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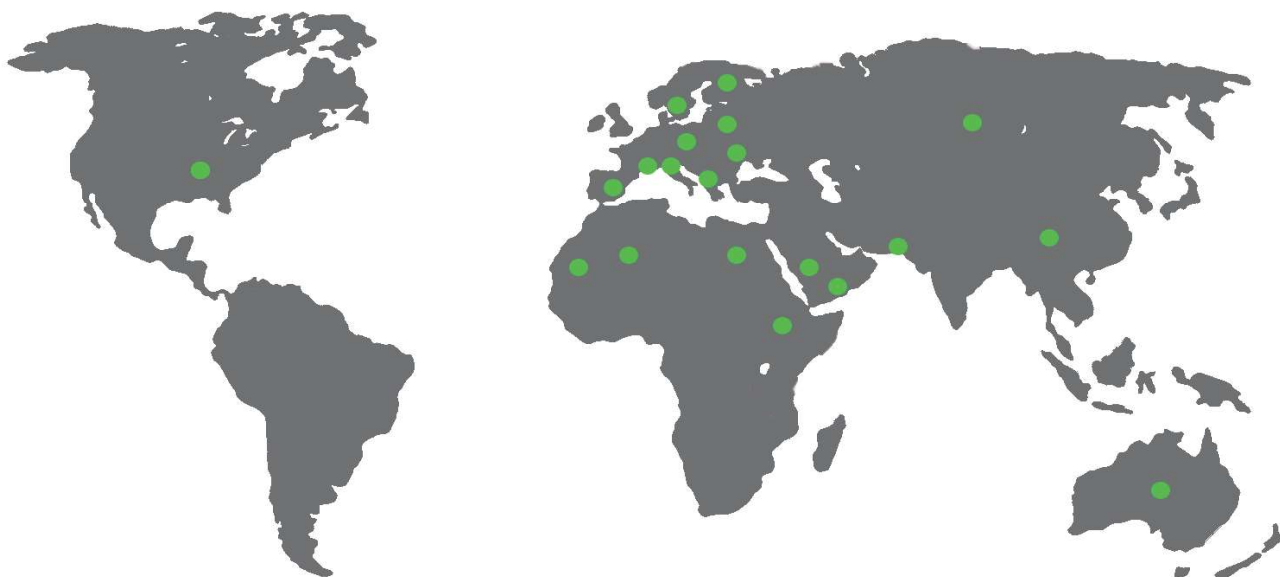
About CBM Technology company

CBM Technology Sp. z o.o. is a manufacturer of earthing and lightning protection systems. Our main products are copper-bonded steel earthing rods, wires and tapes.

We have been developing our products for many years and therefore we can offer products which satisfy each and every need of our customers.

Copper-bonded steel earthing rods, wires and tapes have 30-year corrosion resistance and, in terms of quality and price, they can be placed between copper products and galvanised steel products. Our products meet both European and International Standards such as IEC/EN 62305-3; IEC/EN 62561-2; HD 60364-5-54; EN 50522.

From its very beginning, the company's main aim was to improve quality of its products and provide its customers with wide technical support. This can be achieved thanks to the combination of long-standing experience and innovation introduced by young engineers.



Innovative products from CBM Technology, compliant with the PN-EN 62561-2 standard

CBM Technology is the pioneer of a globally unique production process which results in manufacturing products of highest quality and corrosion resistance for dozens of years. The copper-bonded steel tape with copper thickness of 0.070 mm combined with the copper-bonded rod with copper thickness of minimum 0.250 mm create a homogeneous earthing system.

