

# BEA produces with these Steel Grades

## ALLOY AND STAINLESS STEEL ASTM A 193 for HIGH TEMPERATURE SERVICE

### mechanical requirements

ALLOY	ASTM	AISI	UNS	W.-Nr.	dia	Tensile Strength		Yield min.0,2%Mpa	Elongation in 4 D. min %	Reduction of Area min %	HB max
						min. Mpa	min. Mpa				
B5	A193	501	S50100	1.7302	up to 4", incl	690	550		16	50	-
B6	A193	410	S41000	1.4006	up to 4", incl	760	585		15	50	-
B7	A193	4140	S41400	1.7225	2 1/2 and under	860	720		16	50	321
					over 2 1/2 to 4"	795	655		16	50	302
B7M	A193	4140	G41400	1.7225	over 4" to 7"	690	515		18	50	277
					2 1/2 and under	690	550		18	50	235
					over 2 1/2 to 4"	690	550		18	50	235
B16	A193	-	K14072	1.7711	over 4" to 7"	690	515		18	50	235
					2 1/2 and under	860	725		18	50	321
					over 2 1/2 to 4"	790	655		17	45	302
					over 4" to 7"	690	585		16	45	277
B8	A193	304	S30400	1.4301	all sizes	515	205		30	50	223
B8A	A193	304	S30400	1.4301	all sizes	515	205		30	50	192
B8T	A193	321	S32100	1.4341	all sizes	515	205		30	50	223
B8TA	A193	321	S32100	1.4341	all sizes	515	205		30	50	192
B8C	A193	347	S34700	1.4550	all sizes	515	205		30	50	223
B8CA	A193	347	S34700	1.4550	all sizes	515	205		30	50	192
B8M	A193	316	S31600	1.4401	all sizes	515	205		30	50	223
B8MA	A193	316	S31600	1.4401	all sizes	515	205		30	50	192
B8R	A193	-	S20910	1.3964	all sizes	690	380		35	55	271
B8S	A193	-	S21800	-	all sizes	655	345		35	55	271
B8MLCuN	A193	-	S31254	1.4547	all sizes	660	240		30	40	223
B8cl2	A193	304	S30400	1.4401	3/4 and under	860	690		12	35	321
B8Tcl2	A193	321	S32100	1.4341	over 3/4 to 1	795	550		15	35	321
B8Ccl2	A193	347	S34700	1.4550	over 1 to 1 1/4	725	450		20	35	321
					over 1 1/4 to 1 1/2	690	345		28	45	321
B8Mcl2	A193	316	S31600	1.4401	3/4 and under	760	655		15	45	321
B8MLCuNcl2	A193	-	S31254	1.4547	over 3/4 to 1	690	550		20	45	321
					over 1 to 1 1/4	655	450		25	45	321
					over 1 1/4 to 1 1/2	620	345		30	45	321
B8M2cl2B	A193	316	S31600	1.4401	2 and under	655	515		25	40	321
					over 2 to 2 1/2	620	450		30	40	321
B8cl2B	A193	304	S30400	1.4301	over 2 1/2 to 3	550	380		30	40	321
B8M3cl2C	A193	316	S31600	1.4401	2 and under	585	450		30	60	321
					over 2	585	415		30	60	321

