



Cement Mill Test Report

Date of Issue: January 12, 2022

Plant: Exshaw AB
 Product: Portland Cement Type HE
 Manufactured: December 1-31, 2021

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray					
SiO2 (%)	---	19.7	Blaine Fineness (m2/kg)	---	620
Al2O3 (%)	---	4.0	Retained 45 um (%)	---	1.0
Fe2O3 (%)	---	3.7	Autoclave expansion (%)	1.0 max	0.09
CaO (%)	---	62.0	Compressive strength (MPa)		
MgO (%)	5.0 max	4.4	1 day	13.5 min	30.7
SO3 (%)	3.5 max **	3.3	3 day	24.0 min	39.2
Loss on ignition @ 950 (%)	3.0 (3.5) max ***	2.4	28 day (November 2021 Results)	---	49.8
Loss on ignition @ 550(%)	3.0 max	0.7	Time of setting (minutes)		
Insoluble residue (%)	1.5 max	0.3	Vicat Initial	45 - 375	65
Inorganic Process Addition (Cement Kiln Dust)	5.0 max	-	Mortar Bar Expansion (%) (C5)*	0.020 max	0.008
Potential Phase Composition			Colour (For Information Purposes Only)		31
C3S (%)	---	61			
C2S (%)	---	10			
C3A (%)	---	4			
C4AF (%)	---	11			

Other Chemical Information:

NaEq (%) Week Ending: 12/04 0.54 12/11 0.55 12/18 0.55 12/25 --

* Latest available value

** May exceed 3.5% SO3 maximum based on our A3004-C5 results of <0.020% expansion at 14 days.

*** May exceed 3.0% LOI maximum based on our LOI at 550C <3.0%.

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of the applicable specification for Type HE.

CSA A3001-18 STANDARD SPECIFICATIONS FOR TYPE HE CEMENT.

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