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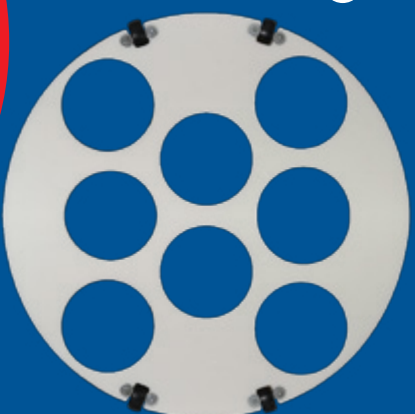
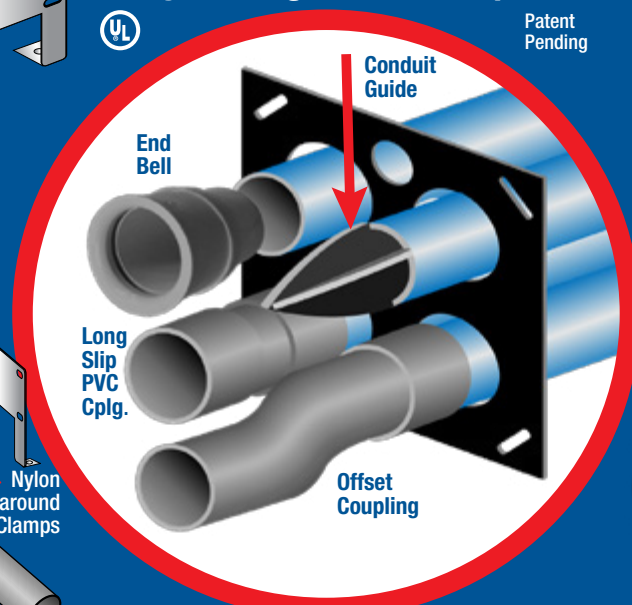
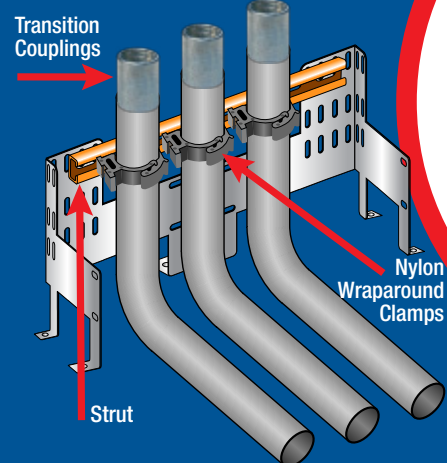
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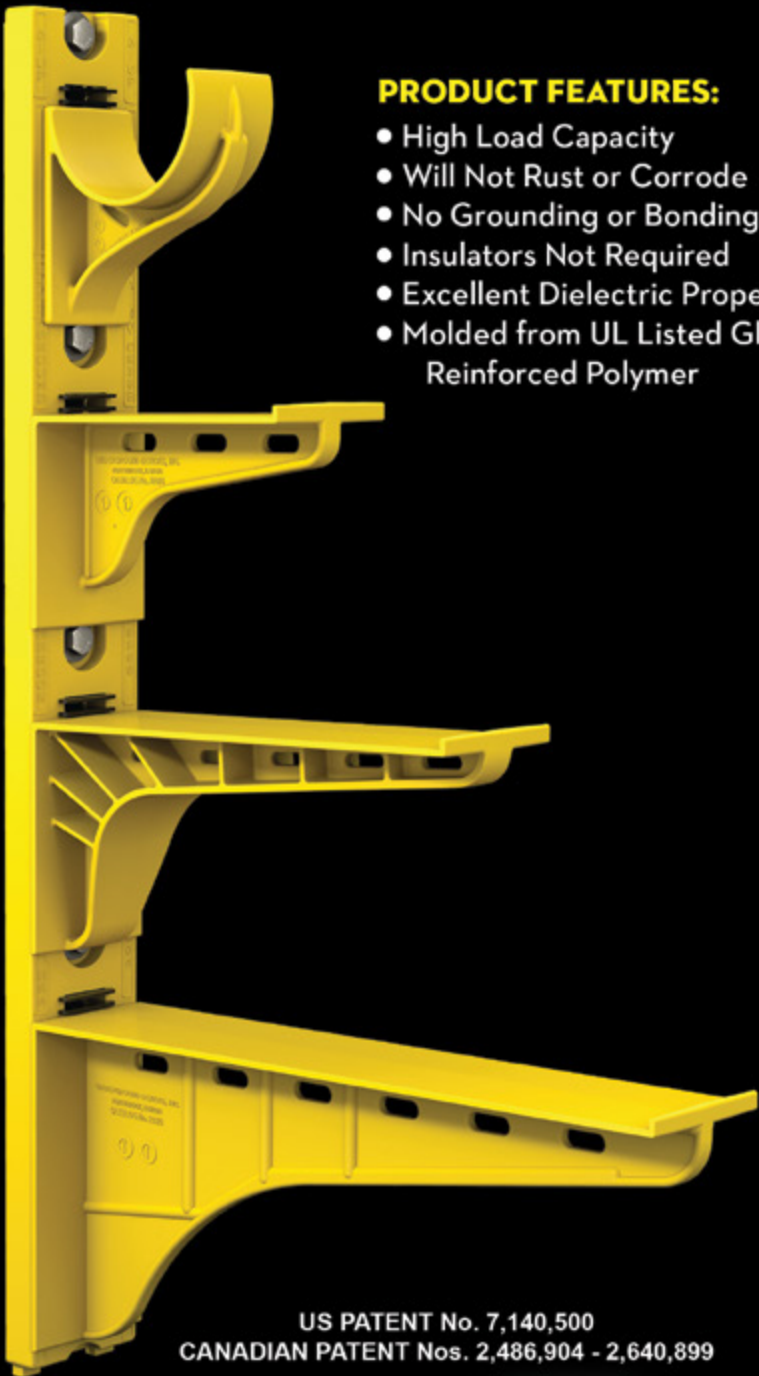
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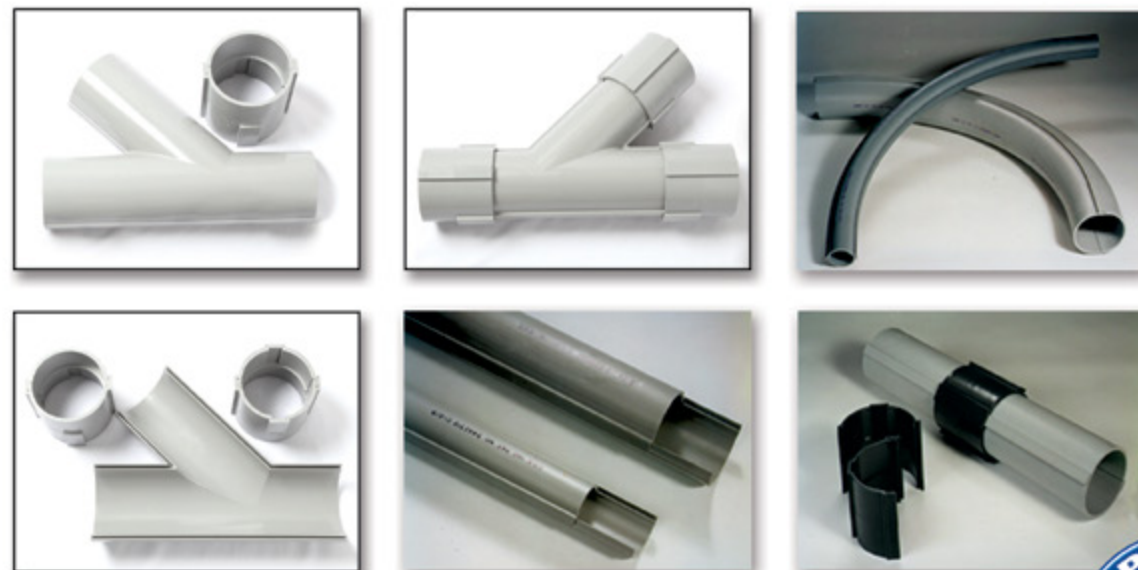
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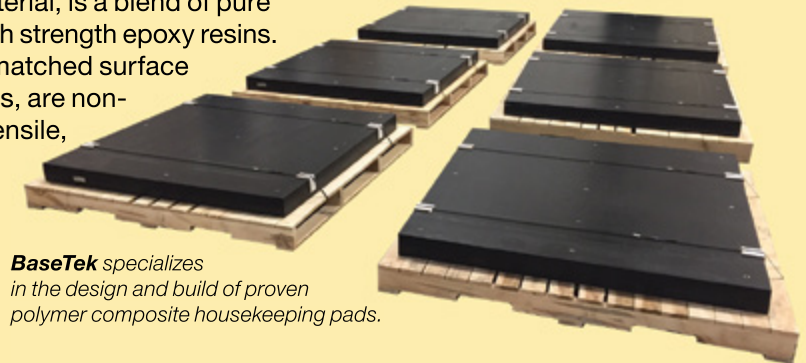
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Protect Yourself

