Newsbriefs

MATERIALS/PRODUCTS

Brush Wellman Inc., Cleveland, Ohio, has introduced a new family of materials under the trademark AlBeMet™. AlBeMet™ is ***a family of high strength, yet relatively ductile aluminum-beryllium materials***. One new application for AlBeMet™ is in disk drives for personal computers. By taking advantage of the light weight, stiffness, and thermal properties of AlBeMet™, the speed, storage capacity, and reliability of the disk drive can be enhanced. Other potential applications have been identified and are being pursued in electronics, aerospace, avionics, and recreation products. Although any sales forecast at this early stage would be premature, Brush Wellman is very enthusiastic about the long-term sales potential for AlBeMet™.

Circle No. (5) on reader service card.

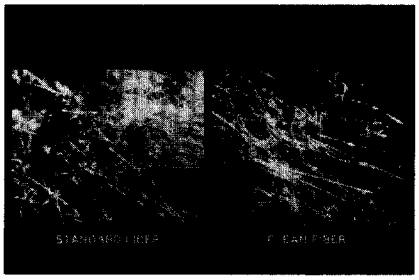
The leading North American producer of aluminum cans, **Advanced Monobloc Corp.**, Hermitage, Pennsylvania, has announced its new ABS™ Advanced Barrier System, a "pouch-in-the-can" aerosol barrier system using a patented gusseted pouch design. The improved barrier system provides ***total separation of propellant from product***, a hermetic seal for the life of the product, all-altitude dispensing, and a laminated pouch that is FDA approved for many food products. The fully operational system incorporates a structured pouch made of a polypropylene inner layer, a pure aluminum foil middle layer, and an outer layer of PET. The laminated structure is the ideal barrier material, with virtually no permeation, in or out. The gusseted pouch design permits greater fill capacity and provides improved bottom support after filling.

Circle No. (6) on reader service card.

Designed and manufactured by **Ershigs, Inc.**, Bellingham, Washington, a pair of 730-ft-high ***liners made of fiber glass-reinforced composite has withstood the corrosive effect of flue gases inside the concrete chimney*** at the Intermountain Power Project near Delta, Utah. The glass liners were field fabricated using an on-site mini-plant to filament wind the liners into 36 can-like sections 45.5 ft long and 28 ft in diameter. They are reinforced with 1.5 million pounds of fiber glass roving, supplied by PPG Industries. It is an E-glass filament winding roving designed for use with polyester resin in corrosion-resistant applications. Because fiber glass chimney liners are an economical way to protect the surrounding concrete chimney from corrosion, ASTM is developing a guide for their design, fabrication, and erection. It will assist the purchaser, designer, and fabricator by providing a common basis for applying the unique advantages of the material to the engineering requirements of a specific installation.

Circle No. (7) on reader service card.

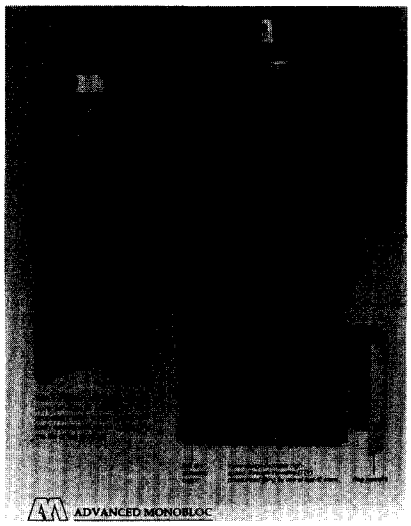
A clean, washed, ***mineral-wool-based moldable composition for use in contact with molten aluminum, downstream from metal treatment operations***, XM-13, has been introduced by **Permatech, Inc.**, Graham, North Carolina. It takes the place of refractory ceramic fiber moldable materials and also replaces unwashed mineral wool, which can cause contamination of molten metal. It is designed for use in the fabrication of troughs and other shapes, for patching existing refractories, for coating and protection of metal against high temperatures, and as a substitute for fiber-blanket products. XM-13 exhibits excellent insulation properties, high strength, low shrinkage, and is resistant to attack by molten aluminum alloys.



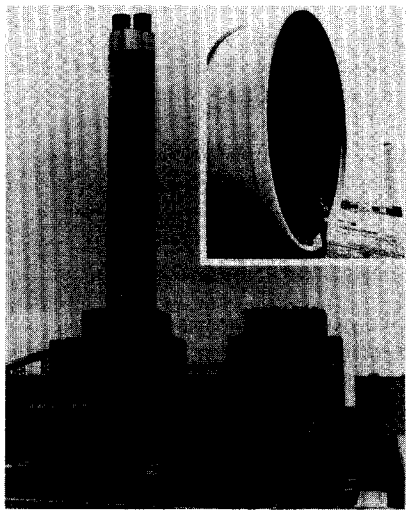
Permatech, Inc.

Circle No. (8) on reader service card.

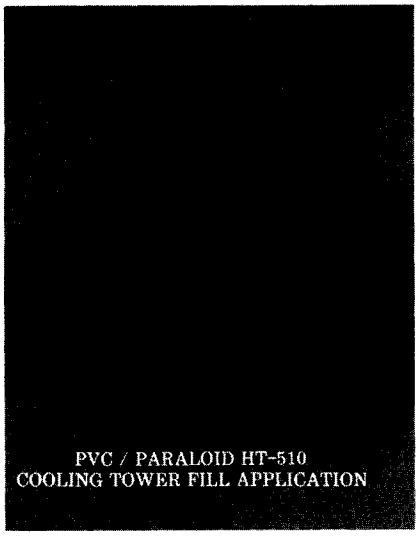
Brentwood Industries, Inc., Reading, Pennsylvania, is the first to offer PVC surface media for cooling towers with higher heat-resistant characteristics. The PVC is blended with Paraloid® HT-510 additive, an imide copolymer. The modified PVC then ***prevents the two most common forms of surface media failure caused by occasional heat spikes well above the normal operating temperatures***, or a sustained increase in service temperatures. The additive enhances the heat distortion temperature of unmodified



Advanced Monobloc Corp.



Ershigs, Inc.



Brentwood Industries, Inc.

