

A line drawing of a substation is positioned in the upper right corner. The substation features a tall metal structure with multiple insulators and electrical components. Below the structure, there are several large cylindrical tanks, likely transformers, and a smaller rectangular unit. The entire scene is set against a yellow background. A yellow fence with a black diamond pattern runs across the middle of the image, separating the substation from the foreground. To the left of the fence, the text 'SUBSTATION MARKING SOLUTIONS' is written in large, bold, white capital letters. At the bottom of the image, there is a black and white diagonal striped hazard pattern.

# SUBSTATION MARKING SOLUTIONS

[www.electromark.com](http://www.electromark.com)

**Electromark®**

Your Outdoor Identification Experts



# The ELECTROMARK EDGE

*Substation Marking Solutions*

## EXPERTISE

Our expertise comes from our experience. Over 45 years in outdoor identification has given us a deep understanding on the importance of proper identification. We are confident in our ability to customize, innovate and standardize solutions that fit your needs. With years of research, thorough testing and proven results, we know Electromark can deliver a reliable solution to you.

## TRUSTWORTHY SERVICE

When we say that we are “Your Outdoor Identification Experts”, we mean every word. Our job is to help you find a solution that alerts, protects and informs the community, contractors and employees. We don’t push product, we provide solutions that will improve safety and the reliability of your services.

## QUALITY MATERIALS

Durability is the most important trait to look for in a material. Poorly suited material use can result in improper hazard awareness and end with someone getting seriously injured or killed. For this reason, we have scoured and continue to search the marketplace for the best utility-centric products and materials that hold up to demanding outdoor environments and meet or surpass relevant industry compliance requirements like, OSHA, ANSI, NEMA, UL, ISO, ASTM and CSA. We have led the marketplace in innovation and continue to showcase superior products, like Metalphoto.





# SUBSTATION MARKINGS

Substation Marking Solutions

## Property Signs

Identify ownership by posting signs that display company, emergency and location information. (Pg. 4)



## Perimeter Warning Signs

The National Electric Safety code (NESC) requires hazard signs to be at every entrance and on each side of your substation. Make your signs visible to people approaching your substation from every angle. (Pg. 4-5)



## Enclosure Signs & Labels

Alert employees and the public about hazards in a substation enclosure with both custom and standard signs or labels. (Pg. 6-8)



## Numbers & Letters

75 KVA

Properly identify asset numbers, KVA ratings, and voltage levels with pre-made labels or single digits that can be arranged on the spot. (Pg. 9 & 10)

## Switch Markers

65T

Switching is an important part of substation work. Identify substation switches with unique ID markers to distinguish each switch for contractors and employees. (Pg. 11)