Miller Safety Consultants — A Leader in Arc Flash Protection

Vince Miller started Miller Safety Consultants, a veteran owned business in 1999. The goal of the business was to provide cost effective safety consulting, employee training such as: confined space entry, fall protection, electrical safety and provide sales of electrical shock and flash protective equipment and fall protection equipment to businesses in the Washington DC area.

Reliance Industries provided fall protection products and much of the sales and training was on behalf of the supplier. In 2000, the owner decided to retire from his business, and Vince decided to discontinue the fall protection line of his business and concentrate more in the electrical training and products.

Vince had been a distributor for Certified Insulated Products (CIP), a manufacturer of electrical insulated tools and electrical arc flash clothing manufactured by Otex in Rochester, New York. As a distributor, Vince provided sales through his internet website and much through relationships with electrical contractors. His training was a classroom environment and was provided directly to customers but he also taught as a sub-contractor for other safety consulting companies and the

Chesapeake Safety Council in Baltimore, Maryland. In 2005, Vince partnered with Vivid Learning Systems in Cascades, Washington to provide on-line training in safe work practices.

Training in electrical safe work practices is still provided locally in the Washington DC area and as a partner with an electrical engineering firm and online. The training is based on the Occupational Health and Safety Administration (OSHA) standards and the National Fire Protection Association (NFPA) 70E standard.

Miller Safety Consultants is now a distributor for Cementex USA, Burlington, New Jersey, for insulated tools and equipment and clothing from OTEX Protective, Rochester, New York.

The majority of his sales of products

are from the web-based store. Cementex is nationally known for their quality equipment. Otex Protective is becoming more known for their quality clothing. For years, they have manufactured their products under other provider labels. Vince chose to not create his clothing line, but to sell the manufacturer product.

Vince has worked with many electrical company employees to fine-tune the clothing to be more comfortable for the user. Working closely with the manufacturer, they have made slight changes in how the cloth pattern was modified to meet final production. An example is the lightweight 40 Calorie vented hood offered by Otex.

The material is of the latest technology. The vented assembly is constructed for balance on the back of the hardhat and the airflow is 27 CFM to prevent fogging of the face shield and provide cooling to the worker. It took over a year to develop the product with the user prior to having the hood “flash tested”. This product is now standard issue with many electrical contractors.

Being a small business and having quality providers has resulted in satisfied customers for Miller Safety Consultants. Being a direct supplier for OTEX Protective, another small business means customized customer needs can be met. □

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Ensuring Electrical Safety in Hydrogen Operations

BY BRANDON WYSOCKI



IN THIS ARTICLE WE EXPLORE THE CURRENT USE OF HYDROGEN in industrial processes, as well as its role in the ongoing global transition to a net zero economy. We'll provide insights into market opportunities and challenges, the latest processing technologies, and best practices in safety to help industry stakeholders as they face mounting pressure to scale up hydrogen production.



Hydrogen can be very dangerous. At every point across its value chain, upstream and downstream, hydrogen remains extremely combustible and can explode in confined spaces when exposed to any electrical equipment producing arcs, sparks or excessive heat. Consequently, correctly certified explosion-proof electrical equipment is required as defined in the NFPA 70 National Electrical Code (NEC Article 500), among others depending on geography. For the purposes of this article, we will concentrate on NEC requirements for hydrogen, specifically Class I, Division 1 or 2, Group B.

The Hydrogen Market

According to the International Energy Agency, hydrogen represents “the biggest innovation opportunity” to reduce or eliminate carbon dioxide (CO2) emissions produced by human activity. Hydrogen’s ability to replace

fossil fuels without releasing CO2 when consumed has led to new applications being explored on numerous fronts, notably fuel cell electric vehicles. Bolstering these initiatives, the U.S. Department of Energy in 2023 announced an investment of \$7 billion to launch seven Regional Clean Hydrogen Hubs to accelerate the commercial-scale deployment of low-cost, clean hydrogen.

While green innovations like these hold great promise, hydrogen as an alternative energy represents only a small sliver of overall consumption. Of the 120 million metric tons (MMT) of hydrogen consumed worldwide in 2022, the vast majority was concentrated in the traditional sectors of petroleum refining and chemical processing. Globally, each year approximately 55% of hydrogen goes into the creation of ammonia for fertilizer, another 25% into petroleum refining hydro-desulfurization

and hydrocracking operations, 10% to produce methanol, and the remaining 10% in treating metals, flat glass manufacturing, chemical synthesis of plastics, and the manufacturing of semiconductors. Gaseous hydrogen is also utilized as a coolant for generators due to its high thermal conductivity.