PVC, enabling it to match the performance of higher temperature resistance materials at considerably less cost. In addition, the altered PVC is easier to extrude and thermoform and does not have the thermal stability problems associated with PVC processing. Reduced scrap rates therefore, contribute to additional cost savings.

Circle No. (9) on reader service card.

NANMAC Corp., Farmington Center, Massachusetts, is pleased to announce the new NC-12 ceramic, which resisted attack from molten aluminum for periods exceeding two years during actual field tests. It is thus an ***ideal protection sheath for thermocouples used during continuous monitoring and control of temperatures of molten aluminum***. NC-12 is a dense, sintered ceramic designed for use in molten nonferrous metals such as aluminum, lead, tin, and zinc. This ceramic has high mechanical strength, is thermally shock resistant, and is dimensionally stable.

Circle No. (10) on reader service card.

Two ***new UV-curable solder masks*** are now available from **Electro-Lite Corp.**, Danbury, Connecticut. ELC4415 is a peelable temporary solder mask, and ELC4497 is a water-soluble version. Both are 100% solid, solvent-free formulations that cure in seconds when exposed to "long wave," UV-A light. The solder mask provides complete protection for desired areas and will withstand temperatures up to 343 °C (650 °F). ELC4497 is completely soluble in hot or cold water washes and dissolves rapidly in any commercial in-line aqueous and semi-aqueous cleaning system.

Circle No. (11) on reader service card.

GLS Plastics, Cary, Illinois, has introduced one of the "softest" grades of thermoplastic elastomers available on the market. ELASTALLOY® 6713 is a new TPE with a durometer of 13 Shore A—***a property that makes it ideal for appliances, sports and leisure equipment, and safety products, in which soft touch surfaces are desired*** for control and quality of feel. The softness and high coefficient of friction allows design engineers to address ergonomic considerations in product design. It processes easily and exhibits compatibility with many rigid plastics, thus allowing for insert or coinjection molding over structural components. The result is cost-effective parts that provide the consumer with the feel of luxury and quality. Typical properties offering great design flexibility and easy molding are 550% elongation, 20g melt flow, and 0.90 specific gravity. It has excellent resistance to water, acids and bases, and offers excellent weatherability.

Circle No. (12) on reader service card.

A new, improved DOWEX™ 11, ***a strong base anion resin, structured specifically to demineralize water with a high organic content,*** has been announced by the **Dow Chemical Co.**, Midland, Michigan. The capacity of DOWEX™ 11 resin has been increased by 9%, which lengthens runs between regenerations and helps to save caustic costs. Although organic fouling eventually reduces the capacity of any strong base anion resin, the capacity of DOWEX™ 11 resin declines more gradually than other resins, and brine cleaning a bed of DOWEX™ 11 will restore much of this lost capacity. It also exhibits improved physical characteristics. The resin is stable to 140 °F to resist thermal degradation. Crush strength is typically 800 g per bead, and osmotic shock resistance is said to be excellent.

Circle No. (13) on reader service card.

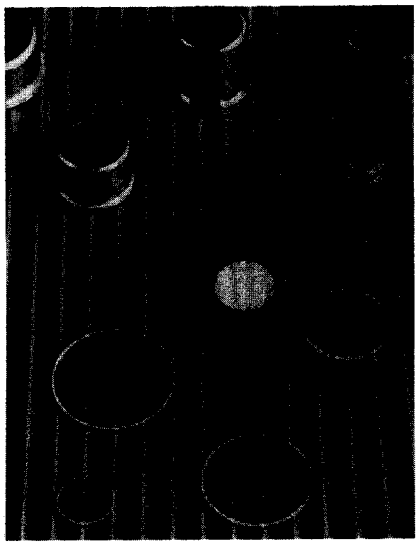
New BETASEAL® 43516 glass primer from **Essex Specialty Products, Inc.**, Troy, Michigan, ***conditions glass surfaces on windshields, backlights, and sideglass before installation in automobiles, trucks, buses, and off-road vehicles***. The product is a nonphotochemically reactive, solvent-based, silane-blend-type primer, and is used in conjunction with an approved black-out glass primer and polyurethane adhesive. It can be applied with a brush or other suitable applicator. Open time ranges from 30 sec to 10 min Shear adhesions tests show that the new glass primer maintains a 100% cohesive bond to an approved urethane adhesive substrate after 72 hr at room temperature. It also displays no loss of adhesion when subjected to cold impact tests, 900,000 cycles of vibrations with the appropriate substrate and urethane adhesive, and a sandwich pull test for 5.5 hr at room temperature.

Circle No. (14) on reader service card.

Plakson Electronic Materials, Philadelphia, Pennsylvania, announces a new transfer grade melamine mold cleaning compound. Called Plaskleen, this ultrawhite cleaning compound is ***designed to speed up the cleaning process, reduce downtime, and lower the total cost*** of mold maintenance.

Circle No. (15) on reader service card.

Custom-fabricated sapphire windows ***featuring extreme surface hardness and good optical properties for infrared and visible applications*** such as TO can covers for detectors are being introduced by **Meller Optics, Inc.**, Providence, Rhode Island. The windows feature Moh 9 surface hardness, which makes this material effective in environments too hostile for glass and other cover materials. Capable of being sealed to TO-5 and TO-8 packages using either glass or metal interfaces, the physical strength of sapphire also helps prevent damage during the processing and assembly of detectors. They have an 80-to-50 scratch dig surface quality per MIL-0-13830A, parallelism of 3 arc-min, and

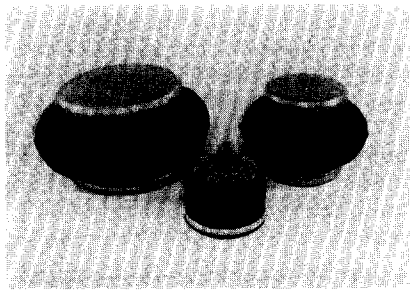


Meller Optics, Inc.

10 waves/in flatness at 0.63 μm. Transmission in the visible and infrared from 0.2 nm to 4 μm averages 85 to 88% uncoated.

Circle No. (16) on reader service card.

