



CUSTOMER REQUIREMENTS FOR ALUMINIUM "HARD ALLOYS"

A COMPARISON TO THE NATIONAL AND
INTERNATIONAL NORM STANDARD



INTRODUCTION

There are serious quality differences in the field of aluminium hard alloys. In addition to the casting quality (hydrogen content, pore formation, etc.), the purity and the exact chemical composition of the alloy play a vital role. The quantity of the individual alloying and accompanying elements varies within the limits set by national (**DIN EN 573-3**) and international standards. (Teal Sheets of the Aluminum Association).

For this reason, our customers often demand narrower tolerances on the content of certain alloys. For example, the standard for the alloy EN AW-2007 allows a lead content of max. **1.5%**. Many customers restrict the content to max. 1%.



LEICHTMETALL - UNBEATABLE QUALITY

We at Leichtmetall Aluminium Giesserei Hannover can significantly reduce the span for individual elements at the customer's request.

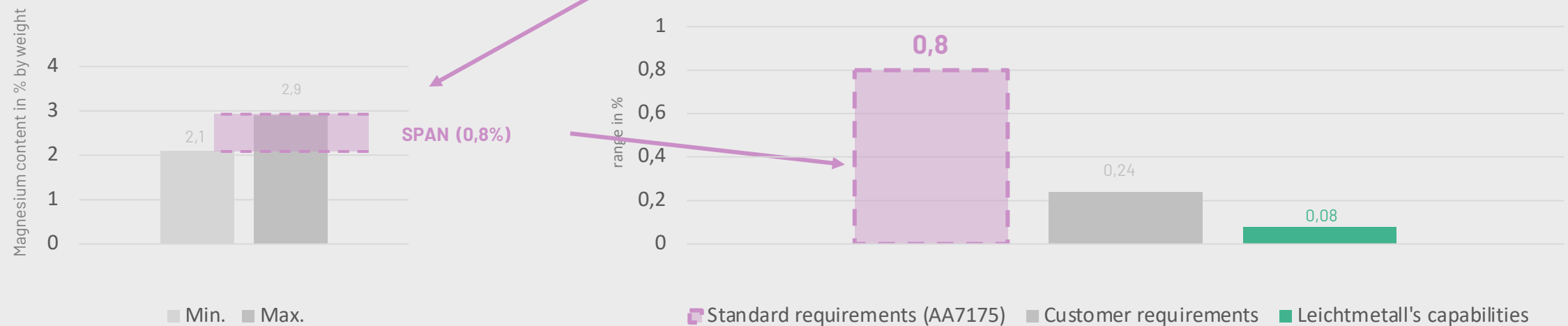
In this way, we produce application-specific alloys for different purposes. In the following slides, our possibilities are illustrated by means of some alloys.



EXAMPLE: ALLOY 7175: ELEMENT MAGNESIUM

Specification from international standard (Aluminium Association, Teal Sheets, AA7175):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	1,2	-	2,1	0,18	5,1	-	0,05	0,15
Max.	0,15	0,20	2,0	0,10	2,9	0,28	6,1	0,10	0,05	0,15



The standard requires for Leg. AA7175 a magnesium content between 2.1 and 2.9%. This corresponds to a range of 0.8 %. **The smaller the span, the more demanding it is to produce** an alloy reproducibly. Our customers demand span widths up to 500 times smaller than the standard - **and we are able to meet this demand reproducibly this reproducibly.**

NOTE ON THE ROUNDING RULE

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	1,2	-	2,1	0,18	5,1	-	0,05	0,15
Max.	0,15	0,20	2,0	0,10	2,9	0,28	6,1	0,10		

In the majority of cases, more decimal places are measured than specified in the specification. In the certificate, however, only as many decimal places are specified as were used in the specification (rounding rule according to DIN EN 573-3). Therefore, the real span is usually larger:

Example (with measurement of 2 decimal places):

Min.: 2.05 % rounded down 2.1 %

Max.: 2.94 % rounded down 2.9 %.

If the range is now calculated taking into account the measurement of 2 decimal places, results in: **2.94 % - 2.05 % = 0.89 % > 0.8 %**

Would the default instead be:

Min. 2.10 %

Max. 2.90 %

This also results in a range of 0.80 % when measuring 2 decimal places, the range is 0.80 %, but more when measuring 3 decimal places.

