

High-temperature coating

Cortec VpCI-397 from Cortec Corp. provides a tough coating for high-temperature applications up to 1100°F (593°C). It offers good weather and corrosion resistance to severe conditions for parts such as mufflers, exhaust stacks, engines, generators, and turbines. The



aluminum, water-borne silicone coating offers protective properties for ferrous and nonferrous substrates; with only a thin film of thickness, it provides more than 600 h of salt spray resistance. It can be applied via dip or spray.

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Structural plastic adhesive

Scotch-Weld structural adhesive DP-8010 and DP-8010NS from 3M are two-part acrylic-based adhesives (10:1 ratio by volume) that can replace screws, rivets, plastic welding, and two-step processes, which include chemical etchants, priming, or surface treatments in many applications. The adhesives can also bond low-surface-energy plastics, including many grades of polypropylene, polyethylene, and thermoplastic olefins, without



special surface preparation. They feature quick handling strength for applications requiring fast assembly. Scotch-Weld DP-8010NS is a non-sag adhesive for use in applications where high viscosity is needed, such as bonding vertical surfaces.

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Low-emissions tube

Norma Products Inc.'s NORMAFLEX LET 10 features a three-layer, polyester-based design whose mechanical properties are said to be superior to the PVDF barrier hoses commonly used in automobiles and trucks. The



tubing presents good tensile strength and elongation at break, as well as a high burst pressure. All materials are fluorine-free, and the tubing can reduce permeation in vapor lines by up to 80%. It can be tailored to customer requirements.

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PPS sheet and roll

Ensinger/PennFibre has introduced its first line of thermoformable polyphenylene sulfide (PPS) sheet and roll products for applications requiring high thermal and chemical resistance and inherent flame



retardancy. Potential applications include underhood parts, interior panels, and other large, thin-walled elements in vehicles, equipment, and airplanes. The products are based on Fortron PPS from Ticona and use several formulations developed for thermoforming. The new line encompasses glass-filled and modified grades containing impact modifiers, tougheners, and other ingredients. The grades are sold as monolayer sheets and rolls in widths to 48 in (1220 mm) and thicknesses of 0.010-0.25 in (0.25-6.4 mm).

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LED light

An LED multi-function light from Peterson Manufacturing Co. offers both strobe and rear-turn functions. Its 39 LEDs meet SAE J318 strobing functions as well as Department of Transportation rear-turn specifications. Smart electronics enable the light's turn



function to override the strobe functions when the turn accelerator is engaged, making it suitable for use on service vehicles in need of improved safety features. Other benefits include a triple-flash, alternating strobe pattern, low amp draw, hard-wired terminals, and a 100,000-h life.

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Oil-resistant compound

Serel TPE Masterbatch from **Goodyear Chemical** can be combined with styrenic block copolymers and EPDM TPVs to produce new compounds for ATV, motorcycle, and watercraft applications. The Serel TPE Masterbatch are solution styrene butadiene rubber in pellet form. They are offered in pre-crosslinked and cross-linkable forms that offer TPE compounders new design latitude and creativity, according to the company. Performance benefits include improved oil resistance, compression set, compression stress relaxation, and wet coefficient of friction for both SBCs and EPDM TPVs.

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Plain bearings

Glacier Garlock Bearings offers GAR-MAX filament-wound dry bearings that can withstand high compressive loads. Improvements to the fiber/resin composite bearings have allowed a 50% increase in load-carrying capacity. They exhibit good friction and wear properties under slow-speed



oscillating or rotating movements, and resistance to shock loads and chemicals, making them suitable for construction, earth-moving and agricultural equipment, conveyors, railway couplers, and chemical plant valves. Available as cylindrical bushes, GAR-MAX can withstand static specific loads of up to 43,500 psi (3000 bar) and dynamic loads up to 20,000 psi (1380 bar). Operating temperature range is -148 to +320°F (-100 to +160°C).

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High-output battery

Caterpillar's line of high-output batteries is offered with cold cranking amp (CCA) capability for construction, mining, and marine equipment. The 4D battery has a 1400 CCA rating while the 8D is rated at 1500 CCA, both at 0°F (-18°C). The line features calcium lead alloy technology on the positive and negative plates for minimal water loss. The plates are secured to the container bottom and are locked at the top of the cell to improve vibration resistance and withstand harsh conditions and extreme temperatures. The flat top design prevents lost or leaking vent caps. Performance specifications include a 100-h vibration endurance test and five, 72-h deep-discharge/-recharge tests.