A new type of shock mount known as the Airspring provides ***exceptional insulation from low-frequency shock and vibration.*** Available for loads from 22 lb to 3000 tons, it is used in supporting instruments, rotating equipment, laboratories, buildings, and living quarters on off-shore rigs or ships. The springs are fabricated in oil-resistant rubber as spheres or cylinders ranging in sizes from 2 in to 4 ft in diameter and can be supplied flame resistant for operation in temperatures up to 392 °F. The Airspring serves as an excellent noise insulator when used to support diesel engines, fans, compressors, pumps, and other machinery. It is manufactured by **Rubber Metaalfabriek Dordrecht**, Dordrecht, Holland.



Rubber Metaalfabriek Dordrecht

Circle No. (17) on reader service card.

StatiCon, Inc., Englewood, Colorado, has announced the availability of Staticon™ C-300, ***a tough, static, dissipative plastic with superior clarity and chemical and scratch resistance.*** Typical uses are for clean-room windows, doors, shields, work stations, tunnels, and pass throughs; and for machine covers and conveyers—anywhere clarity and static control are desirable. C-300 is available on acrylic and polycarbonate substrates, clear and in all standard colors. It is permanently static dissipative, alcohol resistant, and has a surface resistivity of 10^6 to 10^8 $\Omega/?^2$. As well as being available in a wide variety of sizes and thicknesses, Staticon C-300 can be factory applied to formed and fabricated parts.

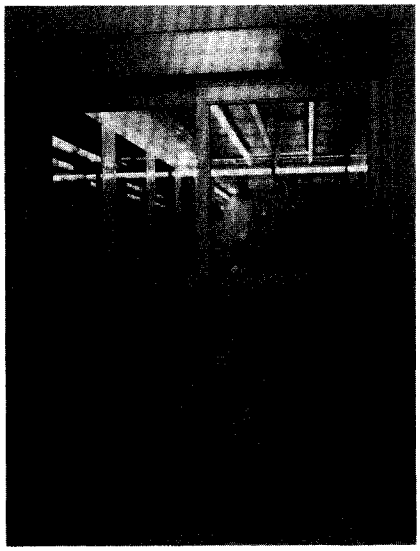
Circle No. (18) on reader service card.

A new line of brushable and trowelable boron nitride pastes are available from **ORPAC, Inc.**, Oak Ridge, Tennessee. They offer a ***combination of high-temperature utility, up to 1800 °C, and excellent thermal conductivity, electrical resistivity, lubrication, and chemical resistance*** to molten metals, salts, plastics, glasses, etc. The pastes offer several advantages. They can be applied as very thick layers, are available as either a neutral pH water-based formulation or as a nonaqueous alcohol-based version and, being nonacidic and nonbasic, are much less corrosive and reactive to most materials.

Circle No. (19) on reader service card.

Sylvania Chemicals and Metals, Towanda, Pennsylvania, has introduced a new line of low-oxidizing copper powders for use in thick-film pastes for hybrid circuits. The extremely low oxidation properties of the CuLox™ line offer paste users ***uniformity of electro-conductive characteristics over a vastly longer time period*** than afforded by previous copper powders. CuLox™ powders are manufactured by a proprietary fine-powder atomization process that renders particle surfaces passive, thus dramatically reducing the rate of oxidation. The process also permits precise sizing and critical control of particle size distribution, which maximizes packing density, thereby greatly enhancing past rheology (flow characteristics). It is an affordable, conductive powder with low oxidation characteristics and superior morphology that promises to bring greater cost efficiencies to the hybrid circuit industry.

Circle No. (20) on reader service card.

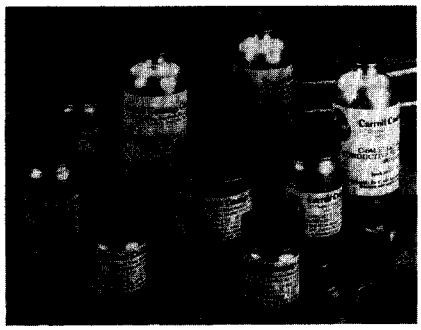


StatiCon, Inc.

A see-through magnetic material with a broad variety of potential applications has been produced by scientists at **Xerox Corporation Research Center**, Webster, New York. The crystalline material is chemically identical to the ferric oxide—or more properly, gamma ferric oxide—that has been used for decades as the magnetic coating for audio and video recording tape. However, the crystals that make up the physical form of the new material are far smaller than the crystals that comprise the conventional magnetic material. The Fe_2O_3 crystals, comprising the transparent material range, in size between 2 and 10 nm—about one $1/10{,}000$ the diameter of a human hair. Because Fe_2O_3 is so small, it loses its usual ferrimagnetic properties and becomes ***superparamagnetic, a state in which the crystals will stick to a magnet, but not to each other.*** In this new state, the nanocrystals have important potential applications in areas such as color imaging, computer information storage, magnetic fluids, and even magnetic refrigeration. It is not yet understood why the nanocrystals are more transparent than the larger crystals of conventional Fe_2O_3, but it appears to relate to the size of the particles.

Circle No. (21) on reader service card.

A new air-dry ***electrically conductive coating for electroplating, electroforming, shielding, radar cross section modeling, application onto tantalum capacitors, and circuit board repair*** is being introduced by **Carroll Coatings Co.**, Providence, Rhode Island. C-646 Electrically Conductive Coating can be applied by brush or spray onto nonconductive surfaces and air dries tack-free within 20 min Featuring (about) 0.1 Ω/sq conductivity, this silver conductive coating produces a very smooth finish and has a service temperature of 250 °F. It adheres well to primed and unprimed metals, most plastics, various waxes, fabric, and leather and

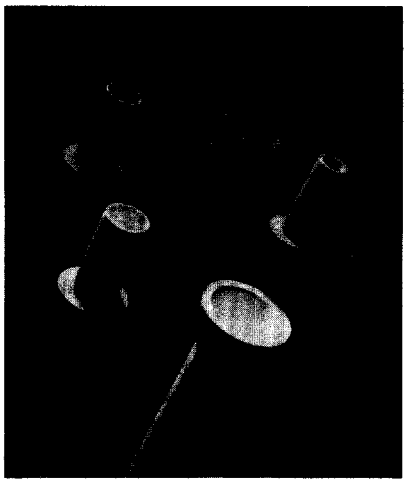


Carroll Coatings Co.

can be soldered using low-temperature solder.

Circle No. (22) on reader service card.