Almost all the hydrogen produced in the United States is used for refining petroleum, treating metals, producing fertilizer, and processing foods.

Hydrogen Production

Hydrogen is the simplest and lightest of all Earth elements, consisting of only one proton and one electron. It is also the most abundant element in the universe, yet rarely in its pure state. Instead, hydrogen covalently bonds to one of three elements: fluorine, oxygen, or nitrogen. To produce hydrogen as fuel, it must be separated from the other elements in the molecules where

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Components of Cementex IKG00-11 glove kit:

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it occurs. Technologies enable the separating of hydrogen gas from its companion substances in purities in the order of 99.999%.

Hydrogen is almost exclusively produced through thermochemical processes requiring fossil fuels: hydrocarbon reforming, coal gasification, hydrocarbon pyrolysis, and plasma reforming. Approximately 95 percent of hydrogen is produced via steam reforming of hydrocarbons with the balance coming from water electrolysis, biomass-derived liquid reforming, and microbial biomass conversion.

The least expensive method of production is steam methane reforming (SMR). Besides methane, it is used to produce hydrogen from ethanol, propane and gasoline. Although steam refining is very cost-effective, it requires fossil fuels as feedstock and to produce heat. In fact, for every kilogram of hydrogen produced in SMR, seven kilograms of CO₂ are released into the environment. Capture and Storage techniques (CCS) seek to trap the vast majority of CO₂ produced by SMR and store it in the ground, converting the product from “gray” to “blue” hydrogen.

An alternative to steam refining is water electrolysis. This pathway splits hydrogen from water using electrical

current, effectively converting electrical energy into chemical energy. Depending on the kind of electrolyte material and ionic species being used, electrolysis is carried out using one of three types of electrolyzers: alkaline, solid oxide, or proton exchange membrane (PEM).

Like steam refining, electrolysis largely relies on fossil fuels. The only way the process is CO₂ neutral—that is, it produces almost no greenhouse gases or other pollutants—is when renewable energy sources are employed, such as wind or solar. Because this “green” hydrogen approach is considerably more expensive than hydrogen sourced from fossil fuels, it makes up less than 0.04% of all hydrogen produced globally.

Hydrogen Production
Color Codes

Different methods of producing hydrogen are often referred to by certain colors:

- **Brown hydrogen** — Produced from the gasification of coal. Releases large quantities of CO₂.
- **Gray hydrogen** – Produced by mixing fossil gas (natural gas, methane) with steam. Releases large quantities of CO₂.
- **Blue hydrogen** – Produced using the same method as gray hydrogen, but with carbon emissions captured and

- stored (CSS) underground.
- **Green hydrogen** – Produced by passing electricity generated from renewable sources through water, resulting in very low or no carbon emissions.
- **Pink hydrogen** — Like green hydrogen, this process incorporates electrolysis, but uses nuclear rather than renewable energy sources. Hydrogen can be used as a feedstock and energy source with no greenhouse gas emissions.

Hydrogen Storage

Hydrogen may be physically stored as a gas or a liquid, yet both methods present challenges. Low energy density and the complexities of cryogenics are some of the biggest barriers. Hydrogen gas is prone to leakage. It can permeate through solid metals, as well as embrittle metals, which affects the integrity of storage and transportation infrastructure by creating cracks. Even a tiny leak can lead to the accumulation of dangerous hydrogen clouds in a confined area or within an enclosure.

Another storage option is to chemically bind hydrogen with solids or liquids able to absorb it.

Finally, there is the underground storage of hydrogen. Bulk storage of uncompressed hydrogen has proven viable in salt caverns, and to a lesser extent in porous media such as sandstone or shale, and in engineered cavities.

Hydrogen Transportation

Most hydrogen used in the United States is produced at or close to where it is consumed—typically at petrochemical or chemical sites. If it isn’t consumed at its point-of-production, hydrogen can be transported to its point-of-use by railcar, barge, or over the road in gaseous tube trailers or in cryogenic liquid tanker trucks. Long-distance pipeline investments have been made in areas where there is a significant, steady demand for hydrogen. In the United States, there are approximately 1600 miles of active pipeline for hydrogen transportation, 90 percent of which is located along the Gulf coast of Texas, Louisiana and Alabama, serving



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refiners and ammonia plants. Pipelines are the least expensive method of transporting hydrogen.

Hydrogen Fires and Explosions

When developing electrical systems for a hydrogen application, engineers must be aware of its associated dangers and the need for proper hazardous area classification for electrical equipment. Make no mistake — there are serious safety concerns when hydrogen is released in sufficient concentrations, a situation made more precarious because hydrogen is both colorless and odorless.

Hydrogen’s wide flammability range (4% to 74%) means the energy needed to ignite it can be very low, like that generated by a small spark or an electrostatic discharge. Therefore, all electrical equipment must be bonded and grounded. Any equipment that is not approved for hazardous environments by the NEC, IECEx or ATEX must be kept outside of the designated area.

Another danger of hydrogen is that its flames burn at extremely high temperatures (500° C, 932° F) yet mostly outside of the visible light spectrum, making these fires both extremely destructive and nearly impossible to initially detect. Furthermore, at concentrations of 18.3% to 59%, hydrogen will explode.

Blast waves from a hydrogen explosion can cause very serious damage to surrounding buildings as well as injuries to nearby personnel. Explosive forces will vary depending on several factors, such as the quantity of gas, the presence of any other materials, and the conditions under which the explosion occurs including container geometry.

The DOE Office of Energy Efficiency and Renewable Energy classifies hydrogen explosions as being either deflagrations or detonations:

Types of hydrogen combustion - Deflagration versus Detonation*

- Deflagrations are combustion explosions in which there is subsonic flame propagation through the hydrogen-oxidant (typically hydrogen-air) mixture.
- Detonations are combustion explosions in which there is supersonic flame propagation through the hydrogen-oxidant (typically hydrogen-air) mixture, such that shock waves are generated. Detonations are frequently more destructive than deflagrations.
- Deflagrations can sometimes accelerate when the flame propagates across repeated small obstacles or through long pipes to produce deflagration-to-detonation transition (DDT). DDT does not occur in

hydrogen concentrations near the flammable limits and is more likely to occur in large equipment or piping, or in very large hydrogen releases in a partially confined area.

- Deflagration venting per NFPA 68 Explosion Protection by Deflagration Venting is not an effective explosion protection measure when DDT occurs; it is effective for deflagrations.
- Detonation prevention and detonation pressure loads for gas mixtures in piping are described in NFPA 67 Explosion Protection for Gaseous Mixtures in Pipe Systems.