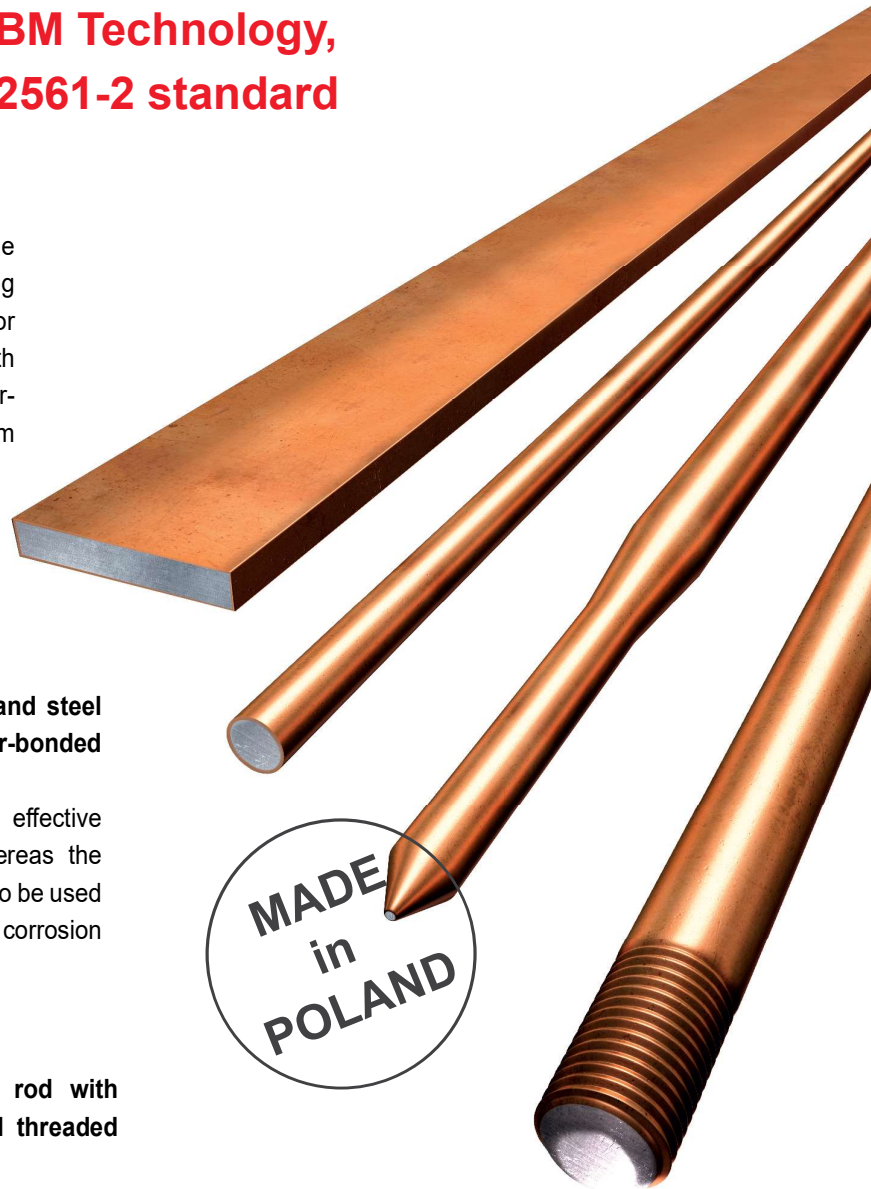
Innovative products

Steel copper-bonded tape and wire (St/Cu) and steel copper-bonded tinned tape and steel copper-bonded tinned wire (St/Cu/Sn)

The 0.070 mm thick copper coating provides effective corrosion resistance for dozens of years, whereas the tinned coating makes it possible for our products to be used in slightly acid and acid soil, also maintaining the corrosion resistance for dozens of years.

Vertical copper-bonded forged rod with sealing-strengthening bush and threaded rod connected with a coupling

The 0.250 mm thick copper coating is wear-resistant and it provides effective corrosion resistance for dozens of years.



The significance of the copper coating thickness

The 0.250 mm thick copper coating on steel with a nickel sub-layer ensures the 30-year corrosion resistance in soil environment of copper-bonded earthing rods. The nickel sub-layer provides molecular connection of copper and steel and ensures the adherence and plasticity required under the PN-EN 62561-2 standard. The coating thickness plays the vital role in ensuring the 30-year corrosion resistance. During the process of driving the rod into the ground, the copper layer is exposed to the risk of scuffing but the excellent adherence to steel through the nickel sub-layer prevents the detachment of the coating from the steel core. The thickness of the copper coating, which is softer than nickel, may be reduced, however, the copper coating will always remain at least 0.150 mm thick.