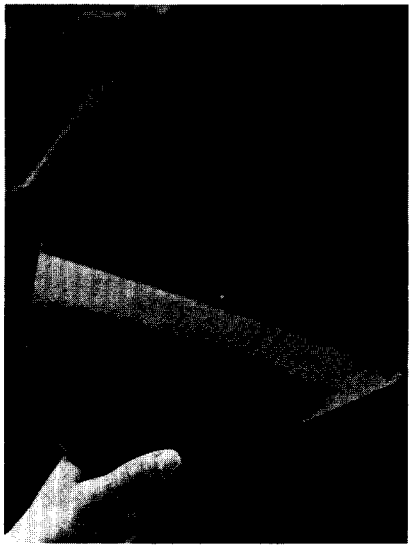
A line of ceramic ferrules—***designed for long life in corrosive, erosive, and high-temperature environments***—has been introduced by **Blasch Precision Ceramics**, Schenectady, New York. The ferrules, manufactured in a wide variety of standard and custom configurations, are injection molded to exact dimensions and controlled porosity through a proprietary process. Available in high-purity alumina, silicon carbide, and alumina silicon carbide composites, the new ferrules offer a number of advantages over conventional technology: longer life span that lowers replacement and maintenance costs; erosion and corrosion resistance not found in metal ferrules; maintenance-free one-piece construction with no cemented-on flanges; and thermal shock resistance that eliminates the breakage found in fully dense ceramic ferrules. They are designed for a broad spectrum of applications, including heat exchangers, chemical processing systems such as nitric acid and sulfur reaction furnaces, waste incinerators, boiler tubes, and others.



Blasch Precision Ceramics

Circle No. (23) on reader service card.

A new patented adhesive that offers ***extraordinary adhesion properties***, FasTape™ 1191 UHA (Ultra High Adhesion), is now available from **Avery Dennison, Specialty Tape Division**, Painesville, Ohio. FasTape™ 1191 UHA provides extremely aggressive adhesion in a wide range of environments, from –30 to +220 °F in high humidity. It also offers good

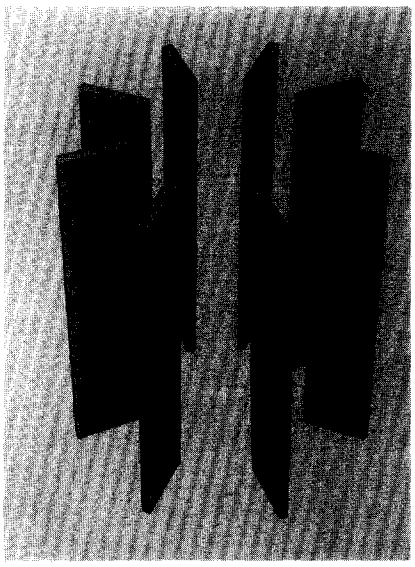


Avery Dennison, Specialty Tape Division

solvent and UV resistance. It is only 11 mils thick, allowing easy flow into uneven surfaces, and has an 80# super-calendared draft liner. The adhesive bonds to low surface energy plastics, metal, pointed metal, wood, carpeting, and other fabrics. Designed with demanding automotive applications in mind, FasTape™ 1191 UHA can also replace mechanical welds and rivets for the appliance and furniture assembly markets and can be used in computer assembly applications.

Circle No. (24) on reader service card.

MAGNADIZE synergistic enhancement coatings from **General Magnaplate Corp.**, Linden, New Jersey, are offered in a wide range of types, each with specific attributes. Controlled coating thicknesses range from 0.0003 to 0.0020 in, providing various degrees of wear resistance, lubricity, corrosion resistance, and friction requirements for both specific applications and specific alloys. They offer ***exceptional resistance to water, steam, oils, acids, and alcohols and allow custom mixing with suitable points and epoxies for special finishes***. Some allow metal-to-metal bonding. Benefits also include the ability to treat subassemblies if the magnesium grade is uniform throughout, with no danger from trapped solutions. Connecting joint galvanic corrosion is reduced, and internal recesses are uniformly and completed coated.



General Magnaplate Corp.

Circle No. (25) on reader service card.

New BETASEAL® 58702SF polyurethane adhesive from **Essex Specialty Products, Inc.**, Troy, Michigan, is a ***solventless, one-component, fast cure, standard viscosity, moisture curing material that resists extended outdoor weathering*** without losing its adhesion and physical characteristics. Suitable for stationary automotive glass bonding when used with appropriate glass and body primers, it can be applied in bead or ribbon form with a pressurized flow gun or other suitable applicator. The product flows readily and demonstrates excellent sag resistance.

Circle No. (26) on reader service card.

High-performance, solventless conformal coatings from **GE Silicones**, Waterford, New York, when used in combination with an advanced infrared and convection curing system, provide important benefits for electronics manufacturers. They ***eliminate many environmental and production drawbacks associated with materials that are thinned with solvents***. At the same time, the fast cure rates of infrared-enhanced convection ovens offer improved productivity and reduced energy consumption. Coating run-off during the cure process is reduced by the faster cure time. Adhesion to substrates is increased, allowing for protection of even the most difficult-to-encapsulate surface-mount devices. The silicone polymers exhibit consistent electrical properties over a wide range of environmental conditions and resist deterioration from UV radiation, ozone, and many chemicals. In addition, they are soft and ductile over a broad temperature range and remain elastomeric at very low temperatures.

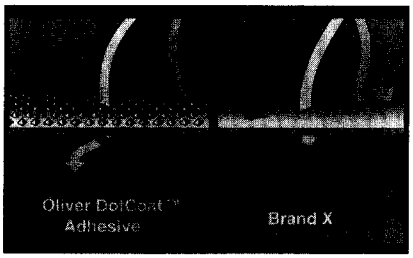
Circle No. (27) on reader service card.

Solid oxide fuel cells may provide a compact energy conversion device with higher power density and reliability at less cost to consumers than existing power sources. SOFC's are also proven to drastically reduce environmental pollution levels of carbon dioxide and nitrogen oxides currently expelled by today's energy conversion devices. Scientists at **Ceramatec**, Salt Lake City, Utah, have developed a ***planar fuel cell designed to convert methane into electricity, as a clean source of energy***. The present design can provide the basis for a 25kW commercial unit the size of a refrigerator. The SOFC works like a battery, but the fuel is supplied and converted to electricity continuously rather than stored. By using a pure oxygen ion conductor as the electrolyte, the cell can be used like a battery. One advantage of SOFC's is that they produce hot exhaust gases that can be used to heat water or generate steam for secondary operations.