Hydrogen has one safety advantage over other flammable fuels: hydrogen is 14 times lighter than air and rises six times faster than natural gas, which means that it disperses rapidly when released. Unless leaking hydrogen is contained by a roof or some other structure, it will quickly disburse before it reaches a flammable concentration. The laws of physics prevent it from lingering near a leak unlike heavier gases such as propane or gasoline fumes. For that reason, hydrogen explosions and fires are most likely to occur in confined, poorly ventilated spaces where hydrogen is processed or stored in large quantities.

Mitigating Hydrogen Risks

In North America, electrical systems installed in hydrogen applications follow the National Electrical Code (NEC), Article 500. The NEC is incorporated into most state and local jurisdiction regulations and therefore carries the weight of law.

In Article 500, 502, and 503 the NEC details its Class (nature of the hazardous material) and Division (likelihood of existence of it) system, which is further delineated into Groups (the type of hazardous materials). The NEC Class/Division System for hazardous areas classifies hydrogen applications as being Class 1, Division 1 or Division 2, Group B.

A Class I area is defined by the NEC as “Locations which are deemed hazardous due to the presence of gases or vapors that are present in the air in a sufficient quantity to produce explosive or ignitable mixtures.” This will apply to



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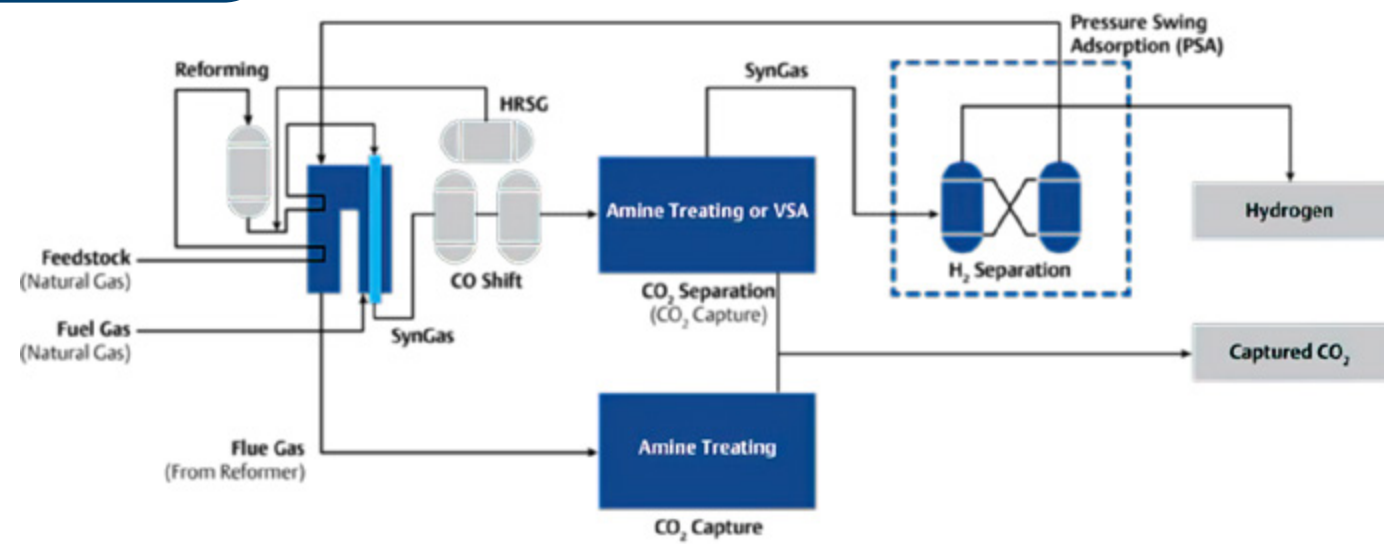
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most areas where hydrogen is produced, stored, transported or dispensed.

Class 1 hazardous locations are subdivided into Divisions. Division 1 is a Class I location “where the hazardous atmosphere is expected to be present during normal operations on a continuous, intermittent or periodic basis.” Division 2 is a Class I location in which “volatile flammable liquids or gases are handled, processed or used but in which they would normally be confined within closed containers or closed systems from which they can escape only in the event of an accidental rupture or breakdown of the containers or systems.”

Divisions are broken down into seven groups (A, B, C, D, E, F, G), although three (E, F, G) refer only to dust and not gases. Data pertaining to combustible vapors and gases in determining Group are its flash point, upper/lower flammable limits, auto-ignite temperature, density and pressure, as well as its MIE (minimum ignition energy), MIC (minimum igniting current) and MESG (maximum experimental safe gap).

Hydrogen falls into Group B. Group B is an area that contains a flammable gas, liquid-produced vapor or combustible liquid-produced vapor mixed with air that has the potential to catch fire and burn or explode. The elements in this Group have an MESG (Maximum Experimental Safe Gap) value equal to or less than 0.45mm or an MIC (Minimum Igniting Current) ratio equal to or less than 0.40. Besides

hydrogen, other Group B gases include butadiene, ethylene oxide, propylene oxide and acrolein.

Applying due diligence in the classification, design and installation per the applicable code will render hydrogen no more dangerous than any other product. We’ll also note here that the application of ventilation may change the electrical requirements in hazardous locations where hydrogen is present, as can walls, ceilings and floors as separation between classified and non-classified areas. If fans are being used, vent fan blades should be constructed with aluminum, plastic or other non-sparking material.

Hazardous Area Strategy

- **Classify Area:** Identify location and determine flammability/ combustibility characteristics of any hazardous materials present, specifically their extent, duration, and sensitivity to spark and heat ignition.
- **Control:** Explore ways to eliminate and/or control flammable atmospheres.
- **Specify Correct Equipment:** Specify, install, and properly maintain electrical equipment engineered for use in the hazardous areas identified and classified.

Explosion-proof Equipment Design

Explosion-proof equipment for Class I, Div 1 or 2, Group B applications are designed and manufactured strong enough to contain an explosion and prevent the escape of a flame or heat

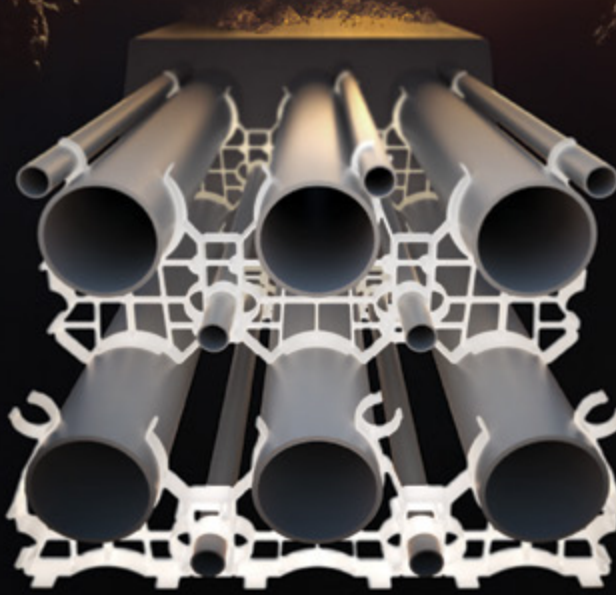
that could ignite the surrounding atmosphere. Burned gases do escape from explosion-proof equipment. However, their escape path has been engineered so the temperature of the escaping gas is well below its ignition point when it escapes into the surrounding atmosphere. This can be done in several engineering methods depending on the product, such as labyrinth-path and ground joint construction. Other means of ensuring equipment is explosion-proof are sealing it to prevent entry of flammable gas, encapsulation in resin or oil immersion, pressurization with inert gas to displace hazardous substances, or limiting the temperature of its external surfaces. Electrical equipment subjected to this environment must also provide protection from the ingress of liquids or dust to maintain proper operation.

