



A – PRODUCT NAMES

NOBLE® Architectural Block
NOBLE® Architectural Stone
NOBLE® Architectural Brick

B – MANUFACTURER

PERMACON GROUP

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Noble®
Architectural Series

C – PRODUCT DESCRIPTION

Architectural concrete units of various types, sizes and finishes in various colours, water-repellent and permeable to water vapour.

Component materials

Concrete units composed of the following materials:

- Portland cement;
- Potable water;
- Sieve-graded sand aggregate;
- Sieve-graded crushed stone aggregate;
- Synthetic pigments based on metallic oxides;
- Water-repellent liquid polymer admixture DRY BLOCK II manufactured by WR Grace & Co. It is designed to disperse evenly in the concrete mixture to provide a uniform level of permanent water repellence without sealing the pores of the concrete unit. Although water-repellent, the unit is not a vapour barrier.

Manufacture

Unit manufactured by moulding and surface finishing by grinding, shot blasting or splitting.

Curing

Factory-produced architectural concrete units cured at normal pressure. The humidity content (refer to the 4th facet, O, in the classification) at the time of delivery or installation is not important since NOBLE® Architectural masonry units will generally be installed on the exterior. However, since these units will be subject to expansion and contraction resulting from variations in moisture and temperature, the designer must provide a sufficient quantity of movement joints appropriately placed in the veneer to accommodate this movement and prevent the appearance of cracks in the mortar joints or in the masonry units themselves. These comments also apply to the masonry of load-bearing walls and interior partitions.

Manufacturing tolerances

- Blocks and Stones: tolerances in accordance with CSA 165.1 standard for masonry units in concrete block
 - *Width: ± 2 mm*
 - *Length: ± 3 mm*
 - *Height: $+ 2$ mm or $- 3$ mm*
- Bricks: tolerances in accordance with CSA 165.2 standard for concrete bricks
 - *Width, length and height: ± 2 mm*

Uses

All of the units of the NOBLE® Architectural Series (blocks, stones and bricks) can be used as cladding on hollow exterior walls or architectural partitions inside residential, commercial, industrial or institutional-type buildings for either new construction or renovation work (small- or large-scale projects).

Designed and used first and foremost for aesthetic purposes, they have a compressive strength sufficient for use in a masonry-bearing wall or single wall, either outdoors or inside.

Finishes, colours and dimensions

To obtain all of the information about selections of colour, finishes and dimensions, consult the complementary promotional tools supplied by PERMACON GROUP for the NOBLE® Architectural Series:

- *Price list and index* (issued annually)
- *Brochure*
- *Finishes and color chart*
- *Shapes and sizes index*

Limitations

The integrity and durability of masonry work, especially the mortar joints, may be compromised by the effects of de-icing salts.

PERMACON GROUP invites the designer to consult its representative before making any decisions regarding the use of such products.

The concrete units of the NOBLE® Architectural Series must not be used as paving units, for sidewalks or for any other kind of walkway either indoors or outside. For this type of use, please consult the brochures and pamphlets relating to the various landscaping products manufactured by PERMACON GROUP that complement the NOBLE® Architectural Series.

In addition, Permacon recommends that the NOBLE® Architectural Series smooth face masonry units be used only as an accent or an accessory.

D – TECHNICAL DATA

Quebec Building Code – Chapter 1, Building, and National Building Code of Canada 2005 (amended)

- Part 4, Section 4.3 - Structural analysis, article 4.3.2 – Reinforced and non-reinforced masonry.
- Part 9, Section 9.20 – Above-grade masonry and insulating concrete form walls.

Standards (most recent editions)

CSA (Canadian Standards Association)

- A165.1 – Concrete Masonry Units
- A165.2 – Concrete Brick Masonry Units
- A179 – Mortar and Grout for Unit Masonry
- A370 – Connectors for Masonry
- A371 – Masonry Construction for Buildings
- S304.1 – Masonry Design for Buildings

Environmental considerations

Inert product, consumes only a limited quantity of energy during the manufacturing process, durable and recyclable.

Some of the NOBLE® Architectural Series products have features that meet the criteria of the LEED (*Leadership in Energy and Environmental Design*) certification program of the CaGBC, particularly regarding to the use of local and recycled materials.

For additional information about the LEED program, consult the LEED section at www.permaconpro.ca.