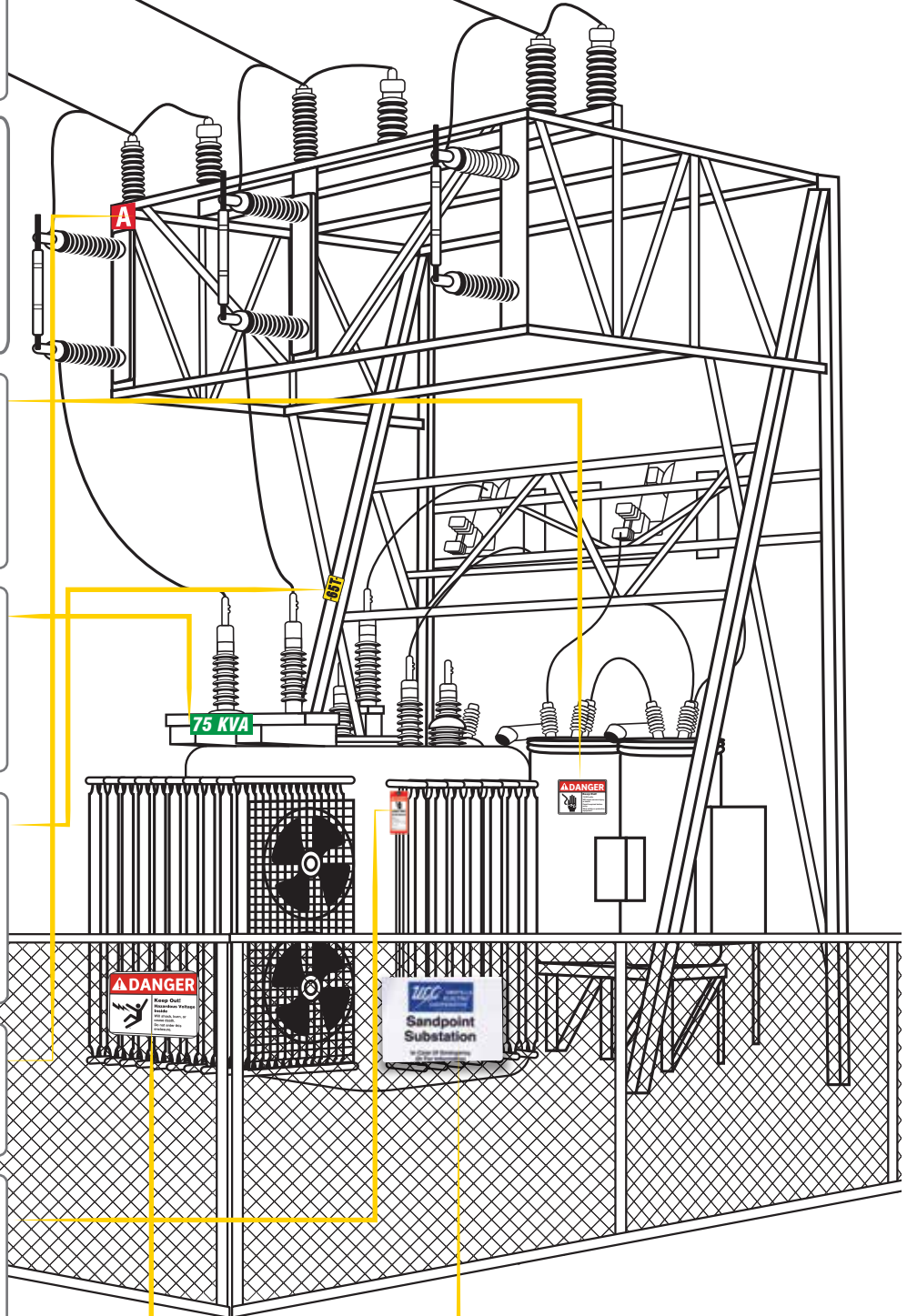
## Cable Markers

Mark cables for instant and safe phase identification. (Pg. 12)

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## Tagout Tags

OSHA 1910.147 and 1910.269 require energized equipment during service to be locked out or tagged out. Comply with OSHA's tagout and tag durability requirements. (Pg. 13 & 14)