CONCLUSION

Reducing the risk of hydrogen explosions and fires requires classifying areas of the operation as hazardous. Because hazardous area classification can be a complex and daunting task, consult NFPA70 (National Electric Code), NEC Articles 500-516, and NFPA 497 (Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas). □

Brandon Wysocki is the Content Marketing Specialist at Appleton Group | Emerson

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Electri-Flex Partners with Community Businesses for Easter Donation Food Drive



ELECTRI-FLEX COMPANY, Roselle, IL, partnered with community leaders to organize a nearly 600-meal food drive to feed Chicago area families in need this Easter holiday. Electri-Flex Company, the DuPage County Sheriff's

Office, Sheriff James Mendrick, Under-Sheriff Eddie Moore, Jim Zay - DuPage County Board District #6, Precision Stamping Products, Inc., and Fates, Bodily & Parker, PLLC made sizeable donations.

The Kinander Family, owners of Electri-Flex, regularly partner with leaders in DuPage County to give back to the community through food donation events. This marks the 5th anniversary of holding the Easter donation food drive. □

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IP19

4-Conduit Block

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IP21a

QwikBlock

Vertical support from only one 1/4", 3/8" or 1/2" threaded rod by attaching two machine screws 1/4" x 20 thru the existing holes in back of the box Eliminates knocking out center KO on box and traditional nut and washer method to support a single box.

IP20a

Box Support Rod Cubes

Vertical support from only one 1/4" or 3/8" threaded or threadless rod with 4 holes for Gripper applications as well as 4 threaded 1/4" or 3/8" holes for conduit support hardware.

IP3e

PVC Guide

IP2b

PVC Driver

TE15

Conduit Layout Tool

IP3g

Long Slip PVC

IP3f

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Preventive maintenance is essential to reducing the risk of catastrophic property damage, unscheduled downtime, and total operating costs. NFPA 70B requires that an electrical maintenance program be established, with additional guidance provided by NFPA 70E, NFPA 99 Health Care Facilities Code, and NFPA 110 Standard for Emergency and Standby Power Systems. Russelectric's Advanced Service Plans help facilities maintain compliance while ensuring their systems operate at peak efficiency.

Russelectric Field Service Engineers are the only factory-authorized service providers for Russelectric equipment. Available 24/7/365, these factory-trained experts have immediate access to replacement parts and direct support from Russelectric product engineers, providing unmatched service capabilities for critical power infrastructure.



Russelectric offers two levels of Advanced Service Plans to accommodate varying operational requirements. The Advanced Plan includes annual scheduled maintenance, priority emergency service response, labor, travel and expenses for emergency dispatch, reduced labor rates for additional services, discounted service parts, and a comprehensive maintenance report. The Prime Plan provides all the benefits of the Advanced Plan while also covering replacement parts at no additional cost and offering deeper discounts on labor rates and additional services.

Both plans offer significant advantages over time-and-material service models, delivering faster response times, cost savings, and enhanced system reliability. Customers benefit from priority onsite dispatch, discounted spare or replacement parts, and access to Russelectric's parts distribution hub. An Advanced Service Plan from Russelectric ensures long-term operational stability and peace of mind for businesses that rely on mission-critical power systems.

For more information, please visit: www.russelectric.com.

ABOUT RUSSELECTRIC

Founded in 1955, Russelectric®, A Siemens Business, provides high-integrity power control solutions for mission critical applications in healthcare, information technology, telecommunication, water treatment, and renewable energy markets. The company maintains vertically integrated manufacturing facilities in Massachusetts and Oklahoma, where it designs and builds a full line of automatic transfer switches, switchgear, and controls. Russelectric products carry the longest and most comprehensive warranty in the industry and are backed by a team of expert factory-direct field service engineers. To learn more about Russelectric products and the company's commitment to customer satisfaction, visit www.russelectric.com, call (781) 749-6000, or email info@russelectric.com.



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NFPA announces Association for Colorado Inspectors as newest NFPA Electrical Inspection Section Affiliate Chapter

Chapter to help advance electrical safety through support of code compliance, training, and education



The National Fire Protection Association® (NFPA®) announced the Association for Colorado Inspectors is the newest Electrical Inspection Section Affiliate Chapter (EIS). As an NFPA EIS Affiliate Chapter, the Association for Colorado Inspectors will serve as a key resource for the state’s electrical inspection community, providing training, education, and networking opportunities.

“NFPA is pleased to welcome its latest EIS Affiliate Chapter,” said Tim McClintock, NFPA regional electrical specialist. “Through this relationship, NFPA and the Colorado electrical enforcement community can unite efforts, using our collective

voice to help address today’s current and emerging electrical challenges to advance safety in the community. We look forward to adding many other chapters in the future.”

McClintock continued, “A strong electrical inspection program plays a vital role in safety and compliance with NFPA 70®, National Electrical Code® (NEC®) and other codes, helping safeguard people and property from electrical-related hazards. The new NFPA EIS Affiliate Chapter actively supports electrical inspection professionals who are charged with understanding the NEC and how its requirements are applied, and is aimed at both meeting their unique needs, as well as preserving the independent voices of those engaged in electrical inspections.”

The Association for Colorado Inspectors joins the Southwest Ohio Electrical Organization, North Carolina Electrical Inspector Association (NCEIA), and the Kentucky Association of Electrical Inspectors among the first organizations to create an NFPA EIS Affiliate Chapter in the U.S. The new chapters are part of a broader push by NFPA to support electrical professionals nationwide, including the recent addition of two regional electrical specialists positions.

“Electrical inspection is a key component to advancing safety in the community, ensuring compliance with the National Electrical Code and an effective electrical system of safety,”

said Tom Blevins, president of the Association for Colorado Inspectors. “The Colorado electrical inspection community is pleased to be working closely with NFPA to meet today’s electrical safety challenges head on, help expand our impact and position the chapter for the future.”