Physical properties

See the next three Tables

TABLE 1:

Physical properties of the NOBLE® Architectural Series concrete block and concrete stone units according to CSA A165.1 four-symbol system for Concrete Masonry Units

SYMBOL	PROPERTIES	CSA REQUIREMENTS Block and Stone	PERMACON REQUIREMENTS	
			Block	Stone
First	H : See Table 2 Hollow unit (net area less than 75% of its gross area)			
	SS : See Table 2 Semi-solid unit (net area more than 75% but less than 100% of its gross area)			
	SF : See Table 2 Solid unit (net area equal to 100% of its gross area)			
Second	20 Minimum compressive strength (MPa), average compressive strength of 5 units, calculated according to net section area.	15	15 to 20	20 to 30
Third	A Type of concrete			
	Minimum density (kg/m ³)	2 000	2150	2250
	Maximum water absorption (%)	8.75%	6%	4 to 5%
Fourth	O Maximum moisture content, % of total absorption	No limit	No limit	No limit

TABLE 2:

*NOBLE® Architectural Series
Classification, fire resistance and Sound Transmission Class*

Product ⁽¹⁾	Classification			Min fire resistance (hours)	STC minimum (decibels)
	H	SS	SF		
Block 10x10x40	x			0.75	45.2
Solid block 10x10x40			x	1	48.0
Solid block 10x10x40 (G)			x	1	48.0
Block 10x20x40	x			0.75	45.2
Solid block 10x20x40			x	1	50.1
Solid block 10x20x40 (G)			x	1	48.0
Block 15x20x40	x			1	46.9
Block 15x20x40 (G)	x			1.5	48.7
Block 20x10x40	x			2	50.1
Block 20x20x40	x			2	50.1
Block 20x20x40 (G)	x			2	50.8
Block 25x20x40	x			2	51.6
Block 25x20x40 (G)	x			3	52.4
Block 30x20x40	x			3	53.9
Block 30x20x40 (G)	x			3	54.4
Stone 10x10x60			x	1	48.0
Stone 10x10x60 (G)			x	1	48.0
Stone 10x15x60			x	1	48.0
Semi-Solid Stone 10x20x60		x		0.75	45.8
Stone 10x20x60			x	1	48.0
Stone 10x20x60 (G)			x	1	48.0
Stone 10x30x60			x	1	48.0
Stone 10x40x60			x	1	48.0
Stone 20x20x60			x	4	55.7
Stone 20x30x60			x	4	55.7
Brick 10x10x30	Not applicable			0.75	45.7
Brick 10x10x30 (G)	Not applicable			0.75	45.7

G = Split with guillotine

STC = Sound Transmission Class according to their equivalent thicknesses

* Note: Fire resistance according to their equivalent thicknesses

(1) The nominal dimension includes the real dimension of a block + one standard 10-mm mortar joint.

For example, a 10 x 20 x 40 cm block is 90 + 10 mm x 190 + 10 mm x 390 + 10 mm.

TABLE 3:

Classification of the NOBLE® Series concrete bricks according to CSA A165.2 Concrete Brick

PROPERTIES for Quality 1 bricks	CSA REQUIREMENTS	PERMACON REQUIREMENTS
Solid unit (net area equal to or more than 75% of its gross area)		
Minimum compressive strength (MPa)	25	25 to 35
Minimum density (kg/m ³)	2000	2250
Maximum water absorption of the unit (%)	8%	5%

Fire resistance

The units of the NOBLE® Architectural Series must be fire resistant when they are part of a masonry construction such as a firewall or a fire separation or when they form part of a wall whose exterior surface area requires exposure protection from a fire originating in an adjacent building (Quebec Building Code, sub-section 3.2.3 – Spatial Separation and Exposure Protection).

Fire resistance of NOBLE® Architectural units as a function of their equivalent thicknesses. See Table 2

Acoustical properties:

Sound Transmission Class (STC)

- NRC: The noise reduction coefficient (the arithmetical average of coefficients obtained at several different frequencies), is the measure of the rate of sound absorption by a concrete block with a regular or a special shape which is made of a light or heavy aggregate. The coefficient varies between 0 and 1; the higher the number, the more sound is absorbed by the material. The NRC of a heavy block, such as the NOBLE® Architectural Series with a medium texture, is approximately 0.26.
- STC: Sound Transmission Class is obtained by measuring the sound levels of a partition or wall of which blocks are either the sole component or one of the components. It is measured in decibels as the reduction in sound that results from the use of one or more materials in a partition or wall that separates two spaces, one of which contains a sound emitter and the other, a sound receiver. The higher the number of decibels, the greater the reduction in sound transmission.

Sound Transmission Class (STC) of NOBLE® Architectural units according to their equivalent thicknesses. See Table 2.

E – TRANSPORTATION AND STORAGE

Packaging and transportation

Units are stacked in rows on wooden pallets. To protect the units in each row from scratches and chipping, they are separated from one another by polystyrene strips. A flexible cellular plastic membrane also separates units in rows stacked on top of one another. A polyethylene bag covers the top and four sides of each cube piled on wooden pallets that can be returned to PERMACON GROUP.

Site storage

When storing the units, it is important to protect all of them from adverse weather conditions. In fact, **it is ESSENTIAL that the cavities never fill up with water.** (Example: uncovered pallets sitting out in the rain at a worksite.)

The storage of concrete units at the worksite must, at all times, respect the “Material Protection” requirements of the CSA A371 standard – Masonry Construction for Buildings (section 6.7.1.1 more specifically).