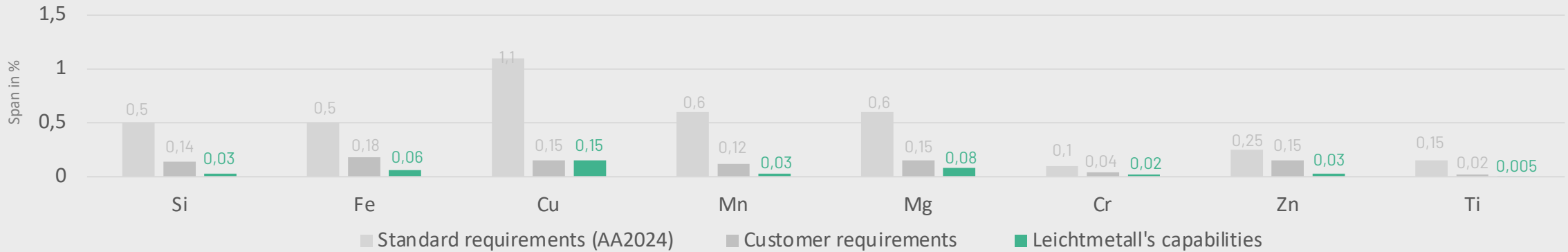
→ For simplification, in this presentation the span is taken to be the purely mathematical difference between max. and Min. assuming a measurement of the exactly specified decimal places.

ALLOY AA2024

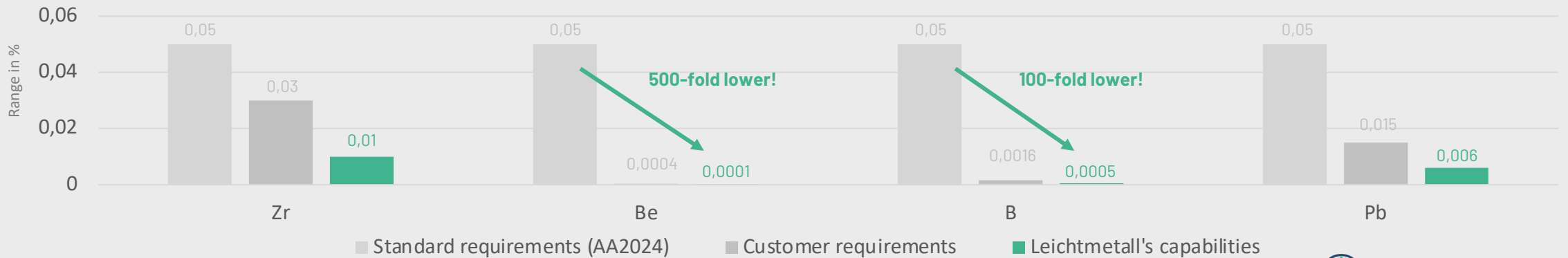
According to international standard (Aluminum Association, Teal Sheets, AA2024):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	3,8	0,30	1,2	-	-	-		
Max.	0,50	0,50	4,9	0,9	1,8	0,10	0,25	0,15	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