Circle No. (28) on reader service card.

PROCESSES/EQUIPMENT

The porosity of a substrate can be controlled when coated with an adhesive applied by Grand Rapids, Michigan, **Oliver Products Co.'s** proprietary dot pattern process. By changing the size and spacing of the adhesive dots, base substrate porosity may be controlled or left unaffected. Properties such as permeability, porosity, hand, or stiffness may be altered if required by the application. ***Controlled porosity enhances the performance of materials*** used for lidding, pouches, and sorbents and may even act as a barrier for moisture and vapors. The adhesive is ideal for controlling porosity of breathable substrates such as Tynek®, film, and nonwovens. It is either heat-sealing or pressure sensitive and is particularly formulated for certain materials depending on substrate characteristics and application requirements.



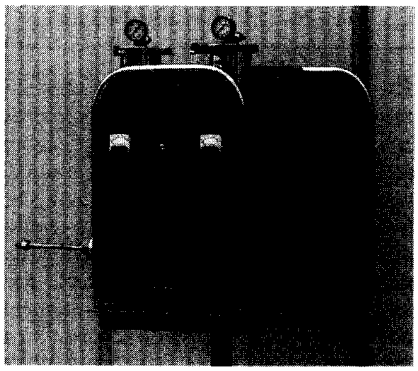
Oliver Products Co.

Circle No. (29) on reader service card.

A new sensor designed to detect the presence of hot metal products has been announced by **Namco Controls Corp.**, Mentor, Ohio. The Hot Product Sensor ***responds to the infrared energy radiated by hot glass or metal items***. It has a particularly low set point temperature of 482 °F (250 °C), which makes it ideal for processes in steel or glass mills where hot object detection was previously very difficult.

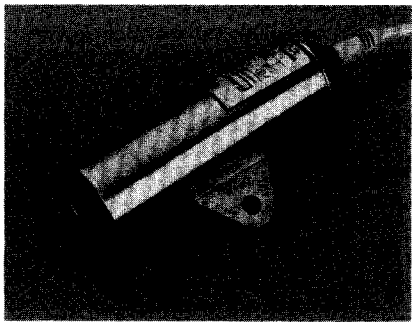
Circle No. (30) on reader service card.

A new control system, Addmaster 1200, from **KOMAX Systems, Inc.**, Wilmington, California, now allows plastics extruders to provide ***direct injection, mixing, and control of additives after the extruder***, enabling the machine to operate on virgin plastic while changing the output formulation. A special injection and distribution device, "SIDD," and a modular, motionless mixer, the "Equalizer," assure complete mixing of the additives—color, lubricants, UV stabilizers, and others—with the melt.



KOMAX Systems, Inc.

Circle No. (31) on reader service card.



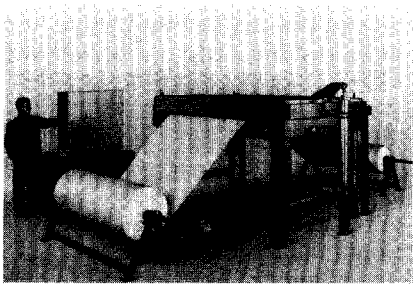
Namco Controls Corp.

A new model Videoimagescope—the Teleview, Model VI20D2Xi-60 —was recently announced by **Olympus Corp., Industrial Fiberoptics Div.**, Lake Success, New York. The TeleView is designed for ***remote visual inspection of large voids*** and is capable of revealing internal defects at distances up to 20 ft It is ideal for inspecting the insides of tank cars and trucks, boiler headers, large vessels, and pipes. The new model features an optical design that increases sensitivity of the system 16 fold over other video scopes. This is accomplished through a lens system with greater light-gathering power (lower F-stop) and a realignment of the CCD chip at the tip of the insertion tube directly in the optical axis or image path of the objective lens. Needing only a 0.79-in access hole to the interior of equipment under inspection, the new scope opens up many new applications for video inspections.

Olympus Corp., Industrial Fiberoptics Div.

Circle No. (32) on reader service card.

Improved adhesion of bindings, coatings, laminations, paints, and inks to polymer webs can be obtained with a fluorine-treating system supplied by **FluoroTec, Inc.™**, Menomonee Falls, Wisconsin. Fluorine,



FluoroTec, Inc.™

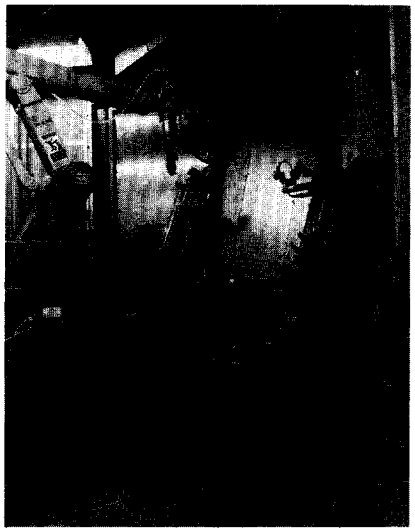
one of the strongest oxidizing agents, reacts with almost any organic or inorganic substance. During the fluorination process, the web is subjected continuously to the agent in a reaction chamber. The level of treatment is determined by the length of the reaction chamber and the line speed. The treatment ***raises the surface energy of the polymer to increase adhesion***. Unlike other commonly used forms of surface treatment, fluorine treatment levels remain constant over time, eliminating the need to immediately process the material after treatment. Safety features are built into each system.

Circle No. (33) on reader service card.

Shred Pax Corp., Wood Dale, Illinois, introduces the first low-speed machine that grinds shredded steel-belted tires or wire-mesh plastics into a pure crumb material for recycling. This unique grinder is the first to separate steel and fiber from rubber or plastic without the high wear of granulating systems or the fire dangers of hammermills. The new G-12 grinder can reduce tire chips to various sizes including a particle as fine as dust. Blending innovative cutting technology and heavy-duty construction, this machine delivers ***unequalled size-reduction performance and minimum maintenance with virtually no downtime***, for an exceptionally economical operation.

Circle No. (34) on reader service card.

