

NordicSIR ABR (Automated Bolting Resin)

Secure injection, complete borehole consolidation

Purpose:

This easily injected and instantly thickening, extremely fast curing two component silicate resin is designed for high strength bonding of rock bolts and cable anchoring technologies. The simple installation can be used in post grouting applications from manual injection to fully automated bolting systems.



Typical Applications:

- Rock bolting and anchoring in mines, tunnels and construction
- Permanent or temporary use
- Steel, cable or GFRP bolting applications
- Consolidation of boreholes and broken ground
- When combined with Nordic Geo Support GFRP bolts, an easier cleaner excavation is obtained in temporary areas by reducing ore contamination with steel, which in turn results in lower wear on cutters, crushers and conveyers in mining and tunnelling works.
- Combine with NordicSDA for immediate consolidation of broken ground
- Vibration resistant which allows better security of bolts nearby to blasting areas

Advantages include:

- Fast setting times for immediate security
- Easy and fast to insert and manage
- Full encapsulation of bolts and anchors
- Clean process – no mixing as with cements and less cleaning up afterwards
- Consolidation in and around the borehole
- With use of automated bolting rigs, this will safely secure areas of broken ground
- Combine with NordicSDA to create a single, uninterrupted drill-bolt-grout process
- Use with NordicSDA to create anchor strands to consolidate the most broken ground conditions.
- Can be used in specific underwater applications and in wet boreholes
- Not affected by vibration from nearby blasting or machines
- Resins offer additional corrosion protection to bolts
- Clean
- No dust
- Various setting times are available
- Total flexibility in design of bolting patterns

Technical Properties:

The data below are laboratory data. They may vary in practice due to thermal exchange between resin and strata, surface properties of the rock, pressure, and other factors.

Reaction Data:

Detail	
Reaction time at 30°C	30 to 50 seconds
Mix viscosity after 10 seconds	> 100 000 mPa.s

* Gel times and setting times are dependent on application and requested timing from customer. Times are set at the 30°C reference point.

** At lower temperatures (below 15°C) setting times may increase. At higher temperatures (setting times may also vary).

Material Data:

	Component A	Component B
Density at 25°C kg/m ²	1460 +/- 50	1160 +/- 25
Flash Point	-	> 140
Viscosity at 25°C: mPa.s	310 +/- 50	190 +/- 40

Mechanical Data:

Property	Age	Value
Strength in % at 25°C	15 min	50%
	30 min	70%
	60 min	90%
	2 hours	100%
Modulus of Elasticity		200 MPa
Shear Strength		100 MPa
Shore Hardness		D 60

Composition and properties:

NordicSIR ABR component A is a sodium silicate with additives.

Nordic ABR component B is a modified polyisocyanate.

Once mixed and injected, the resin rapidly forms. The final product has a low modulus and high strength which provides a consistent load transfer along the length of the bolt.

Application:

The two components are pumped by a dual component gear pump either onboard automated drill rigs or via NordicGeo specialised manual pumping stations for post grouting applications of rock bolts self-drilling anchors and cables.

Recommendations:

Observe the general safety regulations when handling chemicals. Wear suitable protective clothing, gloves and eye/face protection. After contact with skin, to reduce any risk of irritation wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately and seek medical advice. It is recommended to perform tests when using in new areas of excavation and to perform regular pull out tests of the bolts to ensure secure bolting.

Packaging:

NordicSIR ABR comes in a variety of cans, drums and containers to meet the application requirements. Typically standard containers are 20 litres for both component A and component B.

Storage and Shelf Life:

NordicSIR ABR has a standard shelf life of 12 months from manufacture when stored in a dry place with a temperature of <math><25^{\circ}\text{C}</math> and no exposure to direct sunlight. If this time is exceeded, it is recommended to have the material checked for compliance with specification.

Disposal:

Dispose of cured and uncured product components in accordance with the local regulations. Empty cans should be cleared of liquid by punching a hole through the edge of the cover and turning them upside down, until liquid does not flow out any longer.

Disclaimer:

The data in this sheet conform to our best knowledge and experience at the date of printing, which is indicated below. The state of knowledge and experience are evolving constantly. Please pay attention therefore, that you always refer to the current version of this data sheet. The description of the product application in this sheet cannot take the special conditions and circumstances into account emerging from the individual case. Application, use and processing of our product occur outside of our control capabilities. In particular, the processing results are exclusively subject to your own responsibility. No data in this sheet constitute a guarantee in a legal sense. Every time the user is obliged to check the product and auxiliary agents in terms of usefulness for his intended use.

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