



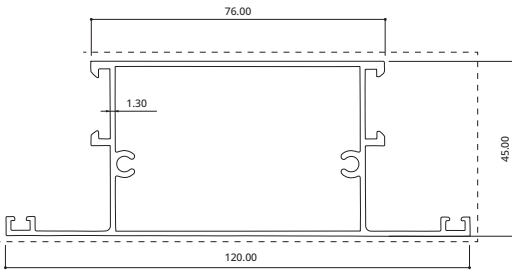
# Aluminium Bahrain B.S.C. (Alba)

## High Extrudability Alloy



### Introduction

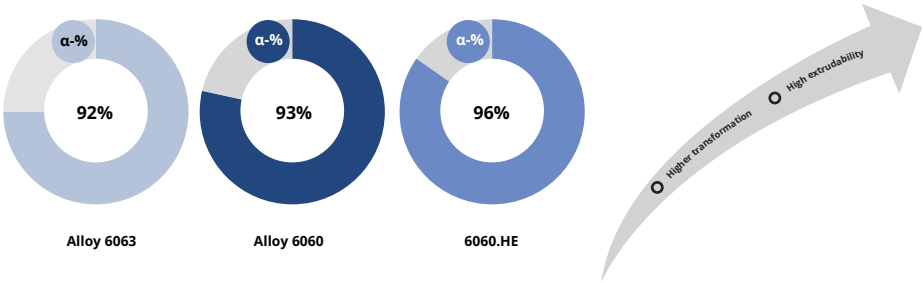
Alba's 6060.HE is engineered to enhance high extrusion press output by improving extrudability for various thin to medium cross sections. Its chemical composition and homogenisation parameters are tailored to achieve AA/EN AW-6060 T5 and T6 mechanical properties with superior performance at the extrusion press.



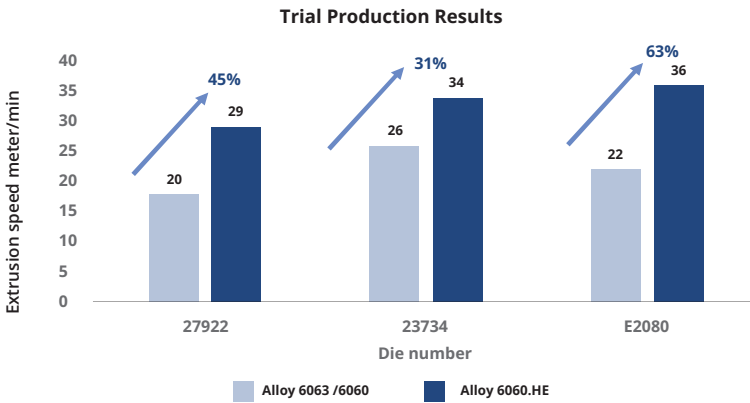
### Development and Experimental Trials

The alloy underwent extensive testing on multiple extrusion presses with different cross sections. Key extrusion parameters like speed, maximum press load, and exit temperature were measured and compared to standard 6060 alloy. The results consistently demonstrated a consistent 20 to 30% increase in extrusion speed.

## Intermetallic transformation ( $\alpha$ - phase)



## Maximum extrusion speed significantly improved



## Alloy Specification

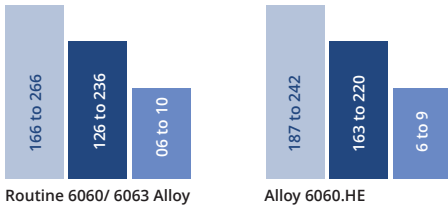
BS EN 573 Chemical Composition (wt %)							
Alloy	Si	Fe	Cu	Mn	Mg	Others Each	Others Total
EN AW-6060	0.30 - 0.60	0.10 - 0.30	0.10 max	0.10 max	0.35 - 0.60	0.05 max	0.15 max
EN AW-6063	0.20 - 0.60	0.35 max	0.10 max	0.10 max	0.45 - 0.90	0.05 max	0.15 max
6060.HE	0.45	0.19	0.02 max	0.02	0.47	0.02 max	0.10 max

## Mechanical Properties

Mechanical properties were evaluated for diverse sections in T5 and T6 tempers. The findings consistently align with BS EN 755 specifications. By employing optimum exit cooling rates and a specialised aging cycle, minimum AA/EN 6063 T6 mechanical properties can be achieved.