## ALLOY AND STAINLESS STEEL ASTM A 320 for LOW TEMPERATURE SERVICE

### mechanical requirements

ALLOY	ASTM	AISI	UNS	W.-Nr.	dia	Tensile Strength		Yield min.0,2%Mpa	Elongation in 4 D. min %	Reduction of Area min %	HB	Impact Test	
						min. Mpa	min. Mpa					-101° C average(min)	-73° C Joules
L7	A320	4140	G4140	1.7225	4" and under	860	725		16	50	235	27(20)	
L7M	A320	4140	G4140	1.7225	all sizes	690	550		18	50	235		27(20)
L43	A320	4340	G4340	1.6565	over 2 1/2	860	725		16	50	235	27(20)	
B8	A320	304	S30400	1.4301	all sizes	515	205		35	50	223		
B8A	A320	304	S30400	1.4301	all sizes	515	205		35	50	192		
B8T	A320	321	S32100	1.4541	all sizes	515	205		35	50	123		
B8TA	A320	321	S32100	1.4541	all sizes	515	205		35	50	192		
B8C	A320	347	S34700	1.4550	all sizes	515	205		35	50	223		
B8CA	A320	347	S34700	1.4550	all sizes	515	205		35	50	192		
B8M	A320	316	S31600	1.4401	all sizes	515	205		35	50	223		
B8MA	A320	316	S31600	1.4401	all sizes	515	205		35	50	192		
B8cl2	A320	304	S30400	1.4301	3/4 and under	860	690		12	35	321		
B8Tcl2	A320	321	S32100	1.4541	over 3/4 to 1"	725	450		20	35	321		
B8Ccl2	A320	347	S34700	1.4550	over 1" to 1 1/4	795	550		15	35	321		
					over 1 1/4 to 1 1/2	690	345		28	45	321		
B8Mcl2	A320	316	S31600	1.4550	3/4 and under	760	655		15	45	321		
					over 3/4 to 1"	690	550		20	45	321		
					over 1" to 1 1/4	655	450		25	45	321		
					over 1 1/4 to 1 1/2	620	345		30	45	321		

### CHEMICAL REQUIREMENTS ASTM A193 - A320 composition percent

ASTM	C max	P max	S max	Mn max	Si max	Cr	Ni	Mo	V	Ti	N	Other max
B5	0,10 min	0,040	0,030	1,00	1,00	4,00-6,00	-	0,40-0,65	-	-	-	-
B6	0,15 min	0,040	0,030	1,00	1,00	11,5-13,5	-	-	-	-	-	-
B7-B7M	0,37-0,49	0,035	0,040	0,65-1,10	0,15-0,35	0,75-1,20	-	0,15-0,25	-	-	-	-
B16	0,36-0,47	0,035	0,040	0,45-0,70	0,15-0,35	0,80-1,15	-	0,50-0,65	0,25-0,35	-	-	Al 0,015
L7-L7M	0,38-0,48	0,035	0,040	0,75-1,00	0,15-0,35	0,80-1,10	-	0,15-0,25	-	-	-	-
L43	0,38-0,43	0,035	0,040	0,60-0,85	0,15-0,35	0,70-0,90	1,65-2,0	2,0-3,0	-	-	-	-
B8	0,08	0,045	0,030	2,00	1,00	18,0-20,0	8,0-11,0	-	-	-	-	-
B8A	0,08	0,045	0,030	2,00	1,00	18,0-20,0	8,0-11,0	-	-	-	-	-
B8C	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	-	-	Cb+Ta 10xC 0,05 under content min; 1,1
B8CA	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	-	-	-
B8M	0,08	0,045	0,030	2,00	1,00	16,0-18,0	10,0-14,0	2,0-3,0	-	-	-	-
B8MA	0,08	0,045	0,030	2,00	1,00	16,0-18,0	10,0-14,0	2,0-3,0	-	-	-	-
B8MLCuN	0,02	0,030	0,010	1,00	0,80	19,5-20,5	17,5-18,5	6,0-6,5	-	-	0,18-0,22	Cu 0,5-1,0
B8R	0,06	0,045	0,030	4,0-6,0	1,00	20,5-23,5	11,5-13,5	1,5-3,0	0,1-0,3	-	0,20-0,40	Cb+Nb 0,1-0,3
B8S	0,10	0,060	0,030	7,0-9,0	3,5-4,5	16,0-18,0	8,0-9,0	-	-	-	0,08-0,18	-
B8T	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	5xC min	-	-
B8TA	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	5xC min	-	-
B8cl2	0,08	0,045	0,030	2,00	1,00	18,0-20,0	8,0-11,0	-	-	-	-	-
B8Ccl2	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	-	-	Cb+Ta 10xC 0,05 under content min; 1,1
B8Mcl2	0,08	0,045	0,030	2,00	1,00	16,0-18,0	10,0-14,0	2,0-3,0	-	-	-	-
B8Tcl2	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	5xC min	-	-
B8MLCuNcl2	0,02	0,030	0,010	1,00	0,80	19,5-20,5	17,5-18,5	6,0-6,5	-	-	0,18-0,22	Cu 0,5-1,0