Participation in the development of a laser-robotic system for metalworking manufacturing by **Design Systems, Inc., Manufacturing Engineering Group,** West Bloomfield, Michigan, has shown that successful ***instantaneous changes can be made in manufactured parts without the use of dies***. The project combines Nd:YAG lasers, advanced robotics, and fiberoptics to cut a finished metal part manufactured from 1 mm-thick double-galvanized sheet in 72 sec No hard tooling of any kind is required. The cutting cell consists of two robots, each with a laser

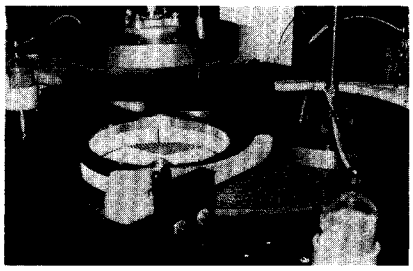


Design Systems, Inc., Manufacturing Engineering Group

focusing head, a class one laser enclosure, a four-position indexing turntable, and system controls. Simple programming is all that is needed to access one of the 80+ preset patterns.

Circle No. (35) on reader service card.

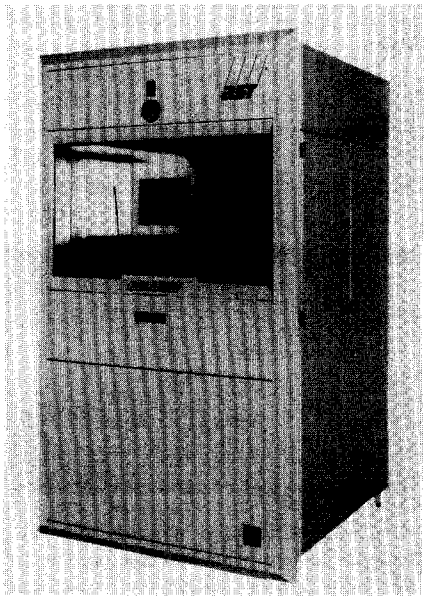
Engis Corp., Wheeling, Illinois, has met the challenge of producing ***scratch-free, stress-free finishes in advanced ceramics***. Titanium-carbides, 95%+ alumina ceramics, aluminum oxide-titanium carbides, silicon, and even sapphire require new levels of finishes for the current demanding electronics and high-tech markets. The previous problem of diamond abrasives rolling between a conventional lap causing random scratches and setting up stresses in the workpiece is eliminated by fixing the diamond particle in place on the lap plate. This breaks the hydroplaning effect of the workpiece because of the lubricating film on the lap. To accomplish this, special grooves are machined across the entire surface of the lap to yield a higher lapping pressure and induce uniform lapping action across the entire surface of the workpiece. To support the higher lap plate pressures, a spindle and pressure plate were added. In addition, a micron-size diamond slurry is used to establish surface flatness, and a colloidal polish is used that provides a scratch-free surface without stress while reducing cycle times by half.



Engis Corp.

Circle No. (36) on reader service card.

A breakthrough flow-enhanced (FE) chemical vapor deposition (CVD) technology, for use with its MESC-compatible GALAXY-1000™ cluster tool, has been unveiled by **Materials Research Corp.**, Orangeburg, New York. It incorporates a rotating disc reactor for blanket tungsten and titanium nitride, which ***lowers defect density while increasing uniformity***. It is the first integration of the W and TiN processes, lowering particulate levels while saving users the cost of two separate pieces of equipment. By eliminating the silane nucleation step, the system saves time as well as money.



Materials Research Corp.

Circle No. (37) on reader service card.

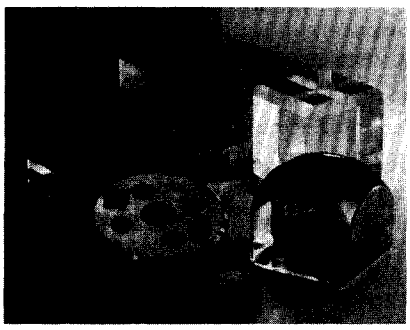
Dangerous, costly, and inconvenient nitrogen gas cylinders can be eliminated with a new compact Nitrogen Gas Generation System available from **Balston, Inc.**, Haverhill, Massachusetts. The generator produces up to 550 cm^3/min of compressed nitrogen on site at purities of up to 99.9995%. It uses several new technologies that separate the gas components from compressed air to ***produce high-pu-***

Balston, Inc.

rity nitrogen gas at safe, regulated pressures without operator attention. Installation consists of connecting a standard compressed air line to the inlet and connecting the outlet to the gas line. Typical applications include chemical and solvent blanketing, glove box purge, chemical and solvent evaporation, instrument purge and supply, evaporative light scattering detector, and sparging.

Circle No. (38) on reader service card.

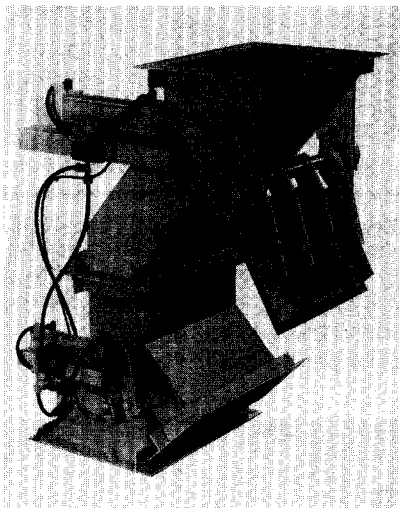
A new diamond edge finishing tool for cutting and polishing edges on plexiglas and acrylics has been developed by **Carter Diamond Tool Corp.**, Willoughby, Ohio. The A-1401 series of edge finishing tools ***removes saw marks and produces clear, polished edges on plexiglas and acrylic parts.*** They work in conjunction with edge finishing and/or polishing machines to eliminate sanding, buffing, or flame polishing. Workpieces can be handled singly or in multiples up to a total thickness of 1½ in Productivity is increased as cutting and polishing is completed in a single pass. The tools are made from natural and synthetic polycrystalline diamonds. They are also ideal for cutting extruded, continuous cast, and cell cast plastics. Custom tools can be manufactured for specific application needs.



Carter Diamond Tool Corp.

Circle No. (39) on reader service card.

