FEHRMANN
MATERIALS

ONE DESIGN. ONE MATERIAL.
ONE TO ONE MILLION PARTS.

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FEHRMANN
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High-Performance Aluminium for Casting, Extrusion and 3D Printing

At FEHRMANN Materials, we combine 50 years of high-performance aluminium development experience and a strong development ecosystem with modern corporate culture, data science and AI.

We are driven to create significant added value for our customers. We call this **Breakthrough DNA**. All of us are keen for challenges. We are curious and often break new ground. „Can't do it?" - we'll see.

- World's toughest aluminium for casting, extrusion and 3D printing.
- Weight saving through next level Lightweight Design.
- Cost saving and sustainability impact due to corrosion resistance.
- New circularity concepts for autonomy and sustainability impact.
- Resilience increase with one material qualified for 3D printing, casting and extrusion.
- Freedom to design - bionic design, polishable and anodizable even in color.

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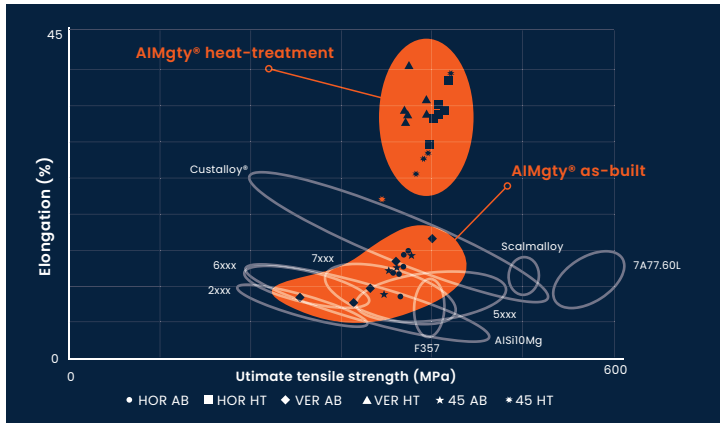
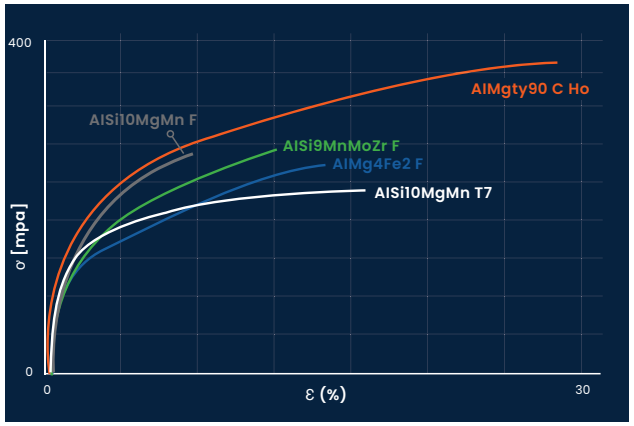
The World‘s toughest Aluminium for Casting, Extrusion and 3D Printing: AlMgty®

Unique in the world, universally applicable.

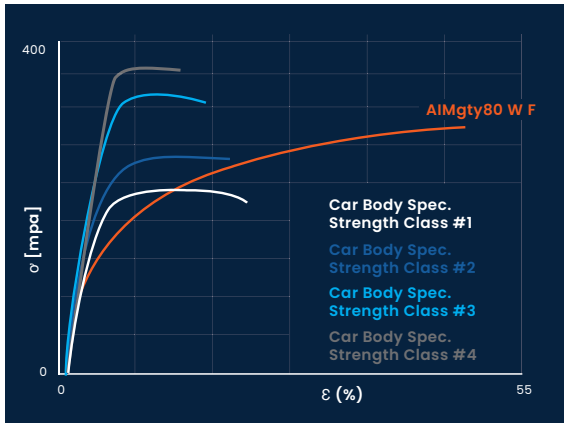
Standard alloys are established on the market, but often, their mechanical properties do not match the application for which they are used. We are specialist for aluminium. Our highperformance alloys have unique and outstanding properties with significant added value for our customers. They are called AlMgty® (aluminum magnesium = AlMg).