# SUBSTATION SIGNS

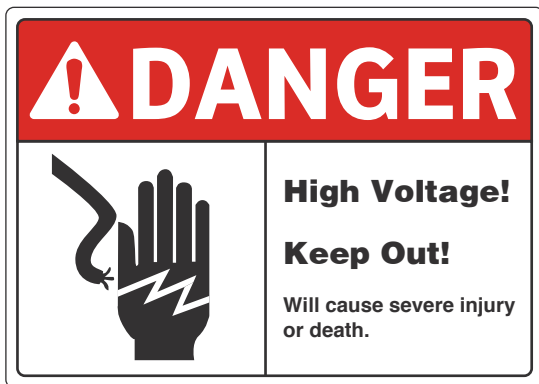
Substation Marking Solutions

## ELECTROMARK Preferred Materials for Substation Signs

SUGGESTED APPLICATION	MATERIAL	REASON
Property Signs Perimeter Fence Hazard Signs Substation Enclosure Rigid Signs	Porcelain	<ul style="list-style-type: none"><li>• Most durable material</li><li>• Extreme abrasion and UV resistance</li><li>• Chemical resistance allows for easier graffiti removal</li></ul>
Property Signs Perimeter Hazard Signs Substation Enclosure Rigid Signs	SolarGrade Polycarbonate	<ul style="list-style-type: none"><li>• Reflective option, visible at night or in dimly-lit areas</li><li>• Low scrap value (theft less likely)</li><li>• Great UV and impact resistance</li><li>• Protected graphics</li></ul>
Property Signs Perimeter Hazard Signs Substation Enclosure Rigid Signs	Fiberglass	<ul style="list-style-type: none"><li>• Great UV resistance (long-term fade resistance)</li><li>• Impact resistance</li><li>• Low scrap value</li><li>• Protected graphics</li></ul>
Property Signs Perimeter Hazard Signs Substation Enclosure Rigid Signs	Painted Aluminum Sign	<ul style="list-style-type: none"><li>• Reflective option</li><li>• Common material used in the industry</li><li>• Most economical option</li><li>• Very good outdoor life</li></ul>
Substation Enclosure Decal Signs/Labels	Duracryl	<ul style="list-style-type: none"><li>• Vandal Resistant – with attempted removal, the label will come off in tiny fragments and make removal a difficult, tedious process</li><li>• Unsurpassed UV resistance, extends the life of the label against the sun</li></ul>

## 1968 OSHA vs 2011 ANSI Z535 LAYOUTS

OSHA 1910.145 requires that all hazard signs in a substation have a consistent design. This means that the 2011 ANSI Z535 and the 1968 ANSI designs cannot be interchanged throughout the substation; one design should be used to eliminate confusion. Electromark encourages the ANSI Z535 design for two reasons, to remain compliant with the National Electric Safety Code and the ANSI design provides a clearer, image-driven message. However, if you are currently using the OSHA header layout and do not have plans to switch the signs out, we offer both layouts in stock and custom sign options.



When your sign demands unique characteristics like wording, shape, color and construction, contact our customer service team for a custom solution.



## PERIMETER FENCE SIGNS

Hazard signs are required at every entrance and side of a substation fence. Provide adequate response time by making signs large, visible, and readable from a distance. Perimeter signs are often the first way to alert people in a substation. Provide ample warning to people approaching the building from all possible angles. Consider including emergency contact information on the sign in case of a substation related accident.

### 3 REMINDERS FOR PERIMETER SIGNS

1. Attach the sign to the outside of the fence to prevent obscured view.
2. Fasten the sign with fence brackets or other more secure measures to deter theft.
3. Use sign material that will remain durable in your environment.



## PROPERTY SIGNS

Request a custom sign with your company name, phone and substation address to enable a response to suspicious activity, evidence of tampering or a fence breach. Reference the Electromark Good, Better and Best categories for suggested materials.

## ELECTROMARK Good, Better, Best for Signs

APPLICATION	GOOD	GREAT	BETTER	BEST
Perimeter Hazard Signs	Aluminum	Fiberglass	Solar Grade Polycarbonate	Porcelain
Pros	<ul style="list-style-type: none"> <li>• Reflective option provides visibility at night or in dimly-lit areas</li> <li>• Most commonly used sign material</li> <li>• Cost-effective solution</li> <li>• Shorter lead time</li> </ul>	<ul style="list-style-type: none"> <li>• Superior UV resistance</li> <li>• Chemical resistance allows for easier graffiti removal</li> <li>• No scrap value, deters theft</li> </ul>	<ul style="list-style-type: none"> <li>• Reflective option, visible at night or in dimly-lit areas</li> <li>• Low scrap value, theft less likely</li> <li>• Excellent graphics</li> <li>• Excellent UV and impact resistance</li> <li>• Protected, subsurface graphics</li> <li>• Shorter lead time</li> <li>• Effective annualized cost improvement over aluminum</li> </ul>	<ul style="list-style-type: none"> <li>• Supreme durability</li> <li>• Extreme abrasion and UV resistance</li> <li>• Chemical resistance, allows for easier graffiti removal</li> </ul>
Cons	<ul style="list-style-type: none"> <li>• Possesses scrap metal value</li> <li>• Moderate UV resistance compared to other sign material options</li> </ul>	<ul style="list-style-type: none"> <li>• Duller graphics compared to other options</li> <li>• More costly than other options</li> <li>• Longer lead time</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate to poor graffiti removal</li> <li>• Subject to moderate scratching</li> </ul>	<ul style="list-style-type: none"> <li>• More costly than other options</li> <li>• Longer lead time</li> </ul>
Warranted Durability	10 years	20 years	12 years	30 years



# PERIMETER SIGNS

Substation Marking Solutions

## HAZARD SIGNS

Ensure that utility workers, contractors and visitors understand the hazards of substations and how to avoid them with sufficient, clear and concise signs. The 2011 ANSI Z535 layouts and designs were tested and chosen based on the frequency and promptness of response. Create a standardized design and more effective message by following ANSI Z535.