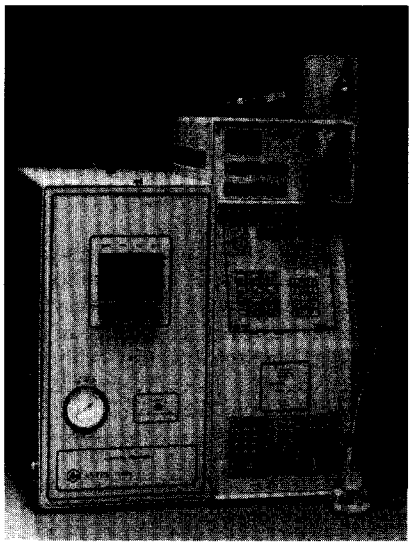
The new Easy Clean Magnetic Hump by **Dings Co.**, Milwaukee, Wisconsin, was designed for use in remote locations. The magnetic separator ***protects products from ferrous contaminants and processing equipment from damaging tramp iron.*** The pneumatic system controls the self-cleaning cycle, reducing downtime, and allowing the magnetic hump to be used in locations where access is limited. It can be used in vertical pipes or chutes, where flow speeds and depths exceed the capacity of plate magnets in a standard housing. The angular shape of the housing conducts the powder or granular material directly against the plate magnets. This slows and agitates the material, resulting in better separation than with conventional chute separators. During the cleaning cycle, air cylinders control the magnetic plates and a diverter gate to safely discharge the accumulated ferrous contaminant.



Dings Co.

Circle No. (40) on reader service card.

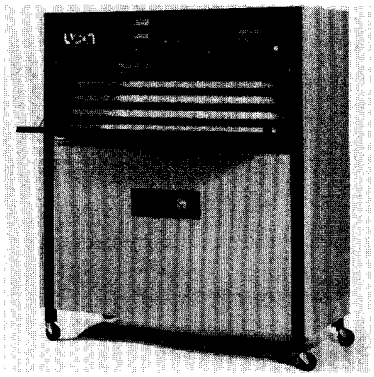
Antek Instruments, Inc., Houston, Texas, announces the availability of the only nitrogen-specific HPLC detector. It uses Pyro-chemiluminescent™ Nitrogen Detection and easily interfaces with any reciprocating dual-piston microbore HPLC system. The detector exhibits ***linear standard calibration curves over a wide range of analyte concentrations.*** It is highly compatible for reverse phase, size exclusion, and ion chromatography methods. Sensitivity is 5 ng nitrogen of ammonium nitrogen in water. The ability of the detector to peer through non-nitrogenous components in the sample matrix simplifies the HPLC analysis of nitrogen-containing analytes.



Antek Instruments, Inc.

Circle No. (41) on reader service card.

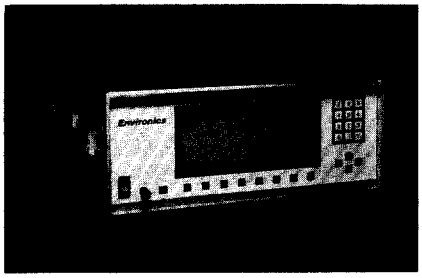
The UVCON™ from **Atlas Electric Devices Co.**, Chicago, Illinois, is an easy-to-use, ***low-cost instrument for testing materials that may be sensitive to the UV portion of the sunlight spectrum and moisture penetration.*** To expand its testing capabilities, a new spray option is now available. The added element of water spray allows for testing of degradation of materials caused by thermal shock and water erosion. The spray option provides realistic simulation of outdoor environments for comprehensive testing of paints, vinyl siding, and other outdoor materials and products.



Atlas Electric Devices Co.

Circle No. (42) on reader service card.

Environics, West Willington, Connecticut, has announced its new Series 2000 Computerized Multi-Component Gas Mixer. The instrument ***blends from two to nine gases simultaneously and permits users to rapidly generate multicomponent, precision gas calibration standards*** by dynamic dilution. It is the first instrument of its kind that makes it possible to achieve low parts per million (ppm) and parts per billion (ppb) concentrations of component gases with 1% accuracy. The instrument improves the quality of analytical data through frequent calibration without expensive, specially prepared gas cylinders. It can be used to calibrate gas chromatographs, mass spectrometers, and other gas analyzers.



Environics

Circle No. (43) on reader service card.

A new soldering fume elimination system has been introduced by **Lectrostatic, Inc.**, Pittsburgh, Pennsylvania. It cleans the air by ***removing dangerous solder fumes from the tip of the soldering iron***. Fumes and gases collected are carried by a silicon hose to the extraction unit, where they are filtered. The new clean air, 99.997% pure, is returned to the environment, eliminating heat loss and protecting workers.

Lectrostatic, Inc.

Circle No. (44) on reader service card.

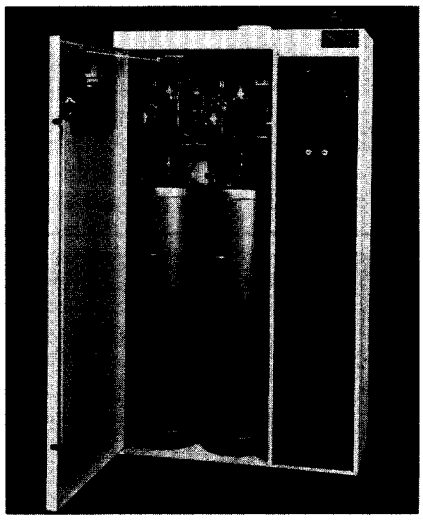
A new line of window assemblies that are ***usable from the UV through the far infrared spectrum in ultra-high vacuum environments*** and are offered in weldable and flange-mounted designs is being introduced by **Meller Optics, Inc.**, Providence, Rhode Island. They are fabricated from a wide range of optical materials for use in the ultraviolet, visible, infrared, and far infrared regions. Using a proprietary technique, Meller can mount crystal materials typically considered too soft, along with glasses as well as harder materials such as sapphire and quartz. The window assemblies allow users to observe and test in high vacuum environments at far infrared wavelengths.

Circle No. (45) on reader service card.

