

# RECOMMENDED FURNACE SELECTION FOR METALLIC MATERIALS USED AT MANUFACTURING USING THIS TECHNOLOGY

Material	MATERIAL TYPE			Type of heat treatment	Recommended furnaces and accessories
	Standard (material identification)	Example of comm. identification	Example of comm. identification		
High-strength steel	18 Mar 300 / 12709	EOS High-strength steel ocel MS1	Böhler W 722	<b>Artificial ageing 490 °C</b> 6 h, air circulation	PP furnace with forced air circulation, protective gas box <b>p. 10</b>
	EN 12709	EOS High-strength steel ocel MS2	Böhler W 722	<b>Artificial ageing 490 °C</b> 6 h, air circulation	PP furnace with forced air circulation, protective gas box <b>p. 10</b>
Stainless steel	Stainless steel 17-4 / 14542	EOS Stainless steel GP1	Böhler N 700	<b>Relieving of internal stress, 650 °C</b> 1 h <b>1. Solution annealing 1040 °C</b> 30 min, cooling with air below 32 °C <b>2. Artificial ageing 460 °C</b> 1 h, cooling with air below 32 °C	PP furnace with forced air circulation, protective gas box, N2 supply <b>p. 10</b> K furnace, protective gas box, Ar supply, cooling table <b>p. 12</b> PP furnace with forced air circulation <b>p. 10</b>
	Hardenable stainless steel 15-5 / 14540	EOS Stainless steel PH1		<b>Hardening 525 °C</b> 4 h	PP furnace with forced air circulation, protective gas box, N2 supply <b>p. 10</b>
	1.4404 / UNS S31673	EOS Stainless steel 316L		<b>Relieving of internal stress 650 °C</b> 1 h	PP furnace with forced air circulation, protective gas box, N2 supply <b>p. 10</b>
	1.44.4 / UNS S31673	EOS Stainless steel 316L VPro		<b>Relieving of internal stress</b>	PP furnace with forced air circulation, protective gas box, N2 supply <b>p. 10</b>
	Tooling grade steel	EOS Stainless steel CX	Böhler AM Corrax	<b>Solution annealing 850 °C</b> 30 min, N2, cooling with air <b>Artificial ageing 525-600 °C</b> 4 h, N2	PP furnace with forced air circulation, protective gas box, N2 or Ar supply, cooling table <b>p. 10</b>
	Stainless steel 17-4PH / 14542 / X5CrNiCuNb17-4 ASTM F899-12b	EOS Stainless steel 17-4PH	Böhler N 700	<b>Relieving of internal stress 650 °C</b> 1 h <b>1. Solution annealing 1040 °C</b> 30 min, cooling with air below 32 °C <b>2. Artificial ageing 460 °C</b> 1 h, cooling with air below 32 °C	PP furnace with forced air circulation, protective gas box, N2 supply <b>p. 10</b> K furnace, protective gas box, Ar supply, cooling table <b>p. 12</b> PP furnace with forced air circulation <b>p. 10</b>
Nickel alloys	Inconel™ 718, UNS N07718, AMS 5662, mat. # 2.4668	EOS Nickel alloy IN718	Böhler L 718	<b>Solution annealing 980 °C</b> 1 h, Ar, cooling with air <b>Artificial ageing 720 °C</b>	K furnace, protective gas box, Ar supply, cooling table <b>p. 12</b> K furnace, protective gas box, Ar supply, cooling table <b>p. 12</b>
	Inconel™ 625, UNS N06625, AMS 5666F, mat. # 2.4856 etc.	EOS Nickel alloy IN625	Böhler L 625	<b>Relieving of internal stress 890 °C</b> air circulation <b>Solution annealing 1090-1200 °C</b> cooling <b>Annealing 950-1000 °C</b> cooling	PKRC retort furnace with hot wall <b>p. 14</b> K furnace, cooling table <b>p. 12</b> K furnace, cooling table <b>p. 12</b>
	UNS N06002	EOS Nickel alloy HX		<b>Solution annealing 1177 °C</b> 1 h, air quick cooling with air under 60 °C	K furnace <b>p. 12</b>
	CoCrMo super alloys, UNS R31538, ASTM F75	EOS Cobalt-chromium MP1		<b>Relieving of internal stress 1150 °C</b> 6 h, Ar	K furnace, protective gas box, Ar supply <b>p. 12</b>
Cobalt-chromium	CoCrMo super alloys	EOS Cobalt-chromium SP2		<b>Relieving of internal stress 750 °C</b> 1 h, Ar	PP furnace with forced air circulation, protective gas box, Ar supply <b>p. 10</b>
	CoCrMo super alloys	EOS Cobalt-chromium RPD		<b>Relieving of internal stress 750 °C</b> 1 h, Ar	PP furnace with forced air circulation, protective gas box, Ar supply <b>p. 10</b>
	Ti64 Ti6Al4V light metal	EOS Titanium		<b>Relieving of internal stress 800 °C</b> 2-4 h, Ar	PKRC retort furnace with hot wall, Ar supply, vacuum pump <b>p. 14</b>
Titanium	Ti6Al4V ELI	EOS Titanium Ti64ELI		<b>Relieving of internal stress 800 °C</b> 2-4 h, Ar	PKRC retort furnace with hot wall, Ar supply, vacuum pump <b>p. 14</b>
	TiCP Grade 2, 37035, ASTM F67 (UNS R50400), (ISO5832-2)	EOS Titanium TiCP		<b>Relieving of internal stress 800 °C</b> 2-4 h, Ar	PKRC retort furnace with hot wall, Ar supply, vacuum pump <b>p. 14</b>
Aluminium	AlSi10Mg light metal	EOS Aluminium AlSi10Mg		<b>Relieving of internal stress 300 °C</b> 2 h	PP furnace with forced air circulation <b>p. 8</b>
	AlSi7Mg0,6 light metal	EOS Aluminium AlF357		<b>Relieving of internal stress 300 °C</b> 2 h	PP furnace with forced air circulation <b>p. 8</b>
Refractory metals	Pure tungsten	EOS Tungsten W1		<b>Austenitization annealing</b> , annealing, hardening	Consult the LAC representative
	Cr-C tool steel		Udeholm Orvar Supreme	<b>Austenitization annealing</b> , annealing, hardening	Consult the LAC representative