AlMgty®vs. other aluminium allyos for the LPBF process



AlMgty® 90 C Casting - Extreme Energy Absorbing Capability



AlMgty®80 W Extrusion -
Extreme Energy Absorbing Capability

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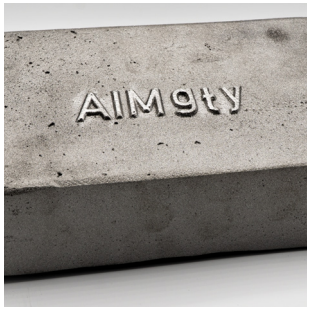
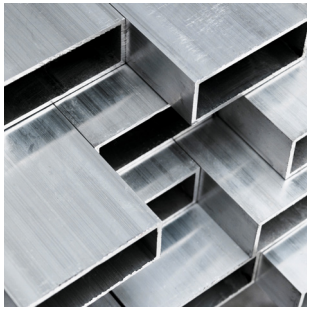
High-Performance Aluminium in all Formats - Your Choice

AlMgty® is qualified for industrial production, in casting (sand, permanent mold and die casting), extrusion and additive manufacturing/3D printing (LPBF/SLM and DED). We focus on our customer's needs. AlMgty® is available as ingots for casting, billets for extrusion, powder for 3D printing, as sand castings, as 3D printed parts and as licenses.



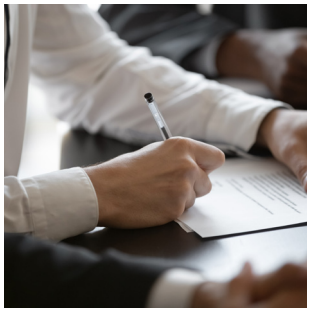
High-Performance Aluminium for Casting

We supply our high-performance alloys also as ingots for foundry ingot. So, you can easily transfer from additive manufacturing into series production.



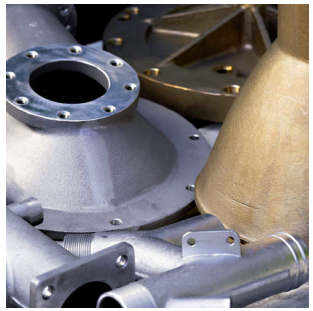
High-Performance Aluminium for Extrusion

You can also receive our high-performance aluminium alloys as profile. Another form but with the same high mechanical properties.



High-Performance Aluminium for 3D Printing

Thanks to our worldwide network, we can deliver small, medium and extraordinary quantities. For the supply of large volumes, FEHRMANN Materials is ready to agree to license agreements.



Sand Cast Parts in High-Performance Aluminium

With our in-house foundry and more than 125 years of experience, we are your partner for all small and medium series production of aluminium and non-ferrous metal components in sand casting.

3D Printed Parts in High-Performance Aluminium

You have questions about specific applications or alloys? You need customized developed alloys for special needs? Our experts are always at your side to support you with anything you need.

Standard Metal-powders for 3D Printing

With both standard and our own high-performance aluminium alloys, we increase the portfolio of certified materials in powder form for additive manufacturing.

FEHRMANN MATERIALS

AlMgty

Our flagship: AlMgty® 90

General information

- ✓ High corrosion resistance, e. g. salt water
- ✓ Specific weight 2,6 kg/dm³
- ✓ No exotic ingredients
- ✓ High strength
- ✓ High ductility
- ✓ High fatigue strength
- ✓ Anodizable Good machinability
- ✓ Good polishability
- ✓ Weldable
- ✓ Particle size range: 20-70 µm
- ✓ Particle shape: spheric
- ✓ Weldable with AlMgSi1, AlMgSi0,5
- ✓ TIG-process
- ✓ Welding filler material AlMg4,5Mn
- ✓ With every delivery, a 3.1 certificate, following EN10204:2004, is provided.