Electrical inspection members of an NFPA EIS Affiliate Chapter may qualify for the NFPA Electrical Inspection Membership, which automatically includes membership in the NFPA Electrical Inspection Section that offers benefits such as participation in the code development process, special programming and products, code changes training, events, and more.

NFPA, the leading authority on fire, life, and electrical safety, and the developer of the National Electrical Code and other related resources, actively serves the electrical safety and enforcement community by helping professionals stay current on vital news and information through related training programs, knowledge, research, and expertise.

For professionals interested in establishing an NFPA EIS Affiliate Chapter and for more information about NFPA Electrical Inspection Membership and the NFPA Electrical Inspection Section, please visit the website.

For this release and other announcements about NFPA initiatives, research, and resources, please visit the NFPA press room. □

ABOUT THE NATIONAL FIRE PROTECTION ASSOCIATION® (NFPA®)

Founded in 1896, NFPA® is a global self-funded nonprofit organization devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach, and advocacy; and by partnering with others who share an interest in furthering the NFPA mission. For more information, visit www.nfpa.org. All NFPA codes and standards can be viewed online for free at www.nfpa.org/freeaccess.



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Appleton Motor Starters Engineered for Challenging Class 1, Division 1 Hazardous Locations

Appleton ACSE Series certified for use in petrochemical plants, oil refineries and other areas with explosive gases

Emerson has introduced the Appleton ACSE Series of across-the-line magnetic pushbutton motor starters specially engineered for highly challenging NEC Class 1, Division 1 (C1D1) areas where ignitable concentrations of flammable gases, vapors, or liquids are present. Designed to start single and polyphase Vac or Vdc motors, Appleton ACSE Series models are supplied with Square D or GE manual motor starters using three overloads, and arrive ready for immediate installation with bolt-on mounting feet.

C1D1 classification is crucial for workplace safety and compliance in industries that deal with flammable materials during normal operations, such as oil refineries, mining, aircraft hangers, chemical plants and petrochemical processors. Appleton ACSE motor starters are C1D1 rated, providing the most reliable, safe performance and operational efficiency in these locations, as well as in C1D2, C2D1, C2D2 and C3 hazardous areas.

In addition to being explosion-proof and dust-ignition-proof, Appleton ACSE motor starters are NEMA 3 and 3R waterproof rated, enabling them to endure exposure to rain, sleet, snow, windblown dust, and ice formation. Cast aluminum enclosures feature mating surfaces that are precision milled to exceed explosion-proof specifications, combined with a stainless steel shaft, bushing and cover bolts.



For more information, visit
www.appletonelec.com

Warm Tiles ColorTouch Wi-Fi Thermostat Remotely Controls Floor Warming Systems

Now Compatible with Voice-Activated Amazon Echo and Google Nest Devices

While smart thermostats are compatible with most residential or commercial HVAC systems, they are not for use with electrical floor warming, leaving consumers to grapple with the limited capabilities of outdated controllers.

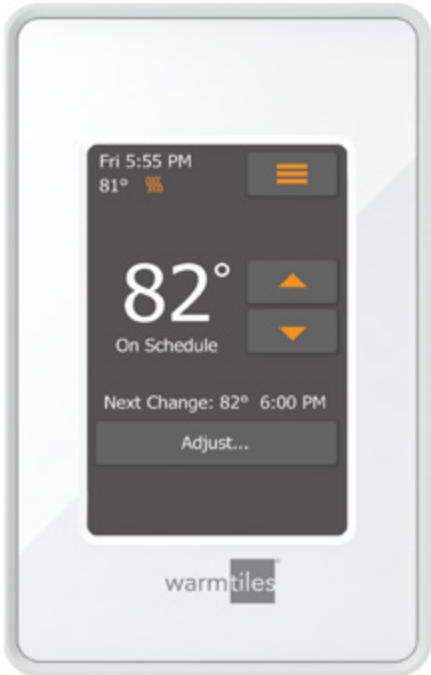
Emerson Warm Tiles™ ESW ColorTouch wireless thermostats are the solution. They simplify floor warming operation by empowering consumers to remotely set, monitor and precisely adjust their floor's temperature from a mobile device or PC. Installing in minutes, the thermostats connect to a Wi-Fi network with step-by-step instructions provided by the included Setup Wizard.

Warm Tiles™ ESW ColorTouch thermostats can be controlled via the Warm Tiles ESW mobile application for Android™ or iOS™ devices, or through the Warm Tiles web portal. Plus, it is compatible with Google Nest Audio and Nest Mini, and Amazon Echo, Echo Dot and Echo Plus. As a result, simple voice commands can be used to adjust the temperature of Warm Tiles systems with Google Home or Amazon Alexa apps.

In addition to simplifying floor warming control, the Warm Tiles ColorTouch thermostats help manage energy budgets. Power consumption is tracked with an energy log that graphically displays data from the past 24 hours, seven days, or last 12 months -- it can calculate the exact cost of electricity for any of those time frames. An Open Window function prevents energy from being wasted by detecting a rapid drop in temperature and shutting off heating for 30 minutes.

Warm Tiles™ ColorTouch thermostats are available in two models: the ESW ColorTouch wireless thermostat and the standard ES ColorTouch thermostat. Both models monitor and regulate Warm Tiles™ DFT, DMC, SAM, and WTE floor warming systems, as well as 120/240V systems from other leading manufacturers. Commercial floor heating sensors are universally compatible with the thermostat's integrated relay switch.

Both the ColorTouch ESW and ES models have a 3.5-inch backlit color screen with easy interactive touch controls. A self-learning adaptive function automatically changes heating start times to ensure that the required temperature has been reached at the beginning of a specific event. After a few days, it re-calculates how much earlier the heating must be switched on to achieve the desired temperature at just the right time.



For more information, visit
www.emerson.com

Perifina Cornice 4 in.

The Perifina Cornice 4 in. is a versatile surface-mount luminaire designed to transform any room with its soft halo effect. Inspired by the elegance of crown molding, the fixture offers both aesthetic appeal and practical functionality, making it an ideal choice for various applications.

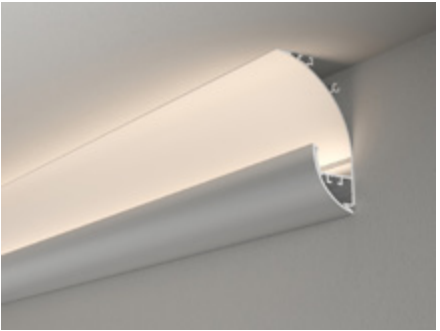
Unlike most solutions on the market, Perifina Cornice 4 in. can easily go around corners without light gaps or the need for complicated soldering.

Designed for use as an illuminated crown molding or as an ADA-compliant sconce, the luminaire is only 3.98-inches tall and 2.48-inches deep and features a paintable surface, ensuring seamless integration with any décor or color palette.

