

MINING

RESIN BOLTS

TYPE APP, APG, APB

*Certificate issued by the Central Mining Institute in Katowice:
No. B/1160/V/2017*

DESCRIPTION

AP bolts are modern design anchors with a load capacity of up to 300 kN and a nut locking system (shearpin). The anchors can be used with three types of washers; a square washer, a round washer or a square washer with an eyelet made of 8 or 10 mm plate.

A M24 nut is connected with the rod by means of a "SPIROL" $\varnothing 3$ or $\varnothing 6$ pin. The use of a spherical washer allows to fix the anchor at an 18° angle.



*Top: APB set and AP Rod
Bottom: APP, APG and APB plates*

APPLICATION AND USE

Resin bolts APP, APG, and APB are designed to be used for roof and ribs support in mining operations as an independent or additional roof support system. They are also used for the attachment of various components of mining equipment.

ADVANTAGES

- Reliable rock bolting elements in situations where increased bearing capacity is required
- Allow for improved binding force and bearing capacity of the bolt along its whole length
- Faster and easier bolting process thanks to minimisation of operations during bolts installation
- Cost-effective due to reducing the amount of labour needed

TECHNICAL DATA

DESIGN DATA

APP, APG, and APB anchor rods are made from a reinforcing steel bar of 21.70 mm in diameter according to ZN-95/AP-1; ZN-02/AP-6 is made of the following type of steel:

Bolt	Steel grade	Re min (MPa)	Rm min (MPa)	A5 min (%)
APP	AP 600	400	600	19
APG	AP 700	550	700	20
	AP-E500	500	700	21
APB	AP 770	640	770	18

BOLT DATA

Parameter	Value
Rod diameter	dr = 21.70 mm
Thread size	M24
Thread length	150 mm
Rod length	od 400 do 4000 mm
Torque shearing the $\varnothing 3$ pin	80 ÷ 120 Nm
Torque shearing the $\varnothing 6$ "SPIROL" pin - (light)	40 ÷ 60 Nm
Torque shearing the $\varnothing 6$ "SPIROL" pin - (medium)	90 ÷ 120 Nm
Torque shearing the $\varnothing 6$ "SPIROL" pin - (heavy)	140 ÷ 160 Nm
Effective anchor capacity	APP – min 190 kN
	APG – min 230 kN
	APB – min 260 kN
Useful load	APP – 220 kN
	APG – 250 kN
	APB – 300 kN

APPROVALS AND CERTIFICATES

- APP, APG, APB adhesive anchors have a Certificate issued by Central Mining Institute in Katowice allowing the product to bear the safety mark No. B/1160/V/2017.

APPLICATION METHOD

- Put the resin cartridges in the drill hole.
- Insert the anchor and rotate while pushing to cause the resin to mix.
- During mixing, the nut does not turn as it is joined with the rod by means of a $\varnothing 3$ or $\varnothing 6$ pin. Once the resin has set, the pin is sheared by turning the nut.
- Apply a torque of at least 250 Nm to screw on the M24 nut in order to tension the anchor to the desired pre-stress (initial tension) of minimum 30 kN.

PACKAGING AND TRANSPORTATION

As a standard practice, anchor poles are packed in bundles of 10pcs or in bundles of 100-300pcs and the plates are stapled with 10pcs of wire.

Other packaging options available on request.

Plates are placed in containers. Elements of the bolts can be transported by any means of transport in bundles or in containers.

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