## BILINGUAL SIGNS

Signs should reach the widest audience possible. A sign is not effective if only half of the readers can understand the message. In some locations, this means having bilingual signs. We offer stock products in English-Spanish and English-French. Send us your translated message and we will put it in the ANSI conforming format.

## FENCE BRACKETS

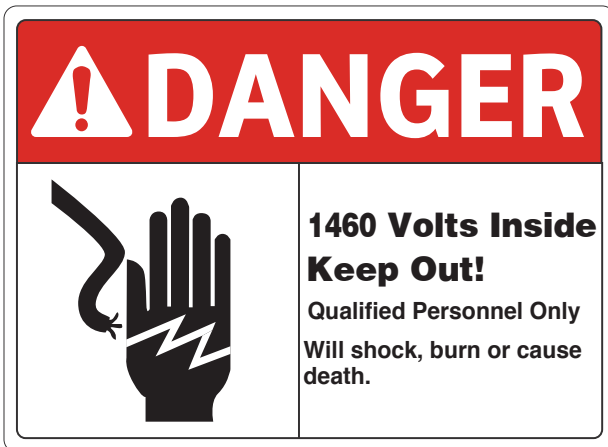
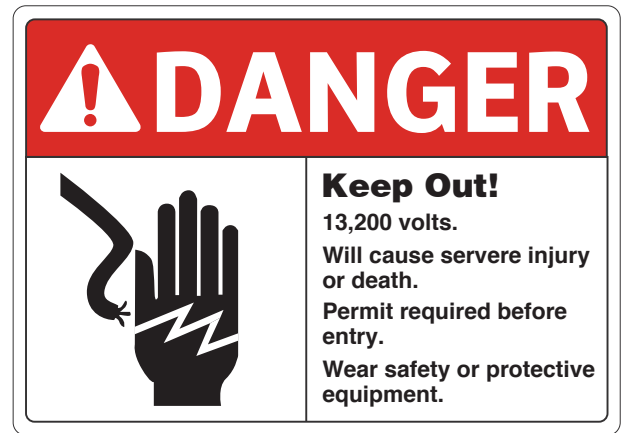
Professionally attach signs to any chain-link fence to discourage vandals and thieves. Once installed with a self-clinching nut or a tamper-proof bolt, our fence brackets are virtually impossible to remove. Brackets are sold in pairs.





## VAULT DOOR SIGNS

Vault doors must be marked with appropriate warnings. We recommend using a rigid sign or Duracryl® label for your vault door message. If the surface of the vault door is irregular, use a foam adhesive and a rigid sign construction.



## BATTERY STORAGE

Post signs inside and near a battery area, prohibiting smoking, sparks and open flames. Maximize sign effectiveness with graphics and bilingual text. Include emergency contact information to speed up response.

## ACCESS DOOR WARNING SIGNS

OSHA 1910.269 requires signs to be posted on entrances to rooms with energized equipment warning unqualified people to stay out. Prevent accidental entry with access door warning signs.