Therefore, the industry standards provide for 0.250 mm copper coating in earthing rods and at least 0.070 mm in tapes and wires. Unlike earthing rods, tapes and wires are not exposed to mechanical damage during the installation in the ground. The 0.070 mm copper coating on the steel tape considerably decreases its resistivity, which makes it possible to use steel tapes of considerably smaller dimensions in facilities where earth fault currents occur. However, CBM Technology offers an additional tin coating (Sn) covering the copper coating so that our products can be used in acid soil and slightly acid soil (pH 2 to pH 12.5).

Earthing system

Vertical rods

Vertical copper-bonded forged rod with sealing-strengthening bush

The 99.9% pure electrolytic copper bonded onto a drawn steel to a thickness of **min 0.250 mm** forms molecular and inseparable connection with the steel. The steel core has a high tensile strength of 600 N/mm².

One end of the rod has decreased diameter by hot forging this guarantees the same thickness of the copper layer on the whole length of the rod. The other end has a hole which enables the connection between the rods to increase the length.

The connection of the rods is protected by sealing bush made of stainless steel which provides additional mechanical strength to the connection. The bush levels potential deformations of the feather key that form during the grounding. The rod pin is made by hot forging this hardened the bolt. Therefore there is no need to use the tip. Connection of the rods complies with the requirements of IEC/EN 62561-2 „Lightning protection components (LPSC). Requirements for conductors and earth electrodes”. To drive the forged rod into the ground, the driving stud and tup for mechanical driving or tup for hand driving must be used.

The bush advantage:

- sealing the pin-feather key connection,
- strengthening the mechanical connection,
- eliminating the potential feather key deformations

Vertical copper-bonded forged rod with sealing-strengthening bush

| Cat. no. | Diameter of rod mm | Length* m | Material |
|----------|--------------------|-----------|--|
| C0000175 | 14.2 | 1.5 | steel copper-bonded to thickness of 0.250 mm, sealing-strengthening steel bush |
| C0000195 | 16.0 | 1.5 | |
| C0000185 | 17.2 | 1.5 | |

* for special orders we supply different rod lengths up to 3 m

Driving stud for forged rod

Driving stud is to transfer the vibrations from the tup to earth rod. It should be placed in the feather key of the rod and should be imbeded with the hammer

| Cat. no. | Diameter of rod mm | Material |
|----------|--------------------|----------|
| C1080375 | 14.2 | steel |
| C1080395 | 16.0 | |
| C1080385 | 17.2 | |

The driving stud stabilizer to embed forged rods

The driving stud stabilizer makes it possible for the driving stud to be stroke centrally in the forged rod core when grounding

| Cat. no. | Diameter of rod mm | Material |
|----------|--------------------|----------|
| C1070375 | 14.2 | teflon |
| C1070395 | 16.0 | |
| C1070385 | 17.2 | |



Tup for forged rod

Tup for forged rod transfers vibrations from the percussive hammer or hand hammer onto earth rod core through the driving stud placed in the feather key of the rod

| Cat. no. | Diameter of rod mm | Application |
|----------|--------------------|---|
| C1090375 | 14.2; 16.0 | for mechanical driving using hammers with SDS-Max fastening |
| C1090376 | | for hand driving |
| C1090377 | 17.2 | for mechanical driving with Hilti TE 905 and TE 1000 |
| C1090385 | | for mechanical driving using hammers with SDS-Max fastening |
| C1090386 | | for hand driving |
| C1090387 | | for mechanical driving with Hilti TE 905 and TE 1000 |



Vertical copper-bonded earth rod/grounding rod

They are made of molecularly bonded 99.9% pure electrolytic copper onto a low carbon steel core. The steel core is a bar drawn to the required diameter. The rods are highly resistant to corrosion and because the steel used has a high tensile strength 600 N/mm², they can be driven by vibrohammers to great depths. The copper jacket is **0.250 mm** thick at all points and it ensures a lifetime of more than 30 years.

The threads at the tips of a rod are rolled after copper bonding process, and both steel and copper are rolled into the thread, making it extremely strong. Connection of the rods using threaded coupling complies with the requirements of IEC/EN 62561-2 „Lightning protection components (LPSC). Requirements for conductors and earth electrodes”.

