

# Plain Bolting and Anchoring Products

## Basic Descriptions

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### Introduction

Structural elements such as rock bolts and anchors are used to secure excavations and slopes. A wide range of factors must be considered in the selection of the right bolting or anchoring technology to be used and include:

- Type of rock to be supported
- Corrosive nature of the rock
- Ground water
- Installation equipment
- Site access
- Rock strength and stiffness
- Breaks, fissures, fractures or laminations in the rock formation
- Depth of the excavation created higher pressures
- Life requirements for the bolt (permanent vs temporary)

There is a wide selection of bolting and anchoring technologies available. Nordic Geo Support works with our customers and designers to help select the best technology for the project. Our focus on sustainability helps us look at the total cost of the project through the supply chain to the life expectancy. Below is a small description of standard plain bolt products used in projects. Contact us so we can help assist in your anchoring and bolting needs.

### Resin Bolts and Anchors

The resin cartridges are placed into the borehole and then the bolt with a special mixing blade is spun as it is inserted into the hole mixing and setting the resin. The setting time of the capsule is predetermined and allows for fast loading of the bolt

### SN-Anchors

SN anchors are primarily used in tunnelling and special civil engineering applications. The bolts are ribbed increasing friction and bonding to the grout. The grout is injected into the borehole and the anchor is driven into the grout, creating an encapsulated bolt. Different characteristics are available depending on the application.

### Expansion shell anchors

Expanding shell anchors create a secure point at the toe of the bore hole, transferring load into the rock, for immediate load-bearing capacity. Resins or mortars are not required to secure the anchor.

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### TYPICAL PERFORMANCE DATA

Below are typical values that may be required for a project using plain bolting technologies. Because each project is unique, Nordic Geo Support will work with customers to match the right characteristics of products to the project.

Typical Anchors							
Outer diameter	mm	18	20	22	25	28	32
Thread		M 19	M 20	M 24	M 27	M 29	M 33
Yield strength of thread	kN	109	123	152	211	230	347
Yield strength of bar	kN	127	157	190	246	308	402
Breaking load of thread	kN	120	135	167	232	252	382
Break load of bar	kN	140	173	209	270	338	442
Approx. Weight	kg/m	2.00	2.46	2.98	3.85	4.83	6.31

Expanding Anchor											
		Smooth bar						Ribbed bar			
Outer diameter	mm	16	18	20	22	25	30	18	20	22	25
Thread		103	M 20	M 22	M 24	M 27	M 33	M 19	M 20	M 24	M 27
Borehole size	mm	32-51	32-51	35-51	43-74	47-95	64-95	32-51	35-51	43-74	47-95
Yield strength	kN	95	115	145	165	190	300	109	123	152	211
Breaking load	kN	140	175	220	250	300	475	120	135	167	232
Approx. Weight (without shell)	kg/m	1.6	2.0	2.5	3.0	3.5	5.6	2.0	2.6	3.0	3.8