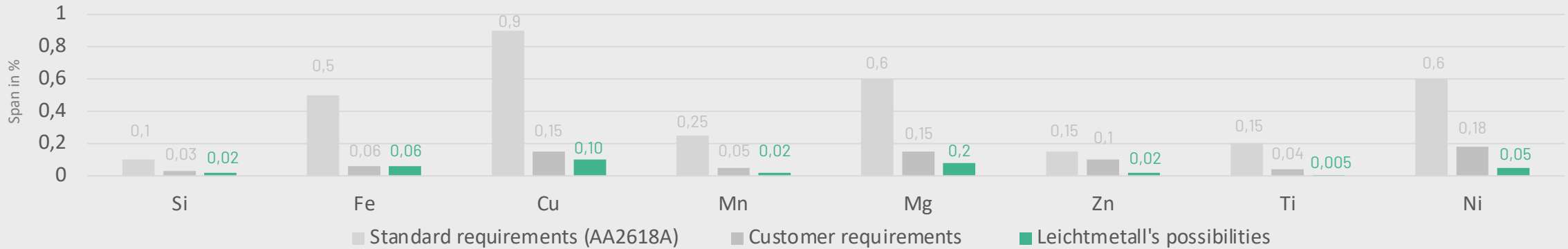


ALLOY AA2618A

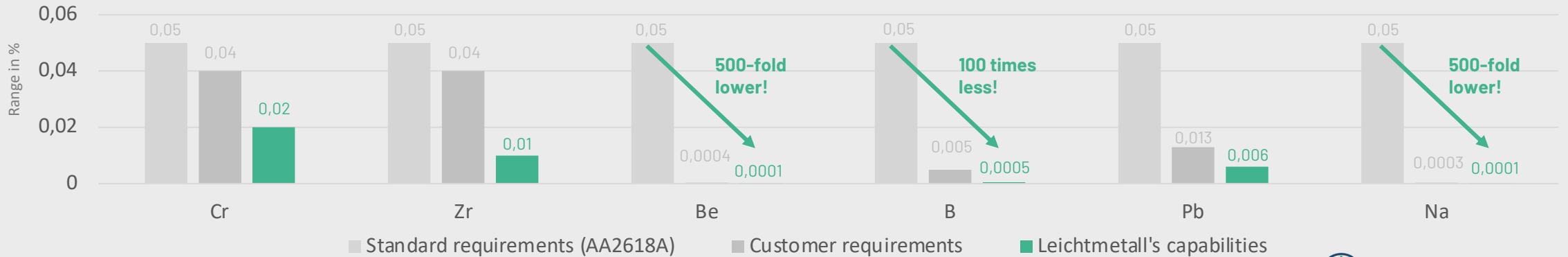
According to international standard (Aluminum Association, Teal Sheets, AA2618A):

Element	Si	Fe	Cu	Mn	Mg	Ni	Zn	Ti	Other, each	Other, together
Min.	0,15	0,9	1,8	-	1,2	0,8	-	-	0,05	0,15
Max.	0,25	1,4	2,7	0,25	1,8	1,4	0,15	0,20	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