### CARBON, ALLOY AND STAINLESS STEEL NUTS ASTM A 194

#### mechanical requirements

ALLOY	ASTM	AISI	UNS	W.-Nr.	dia	HB	HRC max	HRB min
2	A194	1040	K04002	1.1191	all sizes	159 to 327	-	-
2H	A194	1040	K04002	1.1191	11/2 and under	248 to 327	24 to 28	-
	-	-	-	-	over 11/2	212 to 327	38	95
2HM	A194	1040	K04002	1.1191	all sizes	159 to 327	22	-
4L	A194	-	K14510	-	all sizes	248 to 327	24 to 38	-
3	A194	501	S50100	1.7362	all sizes	248 to 327	24 to 38	-
6-6F	A194	410	S41000	1.4006	all sizes	228 to 271	20 to 28	-
7L	A194	4140	S41400	1.7225	all sizes	248 to 327	24 to 38	-
7ML	A194	4140	S41400	1.7225	all sizes	159 to 237	22	-
8	A194	304	S30400	1.4301	all sizes	126 to 300	-	60 to 105
8C	A194	347	S34700	1.4550	all sizes	126 to 300	-	60 to 105
8M	A194	316	S31600	1.4401	all sizes	126 to 300	-	60 to 105
8MLCuN	A194	-	S31254	-	all sizes	126 to 300	-	-
8T	A194	321	S32100	1.4541	all sizes	126 to 300	-	60 to 105
8R	A194	-	S20910	-	all sizes	183 to 271	-	-
8S	A194	-	S21800	-	all sizes	183 to 271	-	-
8A	A194	304	S30400	1.4301	all sizes	126 to 192	-	60 to 90
8CA	A194	347	S34700	1.4550	all sizes	126 to 192	-	60 to 90
8MA	A194	316	S31600	1.4401	all sizes	126 to 192	-	60 to 90
8TA	A194	321	S32100	1.4541	all sizes	126 to 192	-	60 to 90

### CHEMICAL REQUIREMENTS ASTM A 194 composition percent

ASTM	C max	P max	S max	Mn max	Si max	Cr	Ni	Mo	V	Ti	Al max	Other max
2H	0,40 min	0,040	0,050	1,00	0,40	-	-	-	-	-	-	-
2HM	0,40 min	0,040	0,050	1,00	0,40	-	-	-	-	-	-	-
3	0,10 min	0,040	0,030	1,00	1,00	4,0 - 6,0	-	0,40-0,65	-	-	-	-
4L	0,40-0,50	0,035	0,040	0,70-0,90	0,15-0,35	-	-	0,2-0,3	-	-	-	-
6	0,15	0,040	0,030	1,00	1,00	11,5-13,5	-	-	-	-	-	-
6F	0,15	0,060	0,150	1,25	1,00	12,0-14,0	0,05	-	-	-	-	-
7L-7ML	0,37-0,49	0,040	0,040	0,65-1,10	0,15-0,35	0,75-1,20	-	0,15-0,25	-	-	-	-
16	0,36-0,47	0,035	0,040	0,45-0,70	0,15-0,35	0,80-1,15	-	0,50-0,65	0,25-0,35	-	0,015	-
8-8A	0,08	0,045	0,030	2,00	1,00	18,0-20,0	8,0-10,5	-	-	-	-	-
8C-8CA	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	0,050	-	Cb+Ta 10xC 0,05 under content min; 1,1
8M-8MA	0,08	0,045	0,030	2,00	1,00	16,0-18,0	10,0-14,0	2,0-3,0	-	-	-	-
8T-8TA	0,08	0,045	0,030	2,00	1,00	17,0-19,0	9,0-12,0	-	-	5xC min	-	-
8MLCuN	0,02	0,030	0,010	1,00	0,80	19,5-20,5	17,5-18,5	6,0-6,5	-	-	-	Cu 0,5-1,0 /N 0,18-0,22
8R	0,06	0,045	0,030	4,0-6,0	1,00	20,5-23,5	11,5-13,5	1,5-3,0	0,1-0,3	-	-	Cb+Ta 0,1-0,3 /N 0,20-0,40
8S	0,10	0,060	0,030	7,0-9,0	3,5-4,5	16,0-18,0	8,0-9,0	-	-	-	-	N 0,08-0,18