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Tire sealant

Arnco ReSeal tire sealant and conditioner with Kevlar fiber eliminates flat tires caused by slow leaks and instantly repairs punctures up to 0.25 in (6.35 mm) in diameter. The liquid formula is pumped into the tire through the valve stem, and the pump can be attached to the one-piece lid design by removing the protective cap. ReSeal is suitable for off-highway tires when performance, efficiency, and downtime elimination are required, such as on agricultural and construction equipment. As the tire rotates, centrifugal force spreads ReSeal evenly throughout the interior of the tire tread to prevent leaks. If a puncture occurs, thousands of interlocking fibers instantly clot in and around the opening to prevent air loss. The blend of polymers and fibers is environmentally safe and is not reliant on ethylene glycol, and corrosion inhibitors prevent corrosion of rims, valve stems, and steel belts.



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Replacement cups

Replacement vacuum cups from **Vi-Cas Manufacturing** are available for any type of vacuum equipment, including lifters, manipulators, and pick-and-place systems. A variety of sizes and styles are offered in materials to suit most any off-



highway application. An online catalog allows users to select cups to meet their needs, and custom designs can be configured from customer-supplied drawings or can be reverse engineered from customer-supplied cups.

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Wide-base tire

Michelin's XZL all-position, wide-base radial tire handles off-highway conditions while providing improved traction and mobility. A deep 27/32 tread helps to increase tread life, while an application-specific tread compound expands slip resistance. A self-cleaning, open-shoulder tread design features offset elements to improve traction and flotation, and a stable block design creates a consistent footprint that wears the tread evenly, offering improved NVH capabilities. Full-width steel belts and an elastic



protector ply provide extra casing protection against bruising and penetrations. The XZL is available in 425/65R22.5 L and 445/65R22.5 L sizes.

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Engine cooling fan

High-pressure, high-airflow 6 Series off-highway fans from **Multi-Wing America** cool in real-world environments, despite sharp-edge inlets and large tip clearances found in engine compartments. The fans are custom-built and consist of off-the-



shelf parts, including three to 16 blades with diameters from 14 to 49 in (356 to 1245 mm) and eight blade angles from 15 to 45° in clockwise and counterclockwise rotation. High-strength aluminum hubs and fiberglass-reinforced nylon blades result in reduced inertia and decrease bearing wear and belt, or hydraulic motor shaft failure, the company claims.

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Noise reduction

Viscous mount technology from **Lord Corp.** reduces cab noise and vibration in construction-equipment applications. The mounts provide stability and



damping for cab loads from 250 to 1000 kg (550 to 2204 lb). High-capacity laminate viscous mounts control horizontal cab shaking for crawlers and bulldozers, while the roll-over protection structure mount features a high-strength stopper to ensure driver safety without the need for additional protection components. Lord claims the mounts reduce noise levels 2 to 5 dB(A) and operate in severe temperature environments of -40 to +80°C (-40 to +176°F). Other benefits are said to include reduced reaction loads on the cabin, elimination of cabin breakage caused by rough terrain, and a 50% reduction in cab stress.

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Truck battery

Exide Technologies offers the Liberator, a low-maintenance battery that features tubular-plate technology to improve efficiency and extend battery life by delivering a large amount of power that reduces the number of battery change-



outs. The plate design also improves lift-truck run times and provides 70% more electrolyte headspace over comparably sized batteries, according to the company. With an optimized charge, the technology reduces water loss during charging and offers a 90-day watering interval. The batteries are designed for use in all major electric lift trucks in Class I, II, and III, and are offered in standard, gold, and platinum configurations, depending on battery watering option.

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Flatproofing fill

SuperFlex soft-fill polyurethane material for off-highway tires from **Arnco** is a suitable flatproofing product when ride, footprint, and flotation are needed. A SuperFlex-filled tire functions much like an air-filled tire and protects both operator and machine from vibration and jolting. Features include increased tire life and performance, improved ballast, and maintained tire pressure and footprint. The polyurethane liquid cures into a soft rubber-like material that fills any tire with a sound casing to eliminate flats, blowouts, or other damage. It is suitable for skid steers, mining tires, agricultural tires, and front-end loaders. Its shock absorber properties feature a softness of eight.

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Color protractor

The AccuAngle color protractor designed by **DuPont** is molded in derlin acetyl resin to allow users to view color panels from the same angle in different locations with indoor or outdoor lighting. The portable unit enables difficult color judgment for hard-to-match, varying colors such as metallics and pearlescents. Interpreting colors at three angles ensures consistency in manufacturing, according to guidelines established by OEMs and the **ASTM** (American Standards for Testing and Measurement). A test panel is inserted into the protractor, and the AccuAngle slot accepts coating samples on plastic, aluminum, or steel panels. The protractor has alignment marks for gloss and three DuPont metallic color control angles of 15, 45, or 110°. Users rotate the panels and protractor until the reflected light source aligns with each angle marking.