Threaded earth rod dimensions

| Cat. no. | Type of thread inch | Diameter of rod mm | Length of thread mm | Rod length* | | Material |
|----------|---------------------|--------------------|---------------------|-------------|-----|---|
| | | | | feet | m | |
| C1000111 | 5/8 | 14.2 | 30 | 4 | 1.2 | steel copper-bonded to thickness of 0.250 mm |
| C1000112 | | | | 5 | 1.5 | |
| C1000113 | | | | 6 | 1.8 | |
| C1000114 | | | | 8 | 2.4 | |
| C1000115 | | | | 10 | 3 | |
| C1000121 | 3/4 | 17.2 | 34 | 4 | 1.2 | |
| C1000122 | | | | 5 | 1.5 | |
| C1000123 | | | | 6 | 1.8 | |
| C1000124 | | | | 8 | 2.4 | |
| C1000125 | | | | 10 | 3 | |

* for special orders we supply different rod lengths up to 3 m



Threaded coupling

Threaded coupling with counted bore for protecting the rod threads from damage

| Cat. no. | Type of thread inch | Material |
|-------------|---------------------|----------|
| C1040302/60 | 5/8 | brass |
| C1040303/70 | 3/4 | |



Driving head

Suitable for both manual and power hammering. Can be re-used for many times

| Cat. no. | Type of thread inch | Material |
|----------|---------------------|----------|
| C1080302 | 5/8 | steel |
| C1080303 | 3/4 | |



Tip

Pointed hardened steel tip

| Cat. no. | Type of thread inch | Material |
|----------|---------------------|----------|
| C1060302 | 5/8 | steel |
| C1060303 | 3/4 | |



Tup for threaded copper-bonded earth rod

Tup is to carry percussive hammer oscillations on driving head for threaded copper-bonded earth rod (for hammers with SDS-Max fitting only)

| Cat. no. | Tup for driving head with thread type inch | Kind of driving head |
|----------|--|----------------------|
| C1090301 | 5/8; 3/4 | with a hole |



Conductors

Copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight ± 5%

| Cat. no. | X x Y mm | Length m | Material |
|---------------|----------|----------|--|
| C1100272(60M) | 20 x 3 | 60 | steel copper-bonded to thickness of 0.070 mm |
| C1100273(40M) | 25 x 3 | 40 | |
| C1100274(30M) | 25 x 4 | 30 | |
| C1100279(40M) | 30 x 3 | 40 | |
| C1100275(30M) | 30 x 4 | 30 | |
| C1100281(20M) | 40 x 4 | 20 | |
| C1100283(20M) | 40 x 5 | 20 | |



Copper-bonded steel wire

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight ± 5%

| Cat. no. | Diameter mm | Standard coil size m | Material |
|---------------|-------------|----------------------|--|
| C1110249 | ∅ 8 | acc. to order | steel copper-bonded to thickness of 0.070 mm |
| C1110249(20M) | ∅ 8 | 20 | |
| C1110249(60M) | ∅ 8 | 60 | |
| C1110249(80M) | ∅ 8 | 80 | |
| C1110250 | ∅ 10 | acc. to order | |
| C1110250(20M) | ∅ 10 | 20 | |
| C1110250(50M) | ∅ 10 | 50 | |
| C1110249C250 | ∅ 8 | acc. to order | steel copper-bonded to thickness of 0.250 mm |



Tinned copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight \pm 5%

| Cat. no. | X x Y mm | Length m | Material |
|---------------|-------------|-------------|---|
| C1100291(60M) | 20 x 3 | 60 | tinned copper-bonded steel, copper thickness min. 0.070 mm |
| C1100292(40M) | 25 x 3 | 40 | |
| C1100293(30M) | 25 x 4 | 30 | |
| C1100294(40M) | 30 x 3 | 40 | |
| C1100295(30M) | 30 x 4 | 30 | |
| C1100296(30M) | 40 x 4 | 30 | |
| C1100284(20M) | 50 x 4 | 20 | |