# BEA produces with these Steel Grades

## HIGH TEMPERATURE RESISTING ALLOYS

### mechanical requirements

ALLOY	ASTM	UNS	W.-Nr.	Heat Treatment	dia	Tensile Strength		Yield Strength	Elongation in 4 D.	Reduction of Area	HB max
						min. Mpa	min.0,2%Mpa				
600	B166	N06600	2.4816	solution annealed	under 1/2	655	310	20	-	-	
				solution annealed	1/2 to 3"	620	275	25	-	-	
				solution annealed	over 3"	585	240	30	-	-	
660A-B-C 660D	A453	S66286	1.4980	sol+prec.harden	all sizes	895	585	15	18	248-341	
	A453	S66286	1.4980	sol+prec.harden	all sizes	895	725	15	18	248-321	
HX	B572	N06002	2.4606	solution annealed	all sizes	660	240	35	-	-	
718	B637	N07718	2.4668	sol+prec.harden	all sizes	1275	1034	12	15	331	
718 API	-	N07718	2.4668	sol+prec.harden	all sizes	1034	1000	20	25	298-363	
725	B637	N07725	-	sol+prec.harden	all sizes	1034	827	20	35	43 HRC	
X-750	B637	N07750	2.4669	solution annealed	all sizes	965	620	8	-	262 min	
800HT	B408	N08811	1.4876	solution annealed	all sizes	450	170	30	-	-	
80A	B637	N07080	2.4952	solution annealed	all sizes	930	620	20	-	-	
925	B637	N09925	-	sol+prec.harden	5/8 - 3"	965	724	18	25	38 HRC	
				sol+prec.harden	over 1"	965	758	18	25	38 HRC	

## CORROSION RESISTING ALLOYS

### mechanical requirements

ALLOY	ASTM	UNS	W.-Nr.	Heat Treatment	dia	Tensile Strength		Yield Strength	Elongation in 4 D.	Reduction of Area	HRC max
						min. Mpa	min.0,2%Mpa				
276	F468	N10276	2.4819	solution annealed	all sizes	760	310	25	-	20-32	
	F468	N04400	2.4360	solution annealed	1/4 to 7/8	550	275	20	-	75-103HRB	
400	F468	N05500	2.4375	solution annealed	1" to 11/2	480	205	20	-	60-103HRB	
				sol+prec.harden	1/4 to 7/8	900	620	20	-	24-37	
500	F468	N05500	2.4375	sol+prec.harden	1" to 11/2	900	590	20	-	24-37	
				solution annealed	under 1/2	655	310	20	-	-	
600	B166	N06600	2.4816	solution annealed	1/2 to 3"	620	275	25	-	-	
				solution annealed	1/2 to 3"	585	240	30	-	-	
				solution annealed	up to 4"	825	415	30	-	-	
625 G1	B446	N06625	2.4856	solution annealed	all sizes	690	275	30	-	-	
625 G2	B446	N06625	2.4856	solution annealed	all sizes	895	585	15	18	248-341HB	
660A-B-C	A453	S66286	1.4980	sol+prec.harden	all sizes	895	725	15	18	248-341HB	
660D	A453	S66286	1.4980	sol+prec.harden	all sizes	895	725	15	18	248-341HB	
686	F467-8	N06686	2.4606	solution annealed	all sizes	1100	1030	20	-	25-49	
718	B637	N07718	2.4668	sol+prec.harden	all sizes	1275	1034	12	15	331HB	
718 API	B637	N07718	2.4668	sol+prec.harden	all sizes	1034	1000	20	25	298-363HB	
B2	B335	N10665	2.4617	solution annealed	all sizes	760	350	40	-	-	
C22	B574	N06022	2.4602	solution annealed	all sizes	690	310	45	-	-	