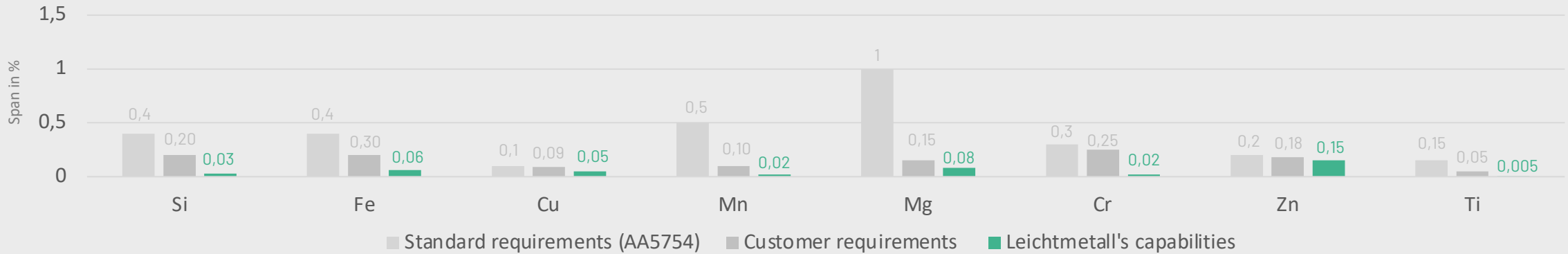


ALLOY AA5754

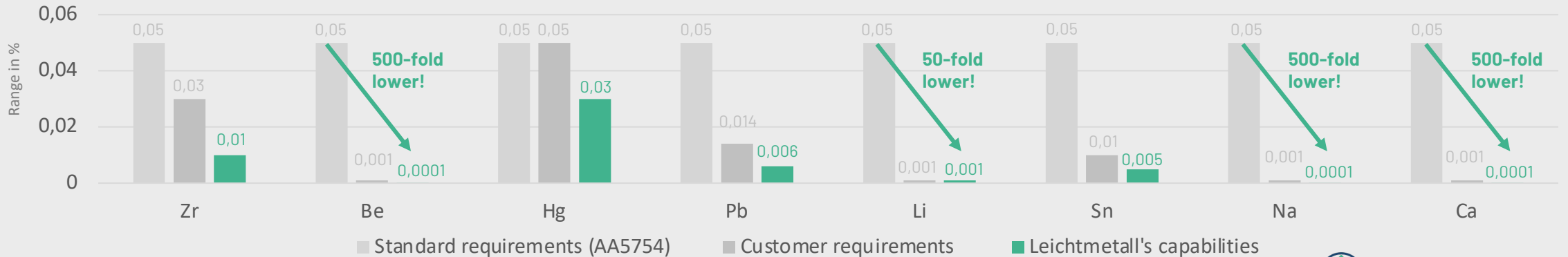
According to international standard (Aluminum Association, Teal Sheets, AA5754):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	-	-	2,6	-	-	-	0,05	0,15
Max.	0,40	0,40	0,10	0,50	3,6	0,30	0,20	0,15	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

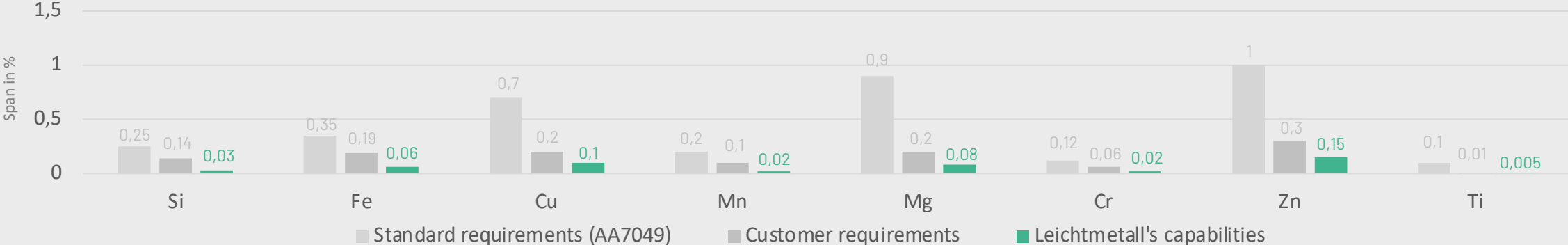


ALLOY AA7049

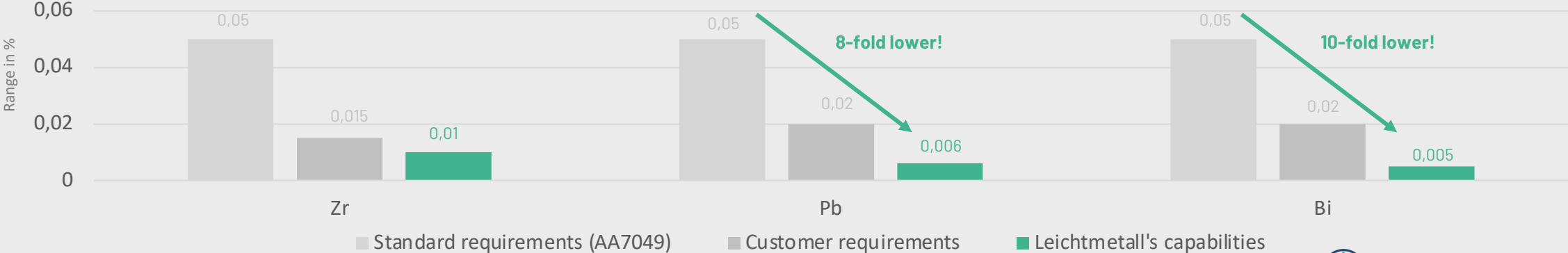
According to international standard (Aluminum Association, Teal Sheets, AA7049):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	1,2	-	2,0	0,10	7,2	-		
Max.	0,25	0,35	1,9	0,20	2,9	0,22	8,2	0,10	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