Among the precautions to take, note the following non-exhaustive list of directions:

- Concrete units must remain stacked on the pallet they were shipped on (or on a wooden platform) at least 75 mm above the ground so that they do not come into any contact with humidity or contaminants in the ground;
- Place a polyethylene sheet (or any other heavy-duty plastic material) between the wooden support and the masonry units if they must be stored again;
- Cover all masonry units stored outdoors in an appropriate manner (system that can withstand wind and adverse weather conditions);
- Do not use salt to melt ice that may have formed on the masonry units;
- Protect the surface of the units to avoid staining and damage during storage.

F – INSTALLATION

Quality assurance

Install masonry units in accordance with requirements of the CSA A371 standard.

Do not hesitate to call for a PREPARATORY MEETING with all stakeholders to ensure a common understanding of the requirements set forth in the plans and specifications.

Conditions for installing and protecting walls during their construction

During the entire period of construction of the concrete masonry work and during the 48 hours following the termination of construction work, make sure it is protected against inclement weather, cold, frost or excessive heat. In no case should the cavities in the cement products contain any water before, during or at the end of the masonry construction work.

Moreover, it is absolutely essential to properly cover the top of the walls after each day of work and when the job is completed in order to prevent water from penetrating cells in the concrete or the free air spaces behind the concrete units.

Complementary materials and products

- Type N mortar (or type S mortar for load-bearing masonry) in accordance with CSA-A179, Mortar and Grout for Unit Masonry. PERMACON GROUP recommends adding water-repellent liquid polymer admixture DRY-BLOCK II for mortar (dosage of 500 ml / 0.085 m³).
- Connectors (ties and anchors) that permit vertical adjustment, in galvanized steel (variable weight depending on protective surface coating) or in stainless steel, in accordance with CSA-A370, Connectors for Masonry.
- Accessories: joint backer and joint sealer for movement joints; membrane and/or metal flashings; loose steel lintels and lateral supports, and prefabricated vents and weep holes.

Projection units on the masonry facing

On the soffits of all units that project from the facing (i.e. windowsill, sleeper wall capping or roof parapet), make a drip mould (water drop) located at least 25 mm from the masonry wall.

Cleaning

Wash the finished work in order to remove traces of primary efflorescence, mortar and other surface residues or dirt likely to affect the aesthetic appearance of the masonry.

Never clean a wall with any kind of high-pressure jet.

Recommended products based on conclusive test results on all types of NOBLE® Architectural Series units:

- *Vana Trof®* or *600 Detergent* from *Prosoco Inc.*
- *202V Vana-Stop* by *Diedrich Technologies Inc.*

Consult a Permacon representative to determine the proper proportions for diluting these products with water in accordance with the scope of the work to be carried out.

G – AVAILABILITY AND COSTS

Availability

Since PERMACON GROUP is committed to providing concrete units from a single manufacturing lot in order to insure uniformity of appearance to the designer's satisfaction, NOBLE® Architectural units are available only on special order.

Management of delivery times

In order to prevent problematic situations related to wait times (for last-minute orders), we recommend that you include with the specifications (in the General Requirements of Division 1 of the specifications) a "Proof of Time of Purchase Order" to be submitted by the contractor no later than 30 days following the signing of the contract.

Costs

See the "Masonry Products Price List and Index" from PERMACON GROUP, which is issued annually.

H – WARRANTY AND DURABILITY

Warranty

PERMACON GROUP warrants that the physical properties of NOBLE® Architectural units exceed the requirements of CSA A165.1 and A165.2.

A 5-year warranty applies to Permacon products. Download the complete document entitled “Statement Warranty” of PERMACON GROUP at www.permaconpro.ca.

I – TECHNICAL SERVICES

Technical support is available at all times through technical representatives and the engineering department located at the PERMACON GROUP head office.

Samples of our products are available from a representative on request.

J – QUALITY CONTROL

PERMACON GROUP follows all of the procedures required by the standards in force for the manufacture of concrete units and blocks. The results of tests performed in Permacon’s own laboratory by its highly trained professional staff demonstrate that the physical properties exceed not only CSA A165.1 and A165.2 standards, but those set by the manufacturer as well.

Certificates are available on request.

K – INFORMATION CLASSIFICATION SYSTEM

A hardcover three-ring binder provides all the relevant and complete technical information about all the products manufactured by PERMACON GROUP for use in the building envelope, walls and decorative or functional masonry partitions. There is also information about landscaping products.

This binder includes the following NOBLE® Architectural Series documents:

- *Masonry products price list and index* (annually issued);
- *NOBLE® Architectural Series* brochure;
- *Shapes and sizes index*;
- *Finishes and colour chart* leaflet;
- *Model Specifications architectural masonry* leaflet;

Download the complete *Model Specifications* document titled “Architectural Masonry: Noble® Architectural Series and split face and smooth face Architectural Blocks” prepared in accordance with the National Master Specification NMS format and classified according to Master Format 2004 at www.permaconpro.ca.

Please note that this technical data sheet is only a guide and does not claim to cover all situations that could arise with various types of construction.

The information and the applications illustrated in this technical data sheet have been carefully compiled by PERMACON GROUP. They represent the use of Permacon products to the best of our knowledge. The customer is entirely responsible for the final use of the materials and the information presented. PERMACON GROUP does not assume any responsibility.



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