## CHEMICAL REQUIREMENTS composition percent

ASTM	C max	P max	S max	Mn max	Si max	Cr max	Ni min	Mo	Ti	Cu max	Fe max	Al max	Cb+Ta max	Other max
276	0,020	0,040	0,030	1,00	0,08	14,5-16,5	balance	15,0-17,0	-	-	4,0 - 7,0	-	-	W 3,0-4,5 /Co2,5
400	0,30	-	0,024	2,00	0,50	-	63,0-70,0	-	-	balance	2,50	-	-	Co balance
500	0,25	-	0,010	1,50	0,50	-	63,0-70,0	-	0,35-0,85	balance	2,00	2,3-3,15	-	Co balance
600	0,15	-	0,015	1,00	0,50	14,0-17,0	72,00	-	-	0,50	6,0 -10,0	-	-	-
625 G1	0,10	0,015	0,015	0,50	0,50	20,0-23,0	58,00	8,0-10,0	0,40 max	-	5,00	0,40	3,15-4,15	Co 1,0
625 G2	0,10	0,015	0,015	0,50	0,50	20,0-23,0	58,00	8,0-10,0	0,40 max	-	5,00	0,40	3,15-4,15	Co 1,0
660	0,08	0,040	0,030	2,00	1,00	13,5-16,0	24,0-27,0	1,00-1,50	1,90-2,35	-	-	0,35	-	B 0,001-0,01 /V 0,1-0,5
686	0,01	0,040	0,020	0,75	0,08	19,0-23,0	balance	15,0-17,0	0,02-0,25	-	5,00	-	-	W 3,0-4,4
718API	0,045	0,010	0,010	0,35	0,35	17,0-21,0	50,0-55,0	2,80-3,30	0,80-1,15	0,23	balance	0,40-0,60	4,87-5,2	B 0,006 /Co 1,0
718	0,08	0,015	0,015	0,35	0,35	17,0-21,0	50,0-55,0	2,80-3,30	0,65-1,15	0,30	balance	0,20-0,80	4,75-5,5	B 0,006 /Co 1,0
HX	0,05-0,15	0,040	0,030	1,00	1,00	20,5-23,0	balance	8,0-10,0	-	-	17,0-20,0	-	-	Co 0,5-2,5 /W 0,2-1,0
725	0,03	0,015	0,010	0,35	0,20	19,0-22,5	55,0-59,0	7,0-9,5	1,0-1,7	-	balance	0,35	2,75-4,0	-
X-750	0,08	-	0,010	1,00	0,50	14,0-17,0	70,00	-	2,25-2,75	0,50	5,0 - 9,0	0,4-1,0	0,70-1,2	Co 1,0
800HT	0,06-0,1	-	0,015	1,50	1,00	19,0-23,0	30,0-35,0	-	0,15-0,60	0,75	min 39,5	0,15-0,60	-	-
80A	0,10	-	0,015	1,00	1,00	18,0-21,0	balance	-	1,80-2,70	-	3,00	0,5-1,8	-	-
925	0,030	0,030	0,030	1,00	0,50	19,5-22,5	42,0-46,0	2,5-3,5	1,9-2,4	1,5-3,0	min 22	0,1-0,5	0,50	-
B2	0,020	0,040	0,030	1,00	0,10	1,00	balance	26,0-30,0	-	-	2,00	-	-	Co 1,0
C22	0,015	0,020	0,020	0,50	0,08	20,0-22,5	balance	12,5-14,5	-	-	2,0 - 6,0	-	-	W 2,5-3,5 /V 0,5 /Co 2,5

**CORROSION RESISTING ALLOYS WITH HIGH YIELD LIMITS**  
mechanical requirements

ALLOY	ASTM	UNS	W.-Nr.	Heat Treatment	dia	Tensile Strength		Yield Strength	Elongation in 4 D.	Reduction of Area	HB
						min. Mpa	min.0,2%Mpa				
F51	A182	S31803	1.4462	solution annealed	all sizes	620	450	25	50		
F60	A182	S32205	1.4462	solution annealed	all sizes	655	450	25	-		290
F44	A182	S31254	1.4547	solution annealed	all sizes	650	300	35	50		290
F53	A182	S32750	1.4468	solution annealed	all sizes	800	550	15	-		310
F55 A	A182	S32760	1.4501	solution annealed	all sizes	750	550	25	-		290
F55 S	A182	S32760	1.4501	sol ann+cold fin	all sizes	860	720	15	-		335
F61	A182	S32550	1.4515	solution annealed	all sizes	760	550	15	-		297
500	F468	N05500	2.4375	sol+prec.harden	1/4 to 7/8	900	620	20	-		24-37 RC
				sol+prec.harden	1 to 11/2	900	590	20	-		24-37 RC
660 A-B-C	A453	S66286	1.4980	sol+prec.harden	all sizes	895	585	15	18		248-341
660 D	A453	S66286	1.4980	sol+prec.harden	all sizes	895	725	15	18		248-321
31050	A182	S31050	1.4466	solution annealed	all sizes	580	270	30	-		