Chemical composition of AlMgty® 90

Si	Fe	Cu	Mn	Mg	Zn	Ti	Others	Al
<0.1%	<0.1%	<0.05%	<0.05%	11-14%	<0.05%	0.011-0.5%	Be	Balance

Mechanical properties

	As-built	Homogenized 450°/3h
$R_{p0,2}$	up to 275 MPa	up to 200 MPa
R_m	exceeding 380 MPa	exceeding 410 MPa
A	up to 10%	up to 35%

Physical properties of AlMgty® 90

- Specific weight: 2.56-2.59 kg/dm³ depending on the Mg content
- Thermal conductivity: 0.92-1.17 W/(K*cm)
- Linear thermal expansion coefficient: 24 x 10^{-6}/K (20-200°C)
- Electrical conductivity: 12-15 m/Ω * mm²
- Hardness: as-built: 132-142 HV

AlMgty® 90 is our flagship. Furthermore, we offer customized AlMg alloys – namely AlMgty® 3, AlMgty® 5, AlMgty® 50, AlMgty® 70, AlMgty® 80 and AlMgty® 100. They all have been developed according to special requirements.

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Select the materials suitable for your application from our product and solution portfolio. We will be happy to provide you with additional safety data sheets for our alloys and metal powders on request.

AlMgty

Product	Corrosion resistance	Strength	Ductility	Fatigue strength	Anodizable	Machinability	Polishability	Weldable	Chemical composition									Mechanical properties			Specific weight	Thermal conductivity	Linear thermal expansion coefficient	Electrical conductivity	Hardness as-built	Available for 3D printing and casting
									Si	Fe	Cu	Mn	Mg	Zn	Ti	Others	Al	$R_{p0,2}$	R_m	A						
AlMgty 3	High	Medium	High	Medium	✓	Good	Good	✓	<0,16%	<0,40%	<0,05%	0,1%-0,4%	2,7%-3,5%	<0,10%	0,011-0,20%	Be	Balance	up to 70 MPa (as-built)	exceeding 180 MPa (as-built)	up to 30% (as-built)	2,68 kg/dm³	1,3 W/(K*cm)	24 x 10^{-6}/K (20a200°C)	16-23 m/Ω* mm² 27,5-39,5% IACS	64-84 HV	✓
AlMgty 5	High	Medium	High	Medium	✓	Good	Good	✓	<0,16%	<0,40%	<0,05%	0,1%-0,4%	4,8%-5,5%	<0,10%	0,011-0,20%	Be	Balance	up to 90 MPa (as-built)	exceeding 210 MPa (as-built)	up to 25% (as-built)	2,66 kg/dm³	1,2 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	15-21 m/Ω* mm² 26-36 % IACS	75-84 HV	✓
AlMgty 50	High	Medium	High	Medium	✓	Good	Good	✓	<0,10%	<0,10%	<0,05%	0,1%-0,4%	4,8%-5,5%	<0,10%	0,011-0,20%	Be	Balance	up to 90 MPa (as-built)	exceeding 220 MPa (as-built)	up to 32% (as-built)	2,66 kg/dm³	1,2 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	15-21 m/Ω* mm² 26-36 % IACS	75-84 HV	✓
AlMgty 70	High	High	High	High	✓	Good	Good	✓	<0,1%	<0,1%	<0,05%	<0,05%	7%-9%	<0,05%	0,011-0,5%	Be	Balance	up to 180 MPa (as-built) up to 135 MPa (homo-genized 450°C/3h)	exceeding 300 MPa (as-built) exceeding 280 MPa (homo-genized 450°C/3h)	up to 20% (as-built) up to 26% (homo-genized 450°C/3h)	2,61-2,63 kg/dm³ (depending on the Mg content)	0,92-1,17 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	12-15 m/Ω* mm²	85-95 HV	✓
AlMgty 80 (Density up to 99,5 %)	High	High	High	High	✓	Good	Good	✓	<0,1%	<0,1%	<0,05%	<0,05%	9%-11%	<0,05%	0,011-0,5%	Be	Balance	up to 220 MPa (as-built) up to 165 MPa (homo-genized 450°C/3h)	exceeding 340 MPa (as-built) exceeding 320 MPa (homo-genized 450°C/3h)	up to 15% (as-built) up to 21% (homo-genized 450°C/3h)	2,59-2,62 kg/dm³ (depending on the Mg content)	0,92-1,17 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	12-15 m/Ω* mm²	100-115 HV or 94-109 HV	✓
AlMgty 90 (Density up to 99,5 %)	High	High	High	High	✓	Good	Good	✓	<0,1%	<0,1%	<0,05%	<0,05%	11%-14%	<0,05%	0,011-0,5%	Be	Balance	up to 250 MPa (as-built) up to 200 MPa (homo-genized 450°C/3h)	exceeding 380 MPa (as-built) exceeding 410 MPa (homo-genized 450°C/3h)	up to 10% (as-built) up to 35% (homo-genized 450°C/3h)	2,56-2,59 kg/dm³ (depending on the Mg content)	0,92-1,17 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	12-15 m/Ω* mm²	132-142 HV	✓
AlMgty 100 (Density up to 99,5 %)	High	High	High	High	✓	Good	Good	✓	<0,1%	<0,1%	<0,05%	<0,05%	11%-14%	<0,05%	0,11-0,5%	Be	Balance	up to 280 MPa (as-built) up to 220 MPa (homo-genized 450°C/3h)	exceeding 380 MPa (as-built) exceeding 410 MPa (homoge-nized 450°C/3h)	up to 8% (as-built) up to 12% (homo-genized 450°C/3h)	2,56-2,59 kg/dm³ (depending on the Mg content)	0,92-1,17 W/(K*cm)	24 x 10^{-6}/K (20-200°C)	12-15 m/Ω* mm²	132-142 HV	✓