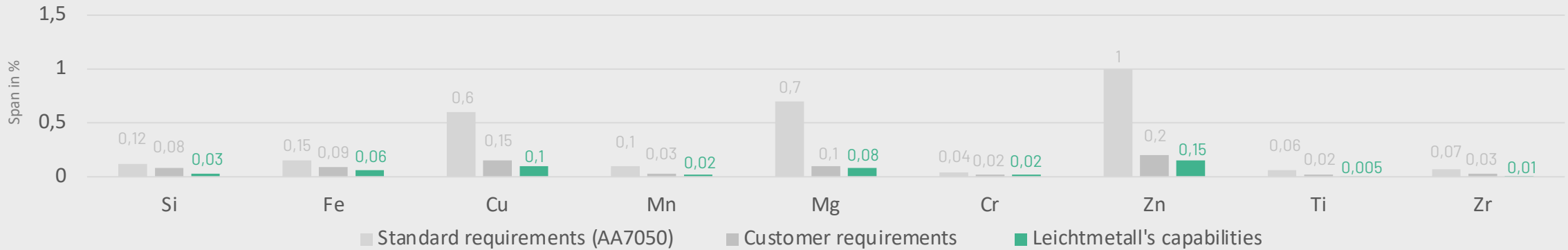


ALLOY AA7050

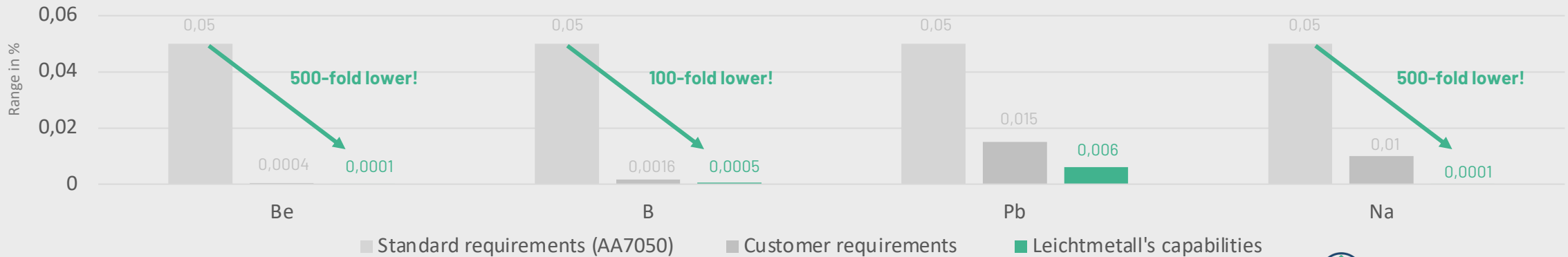
According to international standard (Aluminum Association, Teal Sheets, AA7050):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr	Other, each	Other, together
Min.	-	-	2,0	-	1,9	0	5,7	-	0,08		
Max.	0,12	0,15	2,6	0,10	2,6	0,04	6,7	0,06	0,15	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