Tinned copper-bonded steel wire

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight \pm 5%

| Cat. no. | Diameter mm | Standard coil size m | Material |
|---------------|------------------|-------------------------|---|
| C1110280 | \varnothing 8 | acc. to order | tinned copper-bonded steel, copper thickness min. 0.070 mm |
| C1110280(20M) | \varnothing 8 | 20 | |
| C1110280(60M) | \varnothing 8 | 60 | |
| C1110280(80M) | \varnothing 8 | 80 | |
| C1110281 | \varnothing 10 | acc. to order | |
| C1110281(20M) | \varnothing 10 | 20 | |
| C1110281(50M) | \varnothing 10 | 50 | |



Foundation earthing system

Copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%

| Cat. no. | X x Y mm | Length m | Material |
|---------------|-------------|-------------|---|
| C1100274(30M) | 25 x 4 | 30 | steel copper-bonded to thickness of 0.070 mm |
| C1100279(40M) | 30 x 3 | 40 | |
| C1100275(30M) | 30 x 4 | 30 | |
| C1100281(20M) | 40 x 4 | 20 | |



Skew clamp

Skew clamp universal, with stainless steel separator, to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

| Cat. no. | Dimensions | | | Material |
|-----------|-----------------|---|---|---------------------------------|
| | rod St/Cu mm | tape parallel or squarely to rod mm | wire/cable parallel or squarely to rod mm ² | |
| C1030428N | 16; 14.2 | ≤ 30 | 28-78 | stainless steel 2 mm, stainless |
| C1030429N | 17.2 | ≤ 30 | 28-78 | steel bolts M8 |



Inspection pits

Enable to control rod – earthing conductor connections with no problems as well as to make time earth resistance measurements.

Pit C1140304 can be mounted in different kind of hardened surfaces (recommended for areas with setts because of specially designed reinforced flange). Pit C1140302 can be mounted in surfaces hardened with concrete or asphalt

| Cat. no. | Dimensions length x width x height x depth mm | Material |
|----------|---|---------------------------------|
| C1140302 | 258 x 258 x 215 x 160 | plastic pit with hardened cover |
| C1140304 | 260 x 215 x 210 x 110 | |



Clamps

Cruciform clamps

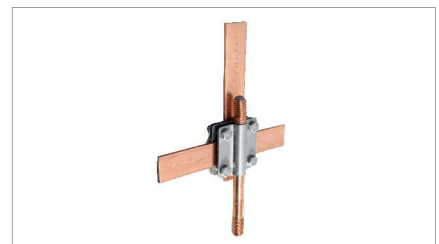
Cruciform clamp – profile, bolted M10 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

| Cat. no. | Dimensions | | | Material |
|-----------|-----------------|------------|-------------------------------|---------------------------------|
| | rod St/Cu mm | tape mm | wire/cable mm ² | |
| C1030432N | 16; 14.2 | ≤ 40 | 28-78 | stainless steel 2 mm, stainless |
| C1030433N | 17.2 | ≤ 40 | 28-78 | steel bolts M10 |



Cruciform clamp – profile, bolted M8 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

| Cat. no. | Dimensions | | | Material |
|-----------|-----------------|------------|-------------------------------|---------------------------------|
| | rod St/Cu mm | tape mm | wire/cable mm ² | |
| C1030495N | 16; 14.2 | ≤ 40 | 28-78 | stainless steel 2 mm, stainless |
| C1030496N | 17.2 | ≤ 40 | 28-78 | steel bolts M8 |



Skew clamps

Skew clamp universal, with stainless steel separator, to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

| Cat. no. | Dimensions | | | Material |
|-----------|-----------------|--|--|--|
| | rod St/Cu mm | tape parallel or squarely to rod mm | wire/cable parallel or squarely to rod mm ² | |
| C1030428N | 16; 14.2 | ≤ 30 | 28-78 | stainless steel 2 mm, stainless steel bolts M8 |
| C1030429N | 17.2 | ≤ 30 | 28-78 | stainless steel bolts M8 |