# SUBSTATION LABELS

Substation Marking Solutions

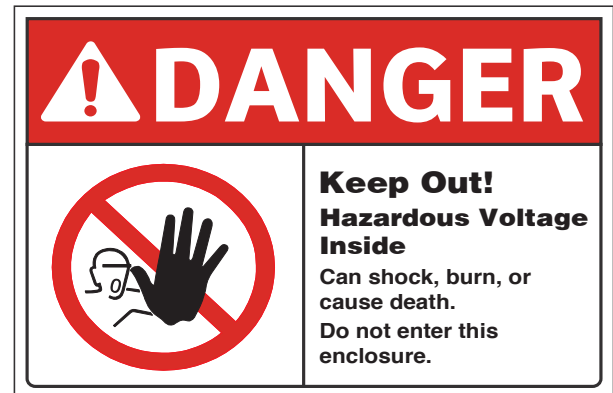
## ELECTROMARK Preferred Materials for Substation Labels

SUGGESTED APPLICATION	MATERIAL	REASON
Outdoor	Duracryl	• UV resistance extends the life of the label against the sun
Indoor	Polyester	• Chemical, heat and dirt resistant • Withstands battery room temperatures
Asset ID	Metalphoto	• Durable, long-lasting material with both a rigid and adhesive options • Resistant to abrasion, extreme temperatures, UV, chemicals, and solvents • Readable barcodes for 30yrs+ outdoors
Asset ID or Safety Label	Retro-reflectivity	• Day and nighttime visibility • Available in three grades of reflectivity: Engineer Grade, High Intensity and SunBright

## HAZARD LABELS

Constant exposure to fluctuating temperature and weather conditions is harsh on outdoor labels. We have chosen and tested materials that will fit your requirements.

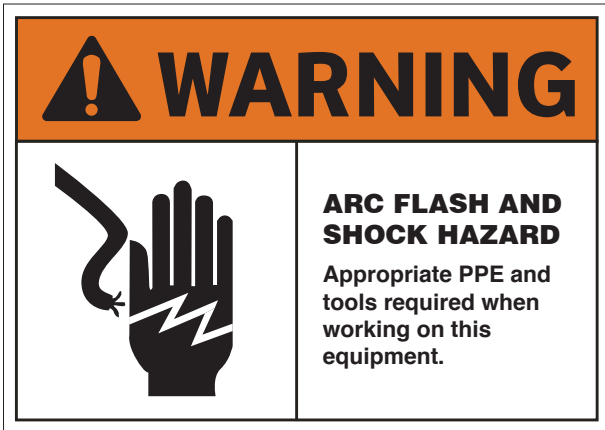
The NESC recommends standards follow ANSI Z535 for sign design. Our knowledgeable sales and support team will ensure your signs meet these regulations.



## CUSTOM LABELS

Custom designs are preferred over stock layouts. A company logo and phone number on a label tells customers and passersby who they should contact if a transformer is damaged or shows evidence of tampering. Customers are often the first people to alert electric utilities of issues within their area. Equip them with the tools they need to alert the right people.



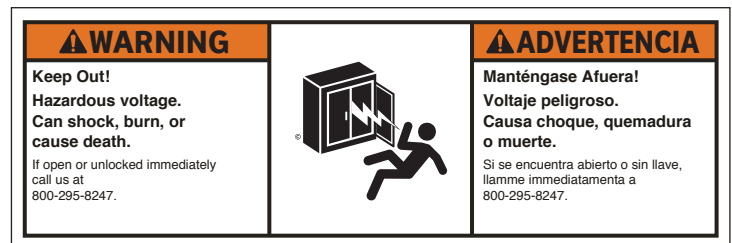


## ARC FLASH LABELS

NFPA 70E *Standard for Electrical Safety in the Workplace* requires equipment owners to label electrical equipment with information regarding the incident energy or PPE levels. OSHA consults and references the NFPA 70E standard and can still issue a fine if someone gets hurt from arc flash as a result of inadequate warning or protection. Provide specific information regarding arc flash with our write-on arc flash labels. Write the information specific to the arc flash on the label, then seal in your writing with a protective flap.

## BILINGUAL LABELS

Labels are not effective if they're only understood by half of your audience. We offer stock products in English-Spanish and English-French. Send us your translated message and we'll put it in the ANSI conforming format.



## SURFACE PREP 77

When an adhesive is applied to a dirty surface, the dirt creates a barrier between the adhesive and the application surface resulting in reduced surface adhesion. For the best bond, the surface needs to be cleaned before the label is applied. Surface Prep 77 is non-flammable, non-solvent based surface cleaner formulated to beat citrus cleaners in removing surface dirt, cutting oils, and wax. Available in 5 gal pails or 32oz spray bottles.