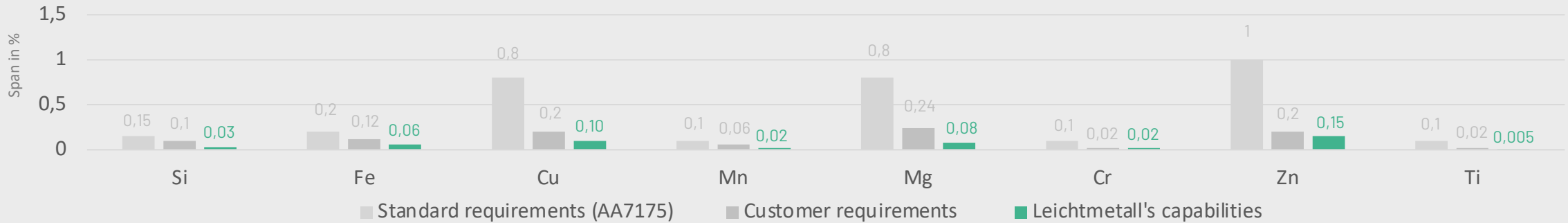


ALLOY AA7175

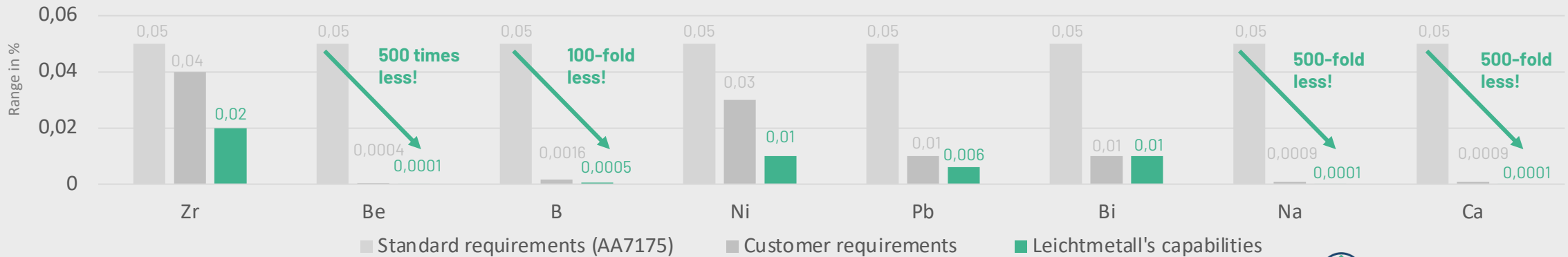
According to international standard (Aluminum Association, Teal Sheets, AA7175):

Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other, each	Other, together
Min.	-	-	1,2	-	2,1	0,18	5,1	-		
Max.	0,15	0,20	2,0	0,10	2,9	0,28	6,1	0,10	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):

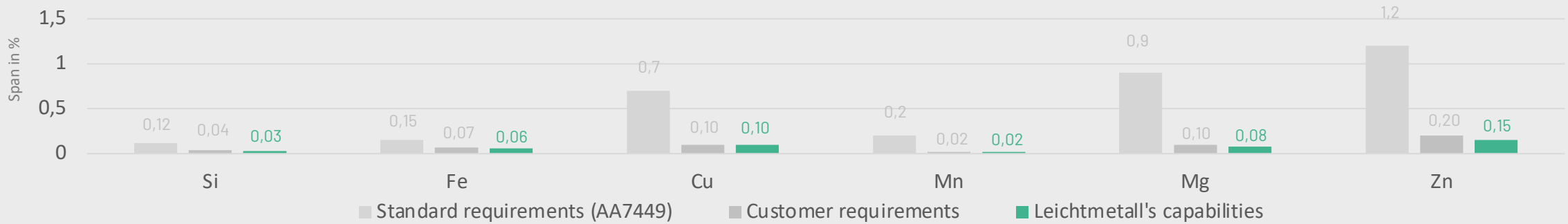


ALLOY AA7449

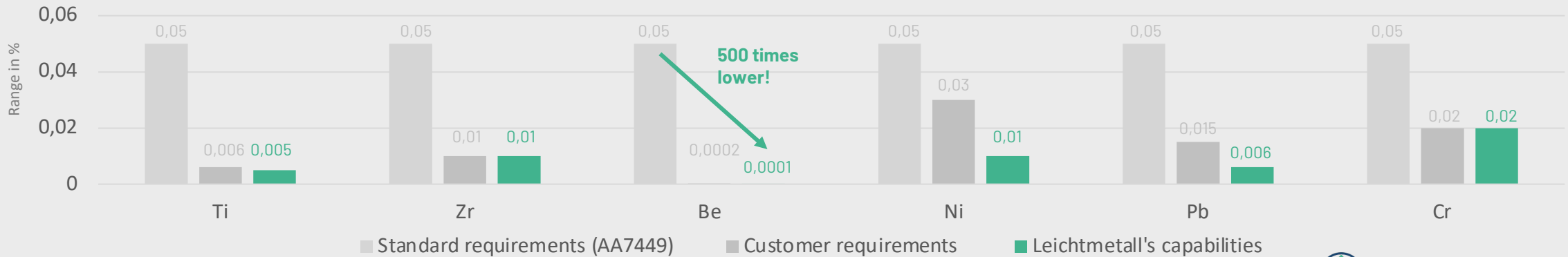
According to international standard (Aluminium Association, Teal Sheets, AA7449):

Element	Si	Fe	Cu	Mn	Mg	Zn	Other, each	Other, together
Min.	-	-	1,4	-	1,8	7,5		
Max.	0,12	0,15	2,1	0,20	2,7	8,7	0,05	0,15

Restrictions of the standard elements



Customer requirements (listed in the standard under impurities < 0.05 %):





DO YOU HAVE ANY QUESTIONS? FEEL FREE TO CONTACT US!

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