Offering the ultimate in customization, lengths are offered in 1-inch increments up to 96 inches or endless lengths using multiple luminaires, and a choice of a frosted or clean lens option.

Featuring superior color rendering with high R9 and R13 values, color variation is kept with a 2-step MacAdams ellipse for quality and consistency. The Perifina Cornice 4 in. is offered in numerous lumen outputs up to 1500± lumens per foot (lm/ft.) in standard White Light, RGBW+ and Tunable White. Seven color temperatures range from 2200K to 5000K, and RGBW+ in 3000K and Tunable White 3000K - 1800K.

The surface-mount luminaire is simple to install and includes integrated wire run that provides space for cabling.



For more information, visit
www.optique-lighting.com

Gripple® Introduces the TecLoc Conduit Claw: Engineered for Fast and Versatile Seismic Stiffening

Revolutionary, Retrofit Clip Delivers Rapid, Code-Compliant Seismic Rod Stiffening Using Affordable and Readily-Available Conduit



Gripple®, a leading manufacturer of engineered suspension solutions for construction and critical infrastructure applications, is proud to highlight the TecLoc Conduit Claw. This revolutionary and innovative seismic rod stiffener, is designed to deliver the most reliable, rapid and cost effective stiffening solution in the market.

The TecLoc Conduit Claw is a fast and secure, IAPMO-approved seismic rod stiffening clip, designed to be quickly installed using pipe or conduit to secure suspended services and prevent buckling in seismic conditions in a variety of construction applications.

One-of-a-kind, this groundbreaking new product has been specifically engineered to be retrofittable, allowing it to be installed after services are fully suspended. This makes it an ideal solution for late-stage modifications or unexpected changes during construction and a true game-changer for contractors.

The TecLoc Conduit Claw is designed for easy, one-person installation, minimizing labor requirements and simplifying the process. Its universal compatibility with 1" EMT, 1" Schedule 40 Pipe, and 3/8", 1/2", and 5/8" rod sizes eliminates the need for multiple SKUs, streamlining inventory and ensuring coverage for a broad range of applications.

Safety and compliance are at the core of the TecLoc Conduit Claw's design. The clip prevents rod buckling under seismic conditions, maintaining structural integrity and supporting code compliance in critical infrastructure such as hospitals, data centers, and commercial buildings. The robust construction, featuring a zinc die cast body manufactured in-house by Gripple, provides assurance of quality, reliability and traceability, giving users peace-of-mind.

With pre-engineered compression loads, TecLoc Conduit Claw provides reliable support for even the most demanding seismic requirements. Featuring a shear-off bolt design to guarantee correct installation and performance, it also allows for easy on-site inspection. As always, Gripple's in-house engineering team is available to help with any project-specific requirements.

Supplied in convenient packaging, the TecLoc Conduit Claw streamlines handling, storage, and site logistics. Clear installation guidance and spacing recommendations are provided to support best practices and guarantee effective installation.

For more information, visit
www.gripple.com



SP PRODUCTS, INC.
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FOR SAFER BETTER FASTER JOBS

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Saves a great deal of time transitioning from PVC conduit to Rigid Conduit above slab without damaging PVC risers and chipping concrete eliminating a concrete repair job!

All SP Products Inc. Transition Fittings are manufactured for installation to either meet or exceed in accordance with NEMA TC2, TC3 or UL 651 specifications

Galvanized Rigid Transition Couplings to Schedule 40/80 PVC Stub-Up

When Concrete is Poured and Metal Below the Slab is Needed

Transitions in Less Than 5 Minutes!

Save Cost on the Rigid Nipple, Tape & Labor

Use for Entire Job - Not Just for Repair



Save at Least **1 Hour** per Installation.

See Our Conduit Plug
See page IP27c



See Our REAMING BITS for Transition Couplings



See page IP15

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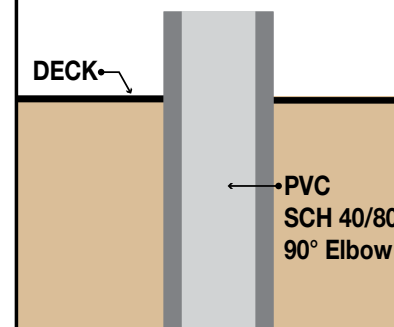
1/2" thru 6"

Transition Couplings

Size	Catalog #
1/2"	50-PVC-R-GRC
3/4"	75-PVC-R-GRC
1"	100-PVC-R-GRC
1-1/4"	125-PVC-R-GRC
1-1/2"	150-PVC-R-GRC
2"	200-PVC-R-GRC
2-1/2"	250-PVC-R-GRC
3"	300-PVC-R-GRC
3-1/2"	350-PVC-R-GRC
4"	400-PVC-R-GRC
5"	500-PVC-R-GRC
6"	600-PVC-R-GRC

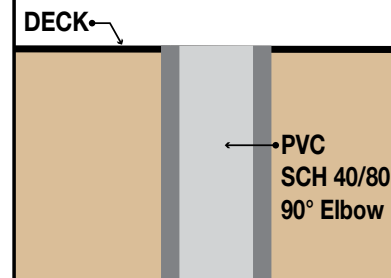
All Above Meet UL651
CSA C22.2, No.85 and
US Army Corps Engineers
Specifications

STEP 1



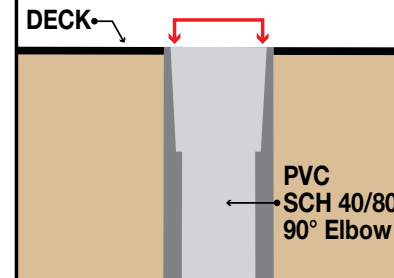
STEP 2

Cut SCH 40/80 PVC Elbow Flush to Deck

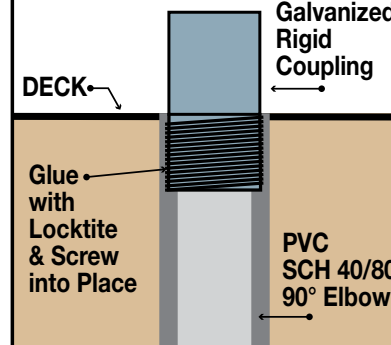


STEP 3

Ream out 1/2 of wall thickness SCH 40/80 PVC Elbow



STEP 4



Customer must satisfy all codes and owners' specifications.

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NEWPRODUCTS

Milwaukee Tool Advances Jobsite Head Protection with New Type 2, Full Brim Safety Helmets

Milwaukee® expands their lineup of personal protective equipment (PPE) with the introduction of the BOLT™ Full Brim Safety Helmets- Type 2 Class C (Vented) and Class E (Non-Vented) Safety Helmets, delivering a new type of jobsite head protection for professionals across the trades. Offering protection from both top and side impacts, these new safety helmets are the industry's lightest weight full brim safety helmets and are engineered to stay up to 15°F cooler than competitive type 2 full brim helmets for improved all-day comfortability. Delivering better protection, more comfort, and greater versatility through full compatibility with the MILWAUKEE® BOLT™ System, these helmets provide a comprehensive solution for jobsite safety and customization.