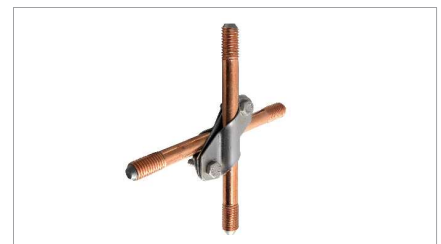
Skew clamp, with stainless steel separator, to connect rod to tape parallel or squarely. Clamp ensures good contact of rod and tape

| Cat. no. | Dimensions | | Material |
|-----------|-----------------|--|--|
| | rod St/Cu mm | tape parallel or squarely to rod mm | |
| C1030478N | 16; 14.2 | ≤ 40 | stainless steel 2 mm, stainless steel bolts M8 |
| C1030479N | 17.2 | ≤ 40 | stainless steel bolts M8 |



Skew clamp rod-rod to connect copper or copper-plated rod to copper or copperplated rod

| Cat. no. | Dimensions | | Material |
|-----------|-----------------|-----------------|--|
| | rod St/Cu mm | rod St/Cu mm | |
| C1030469N | 16; 14.2 | 12.8; 14.2 | stainless steel 2 mm, stainless steel bolts M8 |
| C1030470N | 17.2 | 17.2 | stainless steel bolts M8 |



Terminal clamp

Terminal clamp – flat, bolted 2 x M10, with stainless steel separator inside, enables to connect rod to tape. Stainless steel separator inside protects from corrosion between copper and zinc when different metals are connected

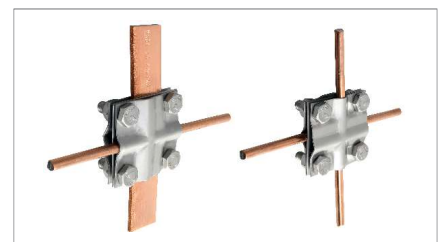
| Cat. no. | Dimensions | | Material |
|-----------|-----------------|------------|---|
| | rod St/Cu mm | tape mm | |
| C1030472N | 16; 14.2 | ≤ 40 | stainless steel 2 mm, stainless steel bolts M10 |
| C1030473N | 17.2 | ≤ 40 | stainless steel bolts M10 |



Cruciform clamps

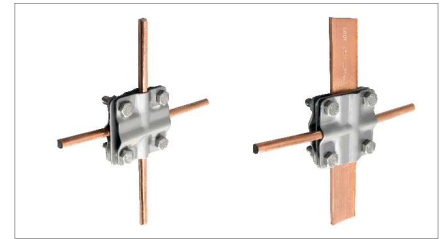
Cruciform clamp to connect conductor to conductor, bolted M10. Clamp enabling connection of two conductors

| Cat. no. | Dimensions | | Material |
|-----------|------------------|-------------------------|---|
| | tape St/Cu mm | wire mm ² | |
| C1030442N | ≤ 40 | 28-78 | stainless steel 2 mm, stainless steel bolts M10 |



Cruciform clamp to connect conductor to conductor, bolted M8. Clamp enabling connection of two conductors

| Cat. no. | Dimensions | | Material |
|-----------|---------------|----------------------|--|
| | tape St/Cu mm | wire mm ² | |
| C1030405N | ≤ 40 | 28-78 | stainless steel 2 mm, stainless steel bolts M8 |



Skew clamps

Skew clamp universal to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

| Cat. no. | Dimensions | | Material |
|-----------|---------------|----------------------|--|
| | tape St/Cu mm | wire mm ² | |
| C1030430N | ≤ 40 | 28-78 | stainless steel 2 mm, stainless steel bolts M8 |



Skew clamp, flat, to connect tape with tape, bolted 2 x M8

| Cat. no. | Dimensions | | Material |
|-----------|---------------|---------|--|
| | tape St/Cu mm | tape mm | |
| C1030431N | ≤ 40 | ≤ 40 | stainless steel 2 mm, stainless steel bolts M8 |



Additional accessories

Inspection pits

Enable to control rod – earthing conductor connections with no problems as well as to make time earth resistance measurements.

Pit C1140304 can be mounted in different kind of hardened surfaces (recommended for areas with setts because of specially designed reinforced flange). Pit C1140302 can be mounted in surfaces hardened with concrete or asphalt

| Cat. no. | Dimensions | Material |
|----------|------------------------------------|---------------------------------|
| | length x width x height x depth mm | |
| C1140302 | 258 x 258 x 215 x 160 | plastic pit with hardened cover |
| C1140304 | 260 x 215 x 210 x 110 | |



Inspection pit earth bar for plastic pits C1140302 and C1140304

Pits number: C1140302 and C1140304 can be equipped with equipotential earth bar enables connection of five bus bars (tapes) of max. size 30 x 4 mm. Earth bar fit into the slots provided in the inspection pit.



