



#### TECHNICAL SERVICE & INNOVATION

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# CEMENT TECHNICAL DATA SHEET

## PRO CEMENT H-UKR N

- **DECARBONIZED CEMENT, 0% CLINKER**
- **CARBON FOOTPRINT 6 TIMES LESS COMPARED TO AN OPC**
- **MADE IN FRANCE**

A manufacturing process with low emissions of CO<sub>2</sub>



“ THE BEST CO<sub>2</sub> IS THE ONE YOU DON'T PRODUCE ”

### DOMAINS OF USE

- Ready-mixed plant
- Construction site concrete
- Precast (with or without heat treatment)

### APPLICATIONS

- Reinforced or unreinforced concrete
- Indoor or outdoor use

### PROPERTIES

- Concrete with a resistance class of C16 to C50 (on N/mm<sup>2</sup>, on Cylindrical Concrete Specimens at 28 days)
- Concrete of any consistency class (Slump from 0 to 250 mm and Slump Flow from 350 to 650 mm)
- Workability maintained up to 120 mins

### ASSESSMENTS

- Under Technical Assessments

#### Compressive Strength in MPa [N/mm<sup>2</sup>]

According to an internal protocol derived from EN 196-1

| Properties                      | Requirements | Average values |
|---------------------------------|--------------|----------------|
| Compressive strength at 1 day   | -            | 20.1           |
| Compressive strength at 2 days  | ≥ 20.0       | 31.1           |
| Compressive strength at 7 days  | -            | 45.8           |
| Compressive strength at 28 days | ≥ 52.5       | 58.3           |

#### Chemical characteristics (%)

| Properties                          | Requirements | Average values |
|-------------------------------------|--------------|----------------|
| Corrected loss on ignition          | ≤ 8.5        | 7.4            |
| Sulphate content (SO <sub>4</sub> ) | ≤ 4.0        | 0.10           |
| Chloride content (Cl <sup>-</sup> ) | ≤ 0.10       | < 0.02         |
| Sulphide content (S <sup>2-</sup> ) | -            | 0.60           |

#### Physical characteristics

| Properties                                      | Requirements | Average values                   |
|-------------------------------------------------|--------------|----------------------------------|
| Heat of Hydration at 41 h (J/g)                 | ≤ 270        | 157                              |
| at 120 h (J/g)                                  | -            | 193                              |
| Fineness, specific surface (m <sup>2</sup> /kg) | -            | [500-550]                        |
| Density (g/cm <sup>3</sup> )                    | -            | 2.65                             |
| Colorimetry                                     | -            | L* > 85<br>a* > 0.30<br>b* > 3.0 |

| Al <sub>2</sub> O <sub>3</sub> | CaO   | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO  | MnO   | Na <sub>2</sub> O | SiO <sub>2</sub> | TiO <sub>2</sub> |
|--------------------------------|-------|--------------------------------|------------------|------|-------|-------------------|------------------|------------------|
| 9.2%                           | 35.1% | 0.40%                          | 0.40%            | 6.4% | 0.20% | 7.7%              | 30.2%            | 0.60%            |

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20°C

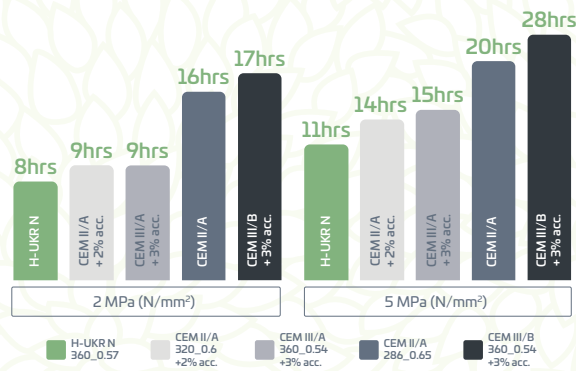
### MATURITY LEVEL

Results of maturity level studies at a young age of different cements.

In temperate conditions, the behavior of concretes based on PRO CEMENT H-UKR N cement and accelerated concretes based on CEM II/A (K94% S6%) and CEM III/A K51% S49%) is similar.