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Traction truck tire

Michelin's XDL drive-axle traction radial truck tire was engineered for off-highway conditions and is offered in size 12.00R24 L. The tire's open shoulder is designed to improve self-cleaning capability and soft-soil mobility. Large tread elements offer resistance to cutting and penetrations, while an application-specific compound resists chipping and chunking.

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Deep-cycle battery

Group 31-size deep-cycle sealed, valve-regulated, lead-acid batteries offer a service life three- to four-times longer than regular wet cell batteries, according to **ODYSSEY Batteries of EnerSys Reserve Power Group**. Using pure lead technology, the ODYSSEY PC 2150 military-grade battery provides up to 70% more starting power at low temperatures, making it suitable for heavy-duty, deep-cycle applications including construction and marine equipment, the company claims. The battery lasts up to 10 years in operation, has starting power up to 12 months in storage, and features a two-year storage life at room temperature. Thin-plate technology provides improved cranking power, particularly at cold temperatures, with 70% more starting power at -4°F (-20°C) than wet-cell batteries. It has the ability to start vehicles at temperatures as low as -20°F (-29°C).

For more information, circle 273



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Dumper tire

The **Michelin X-Traction RD** tire equips rigid dumpers operating in short cycles, often in iron and coal mines; in muddy environments or on wet ground; and requiring good traction and high resistance to stress. A deep and aggressive tread pattern enhances traction performance. Large, separated tread blocks with deep grooves provide enhanced stone evacuation capacity, enhanced stress protection, and improved transversal grip. The tread blocks are staggered to allow a progressive attack against the ground and result in less vibration and increased ride comfort. Rubber wear thickness of 81 mm (3.2 in) provides a long service life.



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Air conditioners

Visionaire, Inc.'s compact wall-mounted air conditioners for off-road applications have a footprint of less than 21 x 20 in



(533 x 508 mm). The modular units include self-contained systems with hydraulic or electric-driven compressors, and a tropical version built to operate in high-ambient/desert conditions.

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Small compression latch

The 2-in (51-mm) stainless steel compression latch from **Southco** is suited for applications requiring a high degree of corrosion resistance and durability, or those requiring a sealed compression latch



with a flush panel surface. The latch uses its 4 mm (0.16 in) of compression to reduce vibration and compress gaskets on a door or panel frame. It is sealed to achieve an IP-65/NEMA 4 rating for critical sealing applications. The handle is lifted to relieve the compression, and then it is turned to unlatch. To store the handle flush while the latch is open, the handle is turned 180° and folded into the latch cup.

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Motive power charger

Exide Technologies' DEC200 charger is used for light-duty, single-shift applications. The unit automatically starts and stops charging, has simple user controls, and is preprogrammed to charge



lead-acid batteries of various capacities. The charger's advanced algorithm continuously monitors charge voltage and current, adjusting the charge accordingly. Recharge times can range from 10 to 14 h, depending on battery capacity. The device is designed for standard GNB and Pacific Chloride flooded-flat-plate products used in a variety of electric lift trucks.

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Crane tire

The **Michelin 445/95 R** tire is designed for road cranes and special vehicles driven on roads. Nondirectional tread sculpture makes permutations possible, and its asymmetry enables proper polyvalence on work-site approach roads while affording handling accuracy required for road driving. An optimized tread sculpture provides for ride comfort, without vibrations, and with a reduction in outside noise. Lengthwise grooves improve grip action, while a new carcass design improves distribution of



constraints and pressure on the ground and a larger footprint, resulting in a better grip and more regular wear form.

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Work lamps

Hella's Ultra Beam Xenon, Mega Beam Xenon, and the Oval 100 Xenon Integral lamps provide 2.5 times higher light output than with a lamp using a 55-W halogen bulb while consuming 25% less power and providing a service life about five times as long, claims the company. A shock-proof light arc provides durability. Fourth-generation xenon ballast contains a plug-type connection for the 3000-mm (118-in) flexible cable to the lamp, enabling ballast placement in a non-visible position within the vehicle bodywork away from the lamp itself. The load on the vehicle wiring is reduced by the power consumption of only 42 W at the ballast.



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Crane-monitoring camera

Motec's MC5000 crane-monitoring camera and display system is a nitrogen-filled, auto-focus motorized zoom color camera that is suited for monitoring loads attached to the crane hook. The camera is attached to the jib of mobile, telescopic, or lattice tower cranes via a suspended



mounting. A constantly vertical camera position allows operators to monitor crane operations, detect obstacles at an early stage, and check whether the load is correctly attached. The camera can also be attached directly at the crane trolley if the crane is not equipped with an adjustable jib. It features a 26 X optical zoom and 470,000 pixels, covering a horizontal image angle from 1.6 to 47.5°, for visibility into critical areas.

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