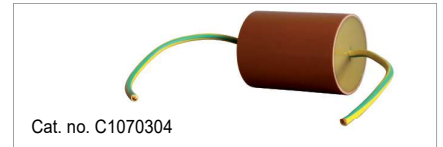
Lubricating medium for couplings of threaded earthing rods

It is used for additional protection of contacts inside coupling. When connecting rods with coupling, we recommend to pour little paste into coupling. It can also be used as lubricating medium for driving stud making it easy to screw it out.



Isolating coil

Isolating coil is positioned between two different earth electrodes to eliminate influence of fault and high frequency currents.



Insulating tape for wrapping underground joints

Insulating tape protects underground connections from soil and electrochemical corrosion

| Cat. no. | Width mm | Length m |
|----------|-------------|-------------|
| C1030355 | 30 | 10 |
| C1030356 | 50 | 10 |



Protective sleeve

When galvanized tape is connected to copper or to copper plated element buried underground, this sleeve is to protect galvanized tape from electrochemical corrosion.

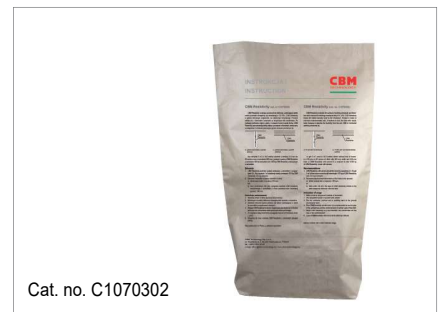


CBM Resistivity

CBM Resistivity is fine powder which increases surface area of earth electrode thus reducing resistance to earth.

It is being sold in the bags of 25 kg each. Before using it needs to be mixed with Portland cement before using in following proportion:

CBM Resistivity : cement
3 : 1



Steel tape and wire bending tools

The manual bending machine is a simple failure-free device which provides a wide range of possibilities in bending wires and tapes at 90 degrees. Thanks to its compact design and small size, it is perfect for bending wires at construction sites, trenches and power stations. The bending machine is intended for copper-bonded steel wires with the following dimensions: copper-bonded flat bar: 3-5 x 25-40 mm, copper-bonded wire: 8-10 mm.

The manufacturer is not liable for any damage to the bending tools if it is used for bending tapes and wires other than those manufactured by CBM Technology. Furthermore, the manufacturer is not liable for any damage to protective layer of tapes and wires other than those manufactured by CBM Technology.

| Cat. no. | Dimensions length x width x height mm | Application |
|-----------|---|--------------|
| C1140350B | 530 x 120 x 80 | bending tape |
| C1140350D | 530 x 120 x 80 | bending wire |



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| C0000185 | 4 | C1100291(60M) | 7 |
| C0000195 | 4 | C1100292(40M) | 7 |
| C1000111 | 5 | C1100293(30M) | 7 |
| C1000112 | 5 | C1100294(40M) | 7 |
| C1000113 | 5 | C1100295(30M) | 7 |
| C1000114 | 5 | C1100296(30M) | 7 |
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| C1000121 | 5 | C1110249(20M) | 6 |
| C1000122 | 5 | C1110249(60M) | 6 |
| C1000123 | 5 | C1110249(80M) | 6 |
| C1000124 | 5 | C1110249G250 | 6 |
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| C1030470N | 9 | C1140306 | 10 |
| C1030472N | 9 | C1140350B | 11 |
| C1030473N | 9 | C1140350D | 11 |
| C1030478N | 9 | | |
| C1030479N | 9 | | |
| C1030495N | 8 | | |
| C1030496N | 8 | | |
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| C1040303/70 | 5 | | |
| C1060302 | 6 | | |
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| C1070385 | 4 | | |
| C1070395 | 4 | | |
| C1080302 | 5 | | |
| C1080303 | 5 | | |
| C1080375 | 4 | | |
| C1080385 | 4 | | |
| C1080395 | 4 | | |
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