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NEXCEM MATERIAL DESCRIPTION AND HISTORY

The Nexcem material was first invented in Switzerland in 1934 under the Durisol brand. The development of this material was made possible through the creation of a unique, natural treatment process that allowed raw wood fibre to be bonded with Portland cement. The softwood aggregate is a by-product from the lumber industry, as well as carefully selected recycled material from the construction industry.

The first Durisol North American facility was established in Mitchell, Ontario, Canada in 1953, and while Durisol continues as a manufacturer of noise barrier products, Nexcem was created as a sister corporation specifically for manufacture of ICF products and other products specific to the building industry. The current state of the art Nexcem facility is also in Mitchell, and has been in operation since 2005, building on the original cement bonded wood fiber technology.

The original Swiss product line was the stay-in-place concrete wall formwork system. This product was developed to service the building industry in post-war Europe, at a time when other natural resources were scarce and traditional building methods were not possible or cost effective. Over the past 60 years, Nexcem and Durisol have successfully introduced numerous other products incorporating the proprietary material. Nexcem products currently in production worldwide include:

- Stay-in-place concrete wall formwork
- Stay-in-place concrete floor formwork
- Pre-fabricated wall systems
- Roof plank systems
- Acoustic panels for highway noise barriers, industrial buildings, tunnels and airports
- Concrete safety barriers for highways
- Earth retaining panels

The Nexcem material is made from recycled waste wood (100% clean softwood lumber) that is bonded with standard Portland Cement. Our wood sources are primarily wood truss manufacturers and are carefully vetted and inspected to ensure that we are only using clean material. We do not use hardwoods or recycled pallets.

Nexcem does not burn or melt and is completely resistant to mold, moisture, rot, termites and other vermin. It is a lightweight material that can be molded into any shape. It is thermally insulating, non-combustible, durable, insect proof and sound absorptive. The Nexcem material provides a solid substrate for finishes and poses no threat to the environment and contains no toxic ingredients. We do not use polystyrene, foams, plastics or other potentially detrimental materials in the manufacture of our products.

nexcem superior design by nature

NEXCEM – MATERIAL PROPERTIES

Property	Value	Units	Test Standard
Dry Density:	500 - 600	kg/m^3	-
Saturated Density:	680 – 800	kg/m^3	-
Porosity:	0.5 – 0.6	-	-
Modulus of Elasticity (Compressive):	1500	MPa	ASTM C513 (Modified)
Minimum Modulus of Rupture (7 day strength):	1.0	MPa	ASTM C293 (Modified)
Minimum Ultimate Compressive Strength:	2.0	MPa	ASTM C513
Minimum Shear Strength:	0.2	MPa	-
Nexcem-Concrete Bond Strength:	0.6	MPa	-
Maximum Thermal Conductance*:	0.083	W / (m•K)	ASTM C177
Heat Capacity	1.5	kj / (kg•K)	-
Vapour Permeability:	20.5 (dry) - 26.5 (100%RH)	ng / (Pa•s•m)	-
Vapour Permeance:	800 - 1000	ng / (Pa•s•m^2)	-
Liquid Diffusivity**:	0	m^2/s	-
Darcy Coefficient***:	10^{-9} – 10^{-10}	kg / m•s•Pa	-
Freeze-Thaw Resistance:	300	cycles	ASTM C666 (Procedure A)
Wall System Fire Rating:	4	hours	ULC-S101 / ASTM E119
Surface Burning Characteristics			
Smoke Developed Index:	11	-	ASTM E84
Flame Spread Index:	0	-	ASTM E84
Minimum Noise Absorption Coefficient (50mm Thickness):	0.75	NRC	ASTM C423

* ASHRAE 1997 HOF gives k = 0.072 – 0.077 W / (m•K) for density = 400 – 430 kg / m^3.

** Liquid Diffusivity is undefined; material experienced no *macroscopic* capillary suction

*** Effectively free draining