**CHEMICAL REQUIREMENTS composition percent**

ASTM	C max	P max	S max	Mn max	Si max	Cr	Ni	Mo max	Ti	Al max	B max	N	Other max
F51	0,03	0,030	0,020	2,00	1,00	21,0-23,0	4,5-6,5	2,5-3,5	-	-	-	0,08-0,2	-
F44	0,02	0,030	0,010	1,00	0,80	19,5-20,5	17,5-18,5	6,0-6,5	-	-	0,50-1,0	0,18-0,22	-
F53	0,03	0,035	0,020	1,20	0,80	24,0-26,0	6,0-8,0	3,0-5,0	-	-	0,50	0,24-0,32	-
F55	0,03	0,030	0,010	1,00	1,00	24,0-26,0	6,0-8,0	3,0-4,0	-	-	0,50-1,0	0,2-0,3	W 0,5-1,0
F60	0,03	0,030	0,020	2,00	1,00	22,0-23,0	4,5-6,5	3,0-3,5	-	-	-	0,14-0,2	-
F61	0,04	0,040	0,030	1,50	1,00	24,0-27,0	4,5-6,5	2,9-3,9	-	-	1,50-2,5	0,1-0,25	-
500	0,25	-	0,010	1,50	0,50		63,0-70,0	1,50	0,35-0,85	2,3-3,15	-	-	Cu balance Fe 2,00
660	0,08	0,040	0,030	2,00	1,00	13,5 - 16	24,0-27,0	1,0-1,5	1,90-2,35	0,35	-	-	V 0,1 - 0,5 /B 0,001-0,01
31050	0,03	0,030	0,015	2,00	0,40	24,0-26,0	21,0-23,0	2,0-3,0	-	-	-	0,1-0,18	-

**CORROSION RESISTING ALLOYS WITH LOW DENSITY**  
mechanical requirements

ALLOY	ASTM	UNS	W.-Nr.	dia	Tensile Strength		Yield Strength	Elongation in 4 D.	Reduction of Area	HB
					min. Mpa	min.0,2%Mpa				
Ti gr 2	B348	R50400	3.7035	all sizes	345	275	20	30		
Ti gr 5	B348	R56400	3.7165	all sizes	895	828	10	25		

**CORROSION RESISTING BRONZE ALLOYS**  
mechanical requirements

ALLOY	ASTM	UNS	W.-Nr.	dia	Tensile Strength		Yield Strength	Elongation in 4 D.	Reduction of Area	HB
					min. Mpa	min.0,2%Mpa				
614	F467/8	C61400	2.0932	all sizes	520	240	30	-		122-208
630	F467/8	C63000	2.0966	all sizes	690	345	5	-		166-230
655	F467/8	C65500	2.1525	all sizes	345	105	20	-		105-148

**CHEMICAL REQUIREMENTS composition percent**

ASTM	C max	Mn max	Si max	Ni max	Fe max	Ti	Al	V	Cu min	Zn max	O max	N max	H max	Other each max	total max
Ti gr.2	0,08	-	-	-	0,30	balance	-	-	-	-	0,25	0,03	0,015	0,10	0,40
Ti gr.5	0,08	-	-	-	0,40	balance	5,5-6,75	3,5-4,5	-	-	0,20	0,05	0,015	0,10	0,40
614	-	1,00	-	-	1,5-3,5	-	6,0-7,5	-	88,0	-	-	-	-	-	-
630	-	1,50	0,25	4,0-5,5	2,0-4,0	-	9,0-11,0	-	78,0	-	-	-	-	-	-
655	-	1,50	2,8-3,8	0,60	0,80	-	-	-	94,8	1,50	-	-	-	Pb 0,05	-