 years (by an inspection and monitoring body)	<ul style="list-style-type: none"> ▪ Hydrostatic test ▪ At 10 years, complete inspection with total or partial disassembly of the lagging in case of doubts

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Fire extinguishers	Portable or fixed fire extinguishers: <ul style="list-style-type: none"> ▪ Powder or halon <= 100 kg ▪ water or foam <= 100 l ▪ CO₂ <= 10 kg 	ITC-MIE-AP05 Fire extinguishers Regulation on fire protection facilities	Every 5 years (by an inspection and monitoring body – manufacturer) Every year (maintenance company)	<ul style="list-style-type: none"> ▪ Hydrostatic test Note: tests tend to be done by the recharging company at their facilities
Cylinders and tanks of compressed gases, liquids and solutions under pressure	Welded and seamless steel cylinders and tanks, dissolved acetylene and aluminium alloy cylinders and tanks, cylinder bundles and cryogenic tanks with P >= 0.5 bar (including closing, safety and additional elements)	ITC-MIE-AP07 Cylinders and tanks of compressed, liquefied and dissolved gases under pressure	<ul style="list-style-type: none"> ▪ Chlorine: 2 years (by an inspection and monitoring body) ▪ Acetylene: 3 years (by an inspection and monitoring body) ▪ Others: depending on the TPC (by an inspection and monitoring body) 	<ul style="list-style-type: none"> ▪ According to regulation 7 of the supplementary technical instructions Note: tests tend to take place in the gas inspector's facilities

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<p>Pressure equipment that belongs to refrigerated facilities</p>	<p>Pressure containers that are not dynamic elements With $V > 15 \text{ dm}^3$ and $P > 1 \text{ bar}$</p>	<p>ITC-MIE-AP09 Refrigerated containers</p>	<p>First at 10 years Then every 5 years</p> <p>If $P \cdot V \geq 40$ (by an inspection and monitoring body)</p>	<ul style="list-style-type: none"> ▪ Exterior revision ▪ Interior revision ▪ Disassembly and taring of safety elements ▪ Disassembly, inspection and testing of pressure limiters ▪ Hydrostatic test if there has been damage or a repair, or if the equipment has not been used for over two years
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TYPE OF EQUIPMENT	FIELD OF APPLICATION	APPLICABLE REGULATIONS	PERIODIC INSPECTIONS	TYPES OF TESTS
Cryogenic tanks	Containers for storing or using cryogenic gases with $450 \text{ l} < V < 2,000,000 \text{ l}$ and $P > 1 \text{ bar}$	ITC-MIE-AP10 Cryogenic tanks	Every 5 years <ul style="list-style-type: none"> ▪ If $P \cdot V > 30,000$ flammable (by an inspection and monitoring body) ▪ If $P \cdot V > 45,000$ combustion agent (by an inspection and monitoring body) ▪ If $P \cdot V > 55,000$ inert (by an inspection and monitoring body) 	<ul style="list-style-type: none"> ▪ Every 5 years, leak tests and inspection of the safety system ▪ Every 15 years, pneumatic test at 1.1 Pms Note: the tests should be carried out by a gas inspector in situ
Hot water boilers	<ul style="list-style-type: none"> ▪ Heating or hot water boilers for domestic or non-industrial use with $P(\text{bar}) \cdot V(\text{m}^3) \leq 10$ ▪ Heating or hot water boilers for industrial use with power $\leq 200,000 \text{ kcal/h}$ 	ITC-MIE-AP12 Hot water boilers	Have a record of types	

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Heat exchangers	Heat exchangers with risk potential $P(\text{bar}) \cdot V(\text{dm}^3)$ and the following group of fluids: <ul style="list-style-type: none"> ▪ $PR > 10,000$ and fluids from groups A or B ▪ $2,500 < PR \leq 10,000$ and fluids from groups A or B ▪ $500 < PR \leq 2,500$ and fluids from groups A or B ▪ $PR > 10,000$ and fluids from group A ▪ $PR > 10,000$ and fluids from group B ▪ $2,500 < PR \leq 10,000$ and fluids from group A ▪ $500 < PR \leq 2,500$ and fluids from group A ▪ $2,500 < PR \leq 10,000$ and fluids from group B ▪ $PR > 10,000$ and fluids from group C ▪ $PR \leq 500$ and fluids from group A ▪ $500 < PR \leq 2,500$ and fluids from group B 	ITC-MIE-AP13 Heat exchangers	Procedure according to RD 2135/1980 Every 3 years Every 10 years Every 4 years Every 10 years Every 5 years Every 10 years Every 5 years	Authorisation to start up <ul style="list-style-type: none"> ▪ Exterior inspection by the user ▪ Pressure test by an official inspection and monitoring body ▪ Exterior inspection by the user ▪ Pressure test by an official inspection and monitoring body ▪ Exterior inspection by the user ▪ Pressure test by an official inspection and monitoring body ▪ Exterior inspection by the user

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Equipment for rapid preparation of coffee	V >= 4 litres with power > 1.5 kW and P(bar) · V(dm ³) <= 300 and maximum boiler pressure < 2 bar	ITC-MIE-AP14 Equipment for the rapid preparation of coffee	5 years (by an inspection and control entity)	<ul style="list-style-type: none"> ▪ Inspection and tests
Compressed air	Tanks and auxiliary containers such as separators, expansion reservoirs, exchanges for the compression system with P > 0.5 bar and P·V > 0.02	ITC-MIE-AP17 Facilities for treating and storing compressed air	Every 10 years (by an inspection and control entity)	<ul style="list-style-type: none"> ▪ Interior inspection ▪ Exterior inspection ▪ Hydrostatic test