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AlZnty

Product in detail AlZnty

General information

- Acceptable corrosion resistance
- Specific weight 2,9 kg/dm³
- Based on 7xxx series (AlZn)
- No exotic ingredients
- High strength
- Highest elasticity
- High fatigue strength
- Anodizable
- Good machinability
- Good polishability
- Weldable
- Particle size range: 20-70 µm
- Particle shape: spheric
- Weldable with Al MgSi1, Al MgSi0,5
- TIG-process
- Welding filler material Al Mg5
- With every delivery, a 3.1 certificate, following EN10204:2004, is provided
- Available only for 3D printing

Chemical composition

Si	Fe	Cu	Mn	Mg	Zn	Ti	Others	Al
<0.15%	<0.40%	<0.05%	0.2-0.6%	0.8-1.4%	5.0-6.0%	0.15-0.25%	Cr	Balance

Mechanical properties

	T4	T6
$R_{p0,2}$	up to 275 MPa	up to 300 MPa
R_m	exceeding 350 MPa	exceeding 350 MPa
A	up to 12%	up to 12%

Physical properties

- Specific weight: 2.87-2.93 kg/dm³ depending on the alloying element contents
- Thermal conductivity: 1.2 W/(K*cm)
- Linear thermal expansion coefficient: 24 x 10^{-6}/K (20-200°C)
- Electrical conductivity: 14-16 m/Ω * mm² (24.0-27.5% IACS)
- Hardness: 100 HV in temper T4 after 30d; 107 HV in temper T6

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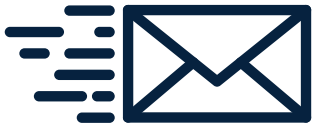
Get personal advice now and contact us!



Do you have special requirements for a project or would you like comprehensive advice? We will be happy to advise you.

Send us an email and simply arrange a consultation.

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