Adding an accelerator to CEM III/B (K34% S66%)-based concrete does not achieve the performance of PRO CEMENT H-UKR N cement-based concrete.

Note: K=Clinker & S=Slag



### RECOMMENDATIONS FOR USE

- Use clean aggregates, free from organic matter
- Use only the Chryso EnviroMix ULC 5500 plasticizing admixture (extension of rheology maintenance in hot weather by 30 to 45 mins depending on the concrete formulation).
- Take all precautions during horizontal pouring by systematically carrying out a cure. The curing products on the market are suitable. Water curing is prohibited.
- Use appropriate personal protective equipment (PPE): pants, long-sleeved clothing, waterproof gloves, waterproof shoes, safety glasses, etc.

**The shelf life of PRO CEMENT H-UKR N CEMENT is 24 months**  
(in dry storage conditions).

**Packaging is:**  
- in bulk (30-T tank maximum)  
- in 1-T big bags  
- in 25-kg bags



H-UKR N



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### RECOMMENDATIONS FOR USE

- Ensure that equipment is clean before producing mortar or concrete.
- Do not mix PRO CEMENT H-UKR N with any other material such as Portland cement, lime, etc.
- Aim for a Water/Cement ratio as low as possible, compatible with the consistency of the mortar/concrete for its use.
- Only use admixtures recommended by HOFFMANN GREEN CEMENT TECHNOLOGIES.
- For pouring horizontal surfaces, it is possible to add anti-crack fibers (glass fiber, cellulose, or polypropylene) to the mixture. Always use a curing product to prevent the concrete from drying out. Water curing is prohibited; commercial treatment products are suitable.
- Use appropriate personal protective equipment (PPE): pants, long-sleeved clothing, waterproof gloves, waterproof shoes, safety glasses, etc.
- Store bags of PRO CEMENT H-UKR N cement in a dry location.



### FORMWORK REMOVAL TIME GUIDELINES

| Average temperature   | Time required for removing from structures after pouring |
|-----------------------|----------------------------------------------------------|
| Between 20°C and 40°C | The day after                                            |
| Between 15°C and 20°C | The day after                                            |

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### RECOMMENDED QUANTITIES FOR MORTAR AND CONCRETE COMPOSITIONS INTENDED FOR MASONRY WORK.

It is important to comply with the quantities and professional standards for implementation

| Quantity for one 25-kg bag of H-UKR cement | Equivalent quantity of cement | Sand 0/4 mm | Gravel 4/10 mm to 4/20 mm | Water       | Mixing Volume |
|--------------------------------------------|-------------------------------|-------------|---------------------------|-------------|---------------|
| Masonry concrete                           | 350 kg/m <sup>3</sup>         | 4 buckets   | 5 buckets                 | ≈ 12 liters | ≈ 70 liters   |
| Masonry mortar                             | 300 kg/m <sup>3</sup>         | 8 buckets   | -                         | ≈ 18 liters | ≈ 80 liters   |
|                                            | 350 kg/m <sup>3</sup>         | 7 buckets   | -                         | ≈ 16 liters | ≈ 70 liters   |
| Traditional screed mortar (dry)            | 300 kg/m <sup>3</sup>         | 8 buckets   | -                         | ≈ 14 liters | ≈ 85 liters   |
|                                            | 350 kg/m <sup>3</sup>         | 7 buckets   | -                         | ≈ 12 liters | ≈ 75 liters   |
| Paving mortar                              | 250 kg/m <sup>3</sup>         | 10 buckets  | -                         | ≈ 25 liters | ≈ 100 liters  |
|                                            | 300 kg/m <sup>3</sup>         | 8 buckets   | -                         | ≈ 20 liters | ≈ 80 liters   |

*The quantities are given for information purposes only. They may vary depending on the mineralogical nature and characteristics of the sand and gravel used.*

*Water quantities are mentioned for sand and dry gravel. The quantity of water to use during mixing must be adapted according to the humidity of the sand and gravel.*

*1 bucket = 10 liters*

H-UKR N

