

# ACCUCAST MAX LD

Ultra high-performance, low-density ceramic casting media



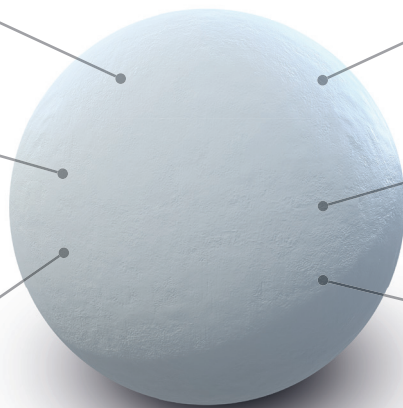
## Exceptional smoothness enhances casting quality

ACCUCAST™ MAX LD low-density ceramic casting media provides a unique combination of consistent thermal, physical and chemical properties. These characteristics provide performance advantages compared to the various sand products used for metal casting production.

Exceptionally smooth surface reduces resin usage and associated binder costs

Very low thermal expansion significantly reduces defects, scrapage and cleaning

Excellent roundness for increased flowability and production cycle rates



Uniform size and shape maximizes mold porosity and enhances permeability to resist gas defects and breakdown

Extraordinary strength and durability to resist particle breakdown and reduce media consumption

No quartz silica content for improved QHSE and sustainability

### Chemically inert for increased compatibility

ACCUCAST MAX LD media is chemically inert and has proven compatible with various metals, resins and additives used in metal casting processes. Unlike zircon (radiation), chromite (chrome) and silica (quartz) sands, ACCUCAST MAX LD poses no hazards and lowers environmental, safety and health concerns.

#### Chemical composition (wt%)

Al <sub>2</sub> O <sub>3</sub>	51.5
SiO <sub>2</sub>	44.0
TiO <sub>2</sub>	2.5
Fe <sub>2</sub> O <sub>3</sub>	1.0
LOI (%)	0.02
Moisture (%)	0.01
pH	7.2
ADV@pH5	0.0
ADV@pH7	0.0

### Improved media flow for lower energy and production costs

ACCUCAST MAX LD media is engineered with a high roundness to increase flowability for optimal media fill and release.

### Improved media reclamation and reduced consumption

The strength and durability of ACCUCAST MAX LD technology enables the reuse of media. The media composition improves product reclamation, resulting in reduced transportation, disposal and product replacement costs.

### Engineered for increased strength and durability

ACCUCAST MAX LD media is a sintered ceramic technology engineered with mullite and cristobalite crystals, which generate high hardness and durability that resist particle breakdown and reduce media consumption.

### Exceptionally smooth surface reduces resin usage

ACCUCAST MAX LD beads are exceptionally smooth, which reduces the amount of surface area that needs to be coated with resin. This significantly reduces resin usage and associated binder costs.

ACCUCAST MAX LD



ACCUCAST MAX LD technology is engineered to produce exceptionally smooth beads to reduce resin usage. The round, uniform shape and consistent sizing maximizes mold porosity and enhances permeability.

Silica sand



Silica sand is broadly sieved and irregularly shaped which packs more tightly, resulting in molds with reduced porosity and permeability. And the rough, porous surface requires more resin which increases binder costs.

