

# Calcium-Aluminum



## Alloys for Lead Battery Production

Initially developed by Timminco Metals, Cal-Al™ master alloys provided the lead battery industry with a means for simultaneous additions of both calcium and aluminum in molten lead. This innovative alloy offered the battery producer rapid and complete alloy dissolution, minimal oxidation, reduced emissions and ultra high alloy recoveries.

Relying on our experience in this industry, Mag Specialties continues the tradition and offers both PREMIUM and STANDARD grade calcium-aluminum alloys in 85/15, 75/25 and 65/35 blends.

Our PREMIUM Cal-Al™ grades are used and recommended by maintenance free battery producers around the world to prevent or eliminate hard spots in the lead battery grids. Our premium grades are produced from electrolytic grade calcium metal and used where an ultra low magnesium content of 0.10% or less is required.

Our STANDARD Cal-Al™ grade alloys offer similar benefits however they are produced from a reductive grade calcium metal and used where a higher magnesium content is acceptable and economic savings are essential.

Available worldwide by the pallet, truckload or container quantities, give us a call today to discuss your Calcium metal, Cal-Al™ and Mag-Cal™ alloy requirements and obtain a customized quote.



## Available Grades

Grades					
Grade	Chemistry			Sizing (mm)	
	% Ca	% Mg	% Al		
Premium	85/15	85% +/- 3%	0.10 Max	Balance	40-70
	75/25	75% +/- 3%	0.10 Max	Balance	40-70
	65/35	65% +/- 3%	0.10 Max	Balance	40-70
Standard	85/15	85% +/- 3%	0.50 Max	Balance	40-70
	75/25	75% +/- 3%	0.50 Max	Balance	40-70
	65/35	65% +/- 3%	0.50 Max	Balance	40-70

## Packaging

Packaging			
Outer	Inner	Quantity	Drums/Pallet
Argon purged polyethylene lined steel drums	10 kg woven bags 10 bags/drum	100 kg/Drum	Four (4)
	10 kg woven bags 15 bags/drum	150 kg/Drum	

## Shipments

- Pallet, truckload and container quantities available worldwide.

## Quality

- Certificates of analysis provided with each shipment.

## Contact Us

Mag Specialties Inc.  
3801 E. Florida Avenue, Suite 715  
Denver, Colorado 80210  
Sales: 303-357-5394  
Info@magspecialtiesinc.com



## Mag-Cal™ for Removal of Bismuth in Lead

Patented by Timminco Metals in 1989, Mag-Cal™ became the alloy standard for the removal of bismuth in lead. Developed initially for the Kroll Betterton lead refining process, Mag-Cal™ eliminated the need for separate additions of magnesium and calcium.

This master alloy provides a clean and efficient method for adding magnesium and calcium in molten lead resulting in:

- Rapid dissolution
- High alloy recovery
- Reliable bismuth control

With over 25 years of magnesium-calcium experience in the development, production and sales of Mag-Cal™, Mag Specialties continues to be the leading supplier of master alloys to the lead refiners, processors and battery producers around the world.

Mag-Cal™ is available worldwide by the pallet, the truck load or container quantities in 65/35, 70/30 and 75/25 alloy compositions.

Give us a call today to review your Magnesium-Calcium, Calcium-Aluminum or Calcium metal requirements, obtain technical support or a customized quote.



## Available Grades

Available Grades		
Grade	Element	Chemistry
Mag-Cal™ 65/35	Calcium	35% +/- 2%
	Magnesium	Balance
Mag-Cal™ 70/30	Calcium	30% +/- 2%
	Magnesium	Balance
Mag-Cal™ 75/25	Calcium	25% +/- 2%

## Size

- Ten kilogram ingots +/- 0.5 kg

## Packaging

- Approximately 1270 kilograms per pallet.

## Quality

- Quality certificates provided with each shipment.

## Shipments

- Pallet quantities to full container shipments available worldwide.

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# Granules & Turnings



## High Purity Magnesium for Grignard Applications

Magnesium is a key ingredient in many pharmaceutical, agricultural and chemical applications. Specifically, magnesium is used in Grignard reactions to produce a multitude of intermediaries and reagents for down stream products including flavors, fragrances, pharmaceutical and agricultural products we rely on each and every day.

With over fifty years experience, Mag Specialties continues to offer the chemical industry high quality magnesium turnings, granules and chips produced from the highest commercial grade raw materials available. Our long standing experience in this industry enables us to custom tailor particle size and distribution to optimize reaction initiation rates and maximize reaction yields.

Our high purity magnesium products are available in variety of chemical specifications, forms, sizes and packaging configurations to meet your needs.

Give us a call today to discuss your requirements, obtain a customized quote and/or samples for qualification.



## Available Grades

Element	Chemical Composition (% Max)											
	Magnesium	Aluminum	Copper	Iron	Lead	Manganese	Nickel	Silicon	Sodium	Tin	Titanium	Others
ASTM	% Mg	% Al	% Cu	% Fe	% Pb	% Mn	% Ni	% Si	% Na	% Sn	% Ti	Each
9998A	99.98	0.004	0.0005	0.002	0.001	0.002	0.0005	0.003	-	-	0.001	0.005
9995A	99.95	0.01	-	0.003	-	0.004	0.001	0.005	-	-	0.01-	0.005
9990A	99.90	0.003	-	0.04	-	0.004	0.001	0.005	-	-	-	0.01
9980A	99.80	-	0.02	-	0.01	0.10	0.001	-	0.006	0.01	-	0.05
9980B	99.80	-	0.02	-	0.01	0.10	0.005	-	-	0.01	-	0.05

## Sizing

Product	Particle Dimensions					
	Size		Width		Thickness	
	in.	mm	in.	in.	mm	mm
Turnings	1/8	3.2	0.080-0.095	0.010-0.020	2.03-2.41	0.25-0.50
	3/16	4.8	0.098-0.112	0.014-0.026	2.50-2.85	0.35-0.67
	1/4	6.4	0.130-0.140	0.020-0.050	3.30-3.55	0.50-1.27
Granules	1/4	6.4	0.118-0.236	0.118 -0.236	3.00-6.00	3.00-6.00
Chips	1/2	12.7	0.157-0.197	0.012-0.031	4.00-5.00	0.30-0.80

## Packaging

- Steel and Fiber Drums and Bulk Bags
- Custom packaging available.

## Quality

- Certificates of analysis provided with each shipment.
- All Analysis to conform to ASTM B92/B92M-11

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