"Through continuous research and user feedback conducted across the country, we recognized a growing demand for better protection, as well as improved comfort on the jobsite," explains Kyle Anderson, Group Product Manager at Milwaukee Tool. "Our new Full Brim Safety Helmets deliver comprehensive impact protection without compromising on comfort, offering an innovative solution for users seeking more protection compared to Type 1 hard hats but prefer the traditional look and feel of it."

Built to meet the rigorous demands of the jobsite, the Type 2, Full Brim, Class C and Class E Safety Helmets are ANSI/ISEA Z89.1-2014 Type 2 certified and third-party tested for comprehensive jobsite protection. Designed to enhance safety, these helmets offer protection against both top and side impacts while helping guard against environmental elements. The helmets also meet Energy Absorption Capacity clauses 4.2.1.2 (Front), 4.2.1.3 (Side), and 4.2.1.4 (Rear), as well as Retention System clauses 4.2.3 (Strength) of the EN12492:2012 standard, further reinforcing their superior impact and retention performance.

Designed for all-day comfort, the BOLT™ Full Brim Safety Helmets feature a padded suspension with a swinging ratchet adjustment system, allowing users to achieve a secure, customizable fit with an easy-to-adjust dial. A five-point adjustable chin strap delivers added stability and slip and fall protection. This lightweight helmet's interior incorporates foam padding along the sides with ventilation holes, optimizing airflow to promote airflow for a cooler, more breathable wearing experience. An antimicrobial, washable sweatband and liner help prevent odor and bacteria buildup for improved hygiene and extended product life, ensuring that users stay more comfortable and protected throughout the workday.



For more information, visit www.milwaukeetool.com



Russelectric, A Siemens Business, Introduces ATS Remote Annunciator

Powerful accessory brings together data from multiple automatic transfer switches into a single display

Russelectric, A Siemens Business, a leading manufacturer of power control systems and automatic transfer switches, introduces its new ATS Remote Annunciator (RTS-RA), a powerful accessory that brings together data from multiple Automatic Transfer Switches into a single display.

The remote annunciator is designed to be configured by the customer. It allows monitoring of the position and status of up to eight Russelectric ATS types RTSCD and RPTCS, as well as viewing power data for each ATS and accessing current alarms and logged historical alarms. Users can initiate load tests and set timers remotely using the RS-422/485 Protocol to ATS. In addition, there is the ability to configure email alerts for alarms. An Ethernet connection is available for exchanging data via the OPC UA protocol to another SCADA or building management system.

ATSs manufactured by Russelectric are modern, high-speed switching devices designed to transfer electrical loads from a preferred power source to an alternate power source when voltage and/or frequency vary beyond preset limits. They also retransfer loads when the preferred source is restored.

For more information, visit www.russelectric.com

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we pay the freight charges!**

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MAGNALUX YOUR BACKLIT LED PANEL SOURCE



1X4FT Panel

Warehouse Pick Up Price	Ship Price
\$19.75	\$24.75



2X2FT Panel

Warehouse Pick Up Price	Ship Price
\$19.55	\$24.55



2X4FT Panel

Warehouse Pick Up Price	Ship Price
\$27.57	\$32.57

Product Features:

- Backlit technology that offers even lighting distribution without shadowing.
- Color selectability allows for changing between 3500K, 4000K or 5000K.
- Wattage/Lumen selectable versions: three different lumen outputs in the same product.
 - Emergency battery back-up unit.
 - The range input voltage 120-277V.
 - 125 lumens per watt -CRI>80
 - DLC Premium/DLC Standard

Areas of Application

The backlit Panels are the high efficiency solution for offices, schools, hospitality and retail areas.

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- RPS Launches SlimWave Filter To Safeguard Motor and Cables**
January 22, 2024

CORDLESS CANNON 6K

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Electrical Products & Solutions

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The built-in capstan switch automatically turns the puller on and off. Simply tug on the rope to start the pull and slack off the rope to shut it down. Delivers dynamic performance in remote locations or areas where power is not yet available.

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FOR SAFER BETTER FASTER JOBS



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IP5

"The Original"

Enter Any KO on Both Sides of the Box



IP19/20

4-Conduit Block
PATENTED

IP21a

QwikBlock
PATENT PENDING

Use 4-Conduit Block (IP19 or IP20) with QwikBlock (IP21a)

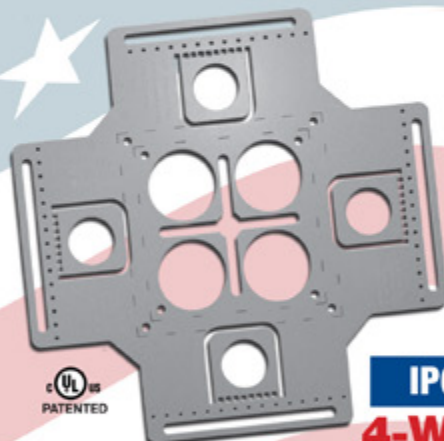
IP6d

2-Way

with Split Fingers for Horizontal or Vertical Installation



Our Family of Conduit & Box Support Plates Saves Valuable Time & Money!



IP6

4-Way

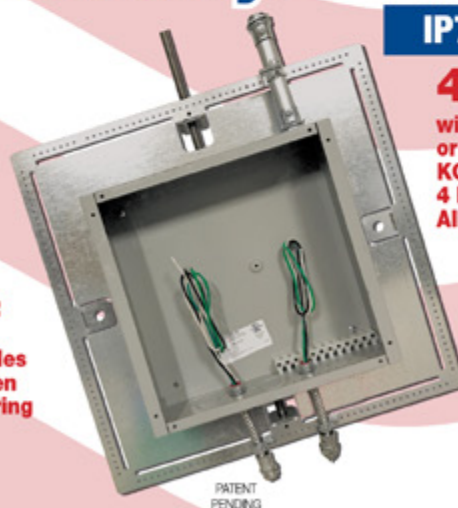
Enter Any KO on All 4 Sides of the Box Plus 4 Large Open KOs in Center Allows Entering Back of Box



IP6a

2-Way/Half

Enter Any KO on 1 or 2 Sides of the Box Plus Large Open KOs in Center Allows Entering Back of Box



PATENT PENDING

IP7

4-Way

with Split Fingers for Horizontal or Vertical Installation. Enter Any KO on All 4 Sides of the Box Plus 4 Large Open KOs in Center Allows Entering Back of Box.

IP8

Mount Horizontally or Vertically from One Single Support

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Supports up to 12 x 12 J-Box

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