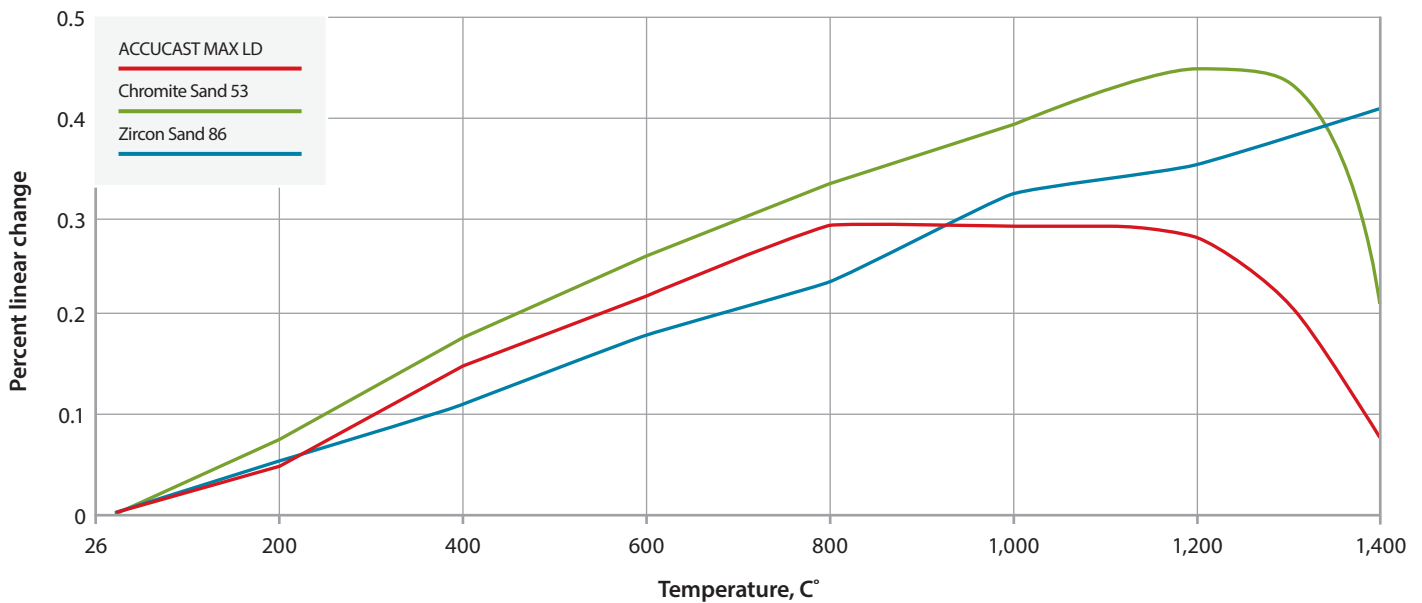
## Low thermal expansion for enhanced casting quality, precision and capability

ACCUCAST MAX LD media produces a low linear thermal expansion that avoids the occurrence of expansion-related defects such as veining, penetration and burn-on and the associated costs to clean, correct or scrap the part. The low linear expansion properties increase the dimensional accuracy of the casting to provide you with the capability to cast more complex parts.

### Physical and thermal properties @1100°C

	ACCUCAST MAX LD	Zircon	Chromite	Silica
Apparent density (g/cm <sup>3</sup> )	2.82	4.65	4.51	2.65
Loose bulk density (g/cm <sup>3</sup> )	1.66	2.69	2.61	1.60
Packed bulk density (g/cm <sup>3</sup> )	1.79	3.03	2.93	1.76
Loose bulk density (lb/ft <sup>3</sup> )	103.6	168	163	100
Packed bulk density (lb/ft <sup>3</sup> )	111.7	189	183	110
Thermal expansion (% LC)	0.2935	0.3432	0.4250	–
Coefficient of expansion (1E-6 in/in-°C)	1.25	0.78	2.49	–
Thermal conductivity (W/m-°C)	0.83	0.63	0.94	1.14
Heat capacity (cal/g-°C)	0.26	–	–	–
Thermal diffusivity (cm <sup>2</sup> /s)	0.0043	–	–	–
Heat diffusivity 10 <sup>6</sup> (W <sup>2</sup> s)/(m <sup>4</sup> °C <sup>2</sup> )	1.616	–	–	–
Square root of heat diffusivity (Ws <sup>1/2</sup> )/(m <sup>2</sup> °C)	1,271	–	–	–

### Thermal expansion product comparison



## Uniform particle size for increased permeability

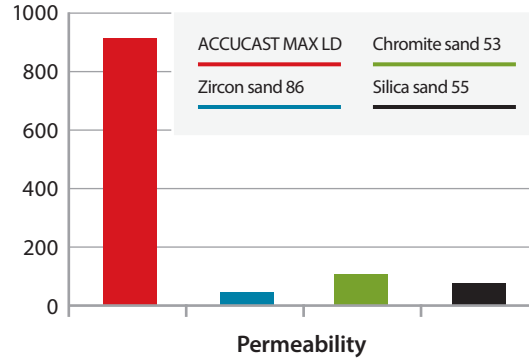
The uniform size and shape of the media maximizes mold porosity and enhances permeability. These characteristics improve pellet strength to resist gas defects and breakdown. Broadly sieved and irregularly shaped media, such as naturally occurring sands and low quality ceramics, pack more tightly, resulting in molds with reduced porosity and permeability.