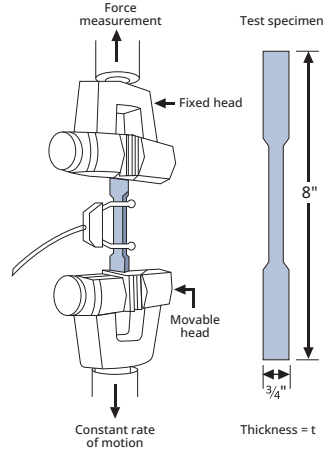
# Mechanical properties

## Mechanical properties within standard specifications



- Tensile strength MPa
- Yield strength MPa
- Elongation %

Achieved mechanical properties of profiles



BS EN 755 Mechanical Properties						
Temper Designation	Alloy	Wall Thickness mm	R <sub>m</sub> MPa	R <sub>p0.2</sub> MPa	A <sub>50 mm</sub> Elongation % Minimum	HBW Typical Value
T5	AA/ EN AW 6060	< 5	160	120	6	60
		< 25	140	100	6	60
T6	AA/ EN AW 6060	< 3	190	150	6	70
		< 25	170	140	6	70
T5	AA/ EN AW 6063	< 3	175	130	6	65
		< 25	160	110	5	65
T6	AA/ EN AW 6063	< 10	215	170	6	75
		< 25	195	160	6	75

### ALBA 6060. HE Mechanical Properties

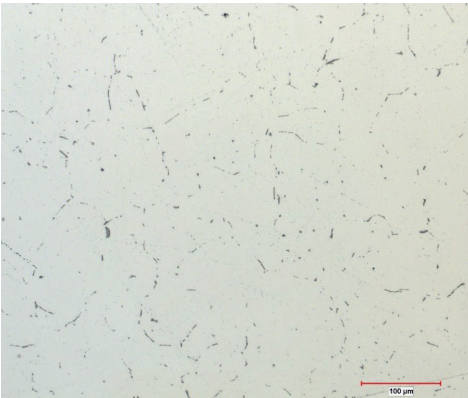
T5	AA/ EN AW 6060	< 3	187	163	8	72
		< 25	205	185	8	78
T6	AA/ EN AW 6060	< 10	242	220	8	84
		< 25	220	205	7	80

## Metal Cleanliness and Metallography

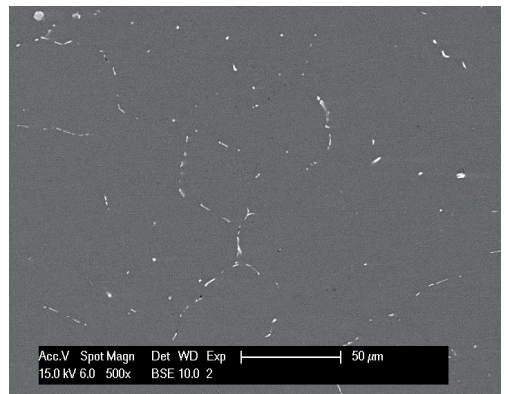
Every stage of production is carefully monitored and controlled to ensure exceptional metal purity and negligible dissolved gas in the billets. Homogenisation settings are optimised to create a uniform distribution of intermetallic and Mg<sub>2</sub>Si particles, to enhance both extrudability and mechanical qualities.

BS EN 573 Chemical Composition				
Measurements	Hydrogen Content (cc / 100 gr of Al)	PoDFA Inclusion Content (mm <sup>2</sup> / kg of Al)	Intermetallic Particle % (< 3 µm)	Beta to Alpha Phase Transformation %
Typical Specification	< 0.20	< 0.20	> 70%	> 90%
ALBA 6060.HE Values	< 0.15	< 0.10	> 80%	> 95%

## Microstructure



Evenly distributed intermetallic particles



SEM Image



[f](#) [@Alba4world](#)  
[in](#) [@Aluminium-Bahrain](#)  
[www.albasmelter.com](http://www.albasmelter.com)

Scan the QR Code to view the flyer online