# NUMBERS & LETTERS

*Substation Marking Solutions*

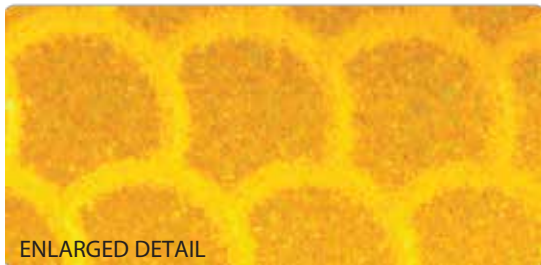
## ADHESIVE DIGITS

Choose the degree of reflectivity (Engineer Grade, High Intense or SunBright) that best meets your needs. Digits come in a variety of colors and sizes.



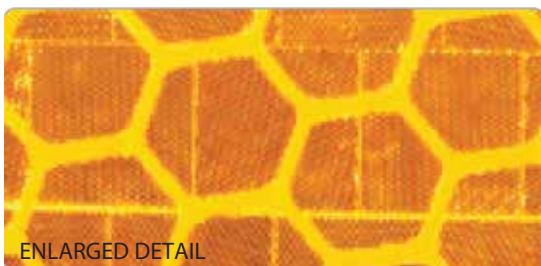
### ENGINEER GRADE REFLECTIVE

Most traditional reflective solution with a 10-year warranted life. Engineer Grade is a tamper-resistant material that shreds with attempted removal. Available in individual or notebook sheet packaging.



### HIGH INTENSITY REFLECTIVE

Higher reflectivity than Engineer Grade with twice-as-strong acrylic adhesive that adheres to more surfaces, including low temperatures and select surface-energy plastics. Available in individual or notebook sheet packaging.



### SUNBRIGHT REFLECTIVE

Need a high degree of reflectivity? Improve marking with the high visibility microprisms of SunBright. Three times Engineer Grade's reflectivity, SunBright out-performs at greater distances, wider angles and with lower light sources. Special thick acrylic adhesive holds quickly and firmly to smooth, clean surfaces. Available in individual or notebook sheet packaging.



## VOLT MARKERS

Choose adhesive or Snap-On markers to label conduits, panels, and circuits. A wide range of legends and sizes are available. Adhesive polyester markers are packaged 5 cards per bag and the number of labels per card depends on size. Custom legends and the convenience of book style packaging (adhesive size B only) are also available.

**220  
VOLTS**

**⚠ CAUTION  
4160 VOLTS**

**120/240**

**75 KVA**

## KVA MARKERS

KVA markers represent the maximum amount of power that can run through a transformer without overheating. Identify KVA limits with our Engineer Grade or High Intensity KVA markers. Different colors and sizes are available.

## POCKET PANELS

Pocket Panels enable on-the-spot marking flexibility with unique precision cavities for easy alignment, professional appearance and nearly-impossible removal of adhesive digits. Pair reflective digits with pocket panels to obtain greater visibility in areas with limited light sources. Use reflective markers on non-adhesive surfaces for cable or switch marking. Available in multiple sizes.





# SWITCH MARKING

*Substation Marking Solutions*

## METALPHOTO

Metalphoto products will look as good as new for a lifetime. Custom information is chemically embedded and then sealed into an anodized layer of aluminum. Embedded graphics withstand extreme heat and sunlight while the anodized surface provides resistance to chemicals, paint abrasion and dirt. Permanently adhere identification labels to your relays, microprocessors, cutouts and other assets for future data collection needs. Expect Metalphoto to last 30+ years.



**02196021**



## FIBERGLASS MARKERS

Graphics are embedded in layers of durable, UV and chemical resistant fiberglass resin. Lighter weight, high-quality graphics and wide color choices provide a larger variety of design options which are scratch, abrasion and chip resistant.

## ALUMINUM MARKERS

We have a variety of aluminum options that can be used for switch markers. Aluminum plates are more traditional, but aluminum slide-in digits and panels can be used as well. As a traditional utility choice, aluminum economically presents good outdoor performance and graphic options. Standard sign-color choices available.