### ACCUCAST MAX LD

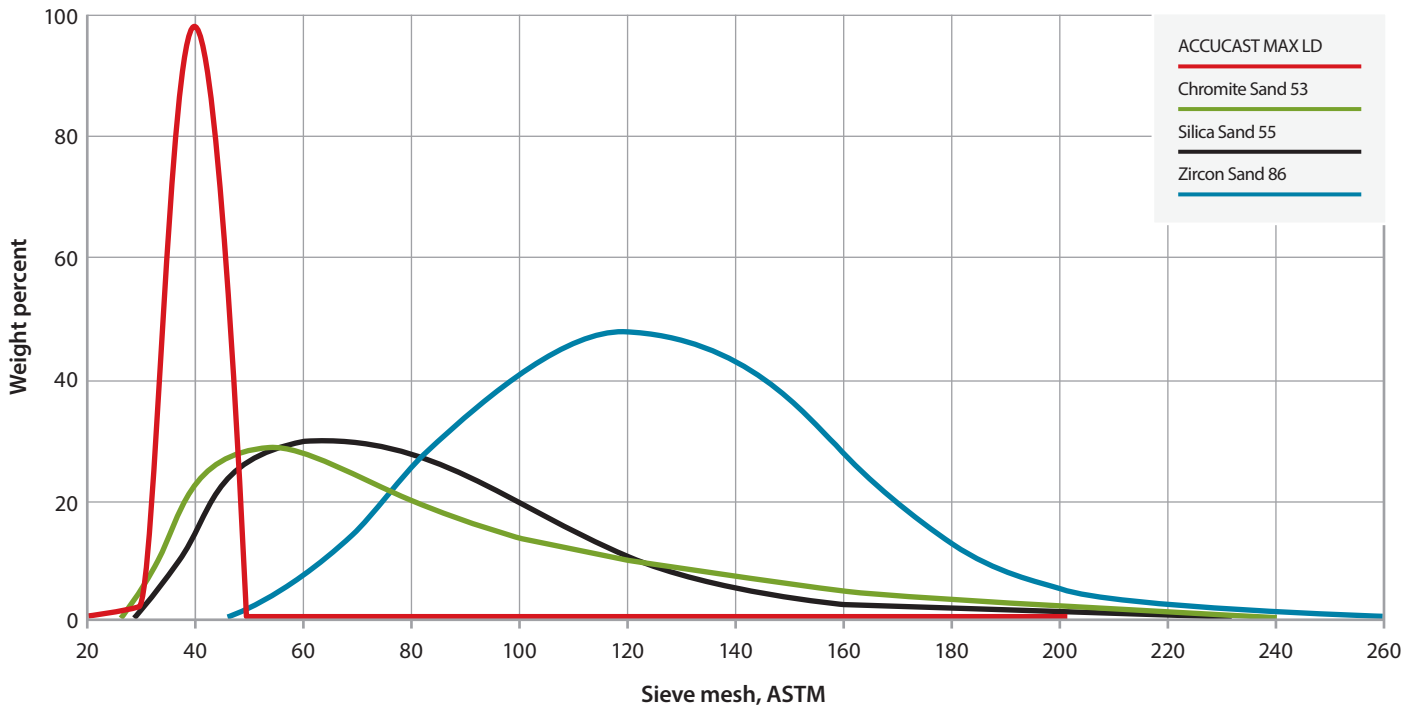
Sieve No.	Microns	Sieve Analysis (wt%)
20	850	0
30	600	2
40	425	98
50	300	0

AFS GFN	29.7
Sintering Temp (°C)	1,310

### Permeability comparison



### Sieve distribution comparison—ACCUCAST MAX LD ceramic and sand products



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+1 800 551 3247 | [customerservice@carboceramics.com](mailto:customerservice@carboceramics.com)

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