

# Technical Data Sheet

## HiCAI 40 Mineralising Carbon



**Product Name:** HiCAI 40 10 mm

**Product Description:** A mineral product rich in fluoride, sodium, alumina and carbon. Designed for use in cement clinker manufacture. The presence of fluoride may result in a beneficial fluxing and/or mineralisation effect that reduces firing temperature and promotes desired phase formation in manufacture of cement clinker. The presence of sodium may improve the burning process and sulphur binding thereby improving kiln operation and clinker quality. The presence of carbon may substitute other types of fuels used for clinkerization.

### Chemical Composition of HiCAI 40

Description	Unit		Test Method
Carbon	%	40 to 45	Liebig technique to Australian Standard AS2434.6
Calorific Value	GJ/t	> 12	Calorimeter to Australian Standard AS1038.5
Silicon	as SiO <sub>2</sub>	%	6 to 12
Aluminium	as Al <sub>2</sub> O <sub>3</sub>	%	16 to 21
Iron	as Fe <sub>2</sub> O <sub>3</sub>	%	2 to 7
Calcium	as CaO	%	1 to 3
Magnesium	as MgO	%	0 to 1
Sulphur	as SO <sub>3</sub>	%	0 to 2
Potassium	as K <sub>2</sub> O	%	0 to 1
Sodium	as Na <sub>2</sub> O	%	14 to 19
Fluoride	total as F	%	8 to 12

See following page for trace element analysis.

### Particle Size Distribution

Sieve Size	Unit	HiCAI 40
> 8 mm	%	0 to 5
8 to 3 mm	%	0 to 10
3 to 1 mm	%	10 to 25
1 to 0.5 mm	%	15 to 30
< 0.5 mm	%	40 to 70

### Bulk Density

10 mm minus product has a dry bulk density (loose) of 1.3 tons per cubic meter.

### Grindability Index

HiCAI 40 grindability index (measured as Hardgrove Grindability Index) is above 50.



### Analysis of Trace Elements

Description	Unit	Amount	Test Method		
Mercury	Hg	mg/kg	<0.2	Atomic Absorption Spectrometry (AAS) cold vapour generation	
Antimony	Sb	mg/kg	<10		
Arsenic	As	mg/kg	<50		
Barium	Ba	mg/kg	<10		
Beryllium	Be	mg/kg	<10		
Cadmium	Cd	mg/kg	<10		
Cobalt	Co	mg/kg	<50		
Chromium	Cr	mg/kg	<150		Inductively Coupled Plasma Spectroscopy (ICP-OES)
Copper	Cu	mg/kg	<350		
Manganese	Mn	mg/kg	<1000		
Nickel	Ni	mg/kg	<500		
Lead	Pb	mg/kg	<100		
Selenium	Se	mg/kg	<5		
Tin	Sn	mg/kg	<20		
Thallium	Tl	mg/kg	<5		
Vanadium	V	mg/kg	<200		
Zinc	Zn	mg/kg	<100		

### Mineralogical Composition

Main minerals that may be found in HiCAI 40 are Cryolite ( $\text{Na}_3\text{AlF}_6$ ), Villiaumite ( $\text{NaF}$ ) and Graphite (C). Minor minerals may include Nepheline ( $\text{Na}_3(\text{Na,K})\text{Al}_4\text{Si}_4\text{O}_{16}$ ), Fluorite ( $\text{CaF}_2$ ), Corundum ( $\text{Al}_2\text{O}_3$ ), Diaoyudaoite ( $\text{NaAl}_{11}\text{O}_{17}$ ), Mullite ( $3\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ ) and other crystalline and amorphous phases.

### Transport, Handling and Storage

HiCAI 40 is not regulated for transport as dangerous good.

- Can be stored against typical steel, concrete and aluminium surfaces.
- Contains soluble fluoride, any water that comes in contact must be contained with the HiCAI 40 material.
- Do not mix with acid as noxious gas may be produced.

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