## PHASE MARKERS

Identify the three phases in your substation. A, B and C phase cables markers are available in porcelain, polycarbonate, rigid polyethylene, polyester and vinyl.



## SNAP-ON MARKERS

Cables do not need to be cleaned before installing Snap-on markers. Adhesive markers require the surface to be cleaned before application. Snap-on markers coil around the cable completely and adhere to themselves rather than the actual cable. Available in vinyl, polyester and reflective materials. Pre-printed and on-site writable options are available.

## SELF-LAMINATING CABLE LABELS

Add information specific to the cable run on the spot. Write and seal with a self-laminating flap to protect your writing from long-term UV exposure and chemicals. We'll customize the labels to fit your size requirements, color and legend specifications. Our standard is a polyester marker with a polyester laminate.





# TAGOUT TAGS & BARRICADE TAPES

Substation Marking Solutions

## WHEN TO TAGOUT

OSHA 1910.147 and 1910.269 require equipment to be locked out in or tagged out during maintenance or servicing to prevent the energizing of equipment that could potentially harm the service person. In our industry, the equipment that needs to be locked out is often a functioning component or section of a larger, more complex distribution network that cannot accommodate a locking device. When this is the case, tagout warning devices are required.

## REGULATION REQUIREMENTS

### Standard Design

OSHA 1910.269(d)(3)(ii)(A)(2) Tagout devices must be standardized within the facility in at least one of the following criteria: color, shape or size; and additionally in the case of tagout devices, print and format should be standardized.

### Durable Materials

OSHA 1910.269(d)(3)(ii)(D) require tag attachment means to meet 50lb pull force and tags to be made out of materials that will hold up to the environment where they are being used.

WHY VINYL?	WHY POLYESTER?
Very tough material, naturally thicker than polyester. Less sensitive to edge tearing.	Easier material to write on, and it can be used in print on-demand devices. Polyester is a tough material.

## ANSI 1968 (OSHA Header) TAGS

Similar to signs, tags require the same text style and format. We offer stock and custom tags in the OSHA 1968 format.



## PRINT ON-DEMAND TAGS

Customize and print tags on-demand by pairing Electromark Print-On-Demand tags with either Redtag or TagLink software. Buy tags in sheets to print from a laser, thermal or ink jet printer, or buy them in rolls to combine with a desktop thermal printer.



# TAGOUT TAGS & BARRICADE TAPES

Substation Marking Solutions

## PERFORATED TAGOUT TAGS

We took the qualities and benefits of our standard self-laminating tagout tags to design perforated tags. Save time and improve records by detaching operational details that need to be saved in the office for record keeping. Standard tag size 7" x 4"; stub: 2" x 4"



## SELF-LAMINATING TAGOUT TAGS

Extremely durable and lightweight polyester tags resist temperatures, UV, moisture and wind. Designed for a single use, pencil markings on the polyester surface appear highly legible. Inscribe your specific information, overlay with clear polyester adhesive flap and attach your tag. Once the tag has served its purpose, destroy it via the edge tear-notch, eliminating any future confusion.

## TAG FASTENERS

Strings and wires do not comply with OSHA 1910.147 and 1910.269. For tagout posting use self-locking nylon zip ties. Zip ties are UV resistant, non-releasable and exceed OSHA's 50lb unlocking strength limit.



## BARRICADE TAPES

Temporarily block-off areas where equipment is being serviced with barricade tape. Use ANSI colors and legends for the most effective design. Polyethylene tape is available in different thicknesses to provide different strengths.



# Your Substation Marking Experts

Over 45 years of utility industry knowledge enables us to deliver durable, reliable, standard and custom substation solutions. The Substation booklet includes a variety of products that come custom or standard:

- Signs
- Labels
- Switch Markers
- Cable markers
- Tags
- Barricade Tape

Need help making a decision? We'll evaluate your needs and guide you to a solution that will work for you.

Call us with any questions or orders, we're happy to help! For more marking options visit us at [www.electromark.com](http://www.electromark.com).

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Your Outdoor Identification Experts