A patented treatment process from **Quality Environmental Systems**, Grand Ledge, Michigan, ***renders hazardous waste nonhazardous***, under both acidic and nonacidic leaching environments. The process involves mixing wastes that contain high amounts of heavy metals, with the patented dry treatment additives, to render the waste nonhazardous. Properly treated waste exhibits low leaching characteristics under acidic and nonacidic leaching tests. The treatment is appropriate in accumulation tanks or containers, wastewater systems, or waste pile cleanups and closures.

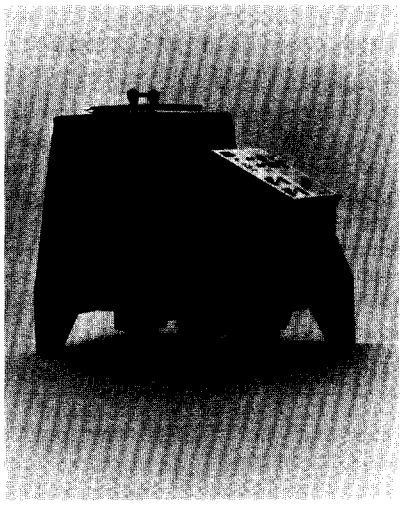
Circle No. (46) on reader service card.

Novapure Corp., Danbury, Connecticut, announces the release of a new product for the abatement of hazardous, toxic, and pyrophoric gas effluents from CVD, MOCVD, metal etch, and other semiconductor process tools. The new EGS-400 point-of-use system offers ***significant advantages for the passive treatment of hydrides (arsine, phosphine, diborane, silane), acid gases (boron trichloride, hydrogen chloride, hydrogen bromide, hydrogen fluoride, dichlorosilane, tetrachlorosilane, tungsten hexafluoride, etc.), and various organometallics***. It operates on the principle of passive, dry resin scrubbing and has many significant benefits, including operation at room temperature.



Novapure Corp.

Circle No. (47) on reader service card.



Hot Melt Technologies, Inc.

A new large-capacity model of the Proflex™ ***hot melt adhesive application system, built for higher volume requirements*** by **Hot Melt Technologies, Inc.**, Rochester, Michigan, is now available. The new Model No. 135 features a 135-lb melt tank capacity. The tank is virtually char free and easy to maintain in the most harsh industrial environments. It provides the latest technology with simple-to-use RTD temperature controls in a modular control box. An audible output signals alarm conditions of overtemperature or sensor failure. The systems can be used for hot melt bead, slot coating, or spray applications.

Circle No. (48) on reader service card.

Nederman, Inc., has introduced a ***self-contained mobile air filtration unit*** for use in repair shops and light industries, which requires, from time to time, fume extraction capabilities in various parts of the premises. The Filter Cart is a complete unit that consists of a lightweight trolley with an integral fume extractor arm, a fil-

Nederman, Inc.

ter, and a fan. It can be wheeled into place and plugged into the nearest electrical power supply. The fully enclosed filter cartridge, with double concentric rings of pleated paper or polyester, traps dust on the inside for spill-free handling. It can also be fitted with a charcoal filter, if required.

Circle No. (49) on reader service card.

Sealed Air Corp., Fair Lawn, New Jersey, offers a copper static shielding bag that ***provides the greatest amount of protection from electrostatic discharge (ESD) damage*** compared to competitive bags. The Copper 2900™ bag combines a copper metallized layer with an extra-thick layer of polyethylene to provide static-sensitive components with the maximum amount of protection available. The bags are superior to single- or double-layer aluminum or nickel bags, offering 99% attenuation, the highest in the industry. The copper layer is pliable and ductile, thereby guaranteeing ESD protection without fracturing or crushing during handling. The bag is also reusable. It features an antistatic inner coating to ensure a nonstatic generating interior. The coating is free of ion contamination, is polycarbonate safe, meets the NASA outgassing requirements, and is ideal for long-term storage.

Circle No. (50) on reader service card.

A pilot-plant demonstration of a new catalytic process to recover elemental bromine from hydrobromic acid waste streams on site has been completed by **Catalytica**, Mountain View, California, with 99% conversion feeding a commercial HBr waste stream. The new process provides ***an environmentally and economically advantageous method of handling waste bromide streams***. It uses oxygen and produces only water as waste. The technology lends itself well to modular, skid-mounted plant construction, which is economically and operationally attractive. Application of recycling HBr waste at the site of generation eliminates the hazards associated with shipping and storing elemental bromine.

Circle No. (51) on reader service card.

COMPOL 2, a uniquely structured, stable colloidal silica polish from **Fujimi Corp.**, Elmhurst, Illinois, achieves an optimum stock removal rate and superior surface quality. It ***minimizes polish instability with even particle distribution over the polishing cloth, providing a scratch-free surface*** under various operating conditions. It contains a new chemical agent to enhance its polishing characteristics on silicon. The larger surface area of the colloidal silica allows for a larger percentage of chemical agents to be added without reducing polish stability.

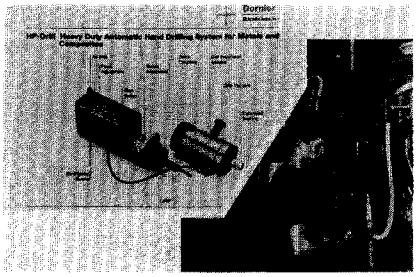
Circle No. (52) on reader service card.

A new line of mixers featuring a high-tech, replaceable poly drum liner has been introduced by **CF Gilco**, Cedarburg, Wisconsin. Originally designed solely for concrete, it adapts to food, drug, and other manufacturing processes. Exclusive integral mixing action provides optimum assurance of proper mix. Lightweight, but durable, the new liner permits easy cleaning and is an ***economical alternative to total drum replacement***. For added strength, the liner is encased in a steel shell that has quick disconnects for easy removal.

CF Gilco

Circle No. (53) on reader service card.

A ***lightweight, compact, self-contained HP drilling system*** is available from **Intech Corp.**, Closter, New Jersey. The fast, accurate, one-step automatic system offers significant savings in assembly time, higher hole quality, extended drill life, ease of handling, accessibility in tight spaces, comfortable ergonomic design, and operator safety. Similar to an automatic riveting tool, it is ideal for use on composites and metals in the assembly of aircraft, buses, rapid transit trains, boats, sporting goods, bicycles, small prototype development, and composite-to-composite or composite-to-metal assemblies.



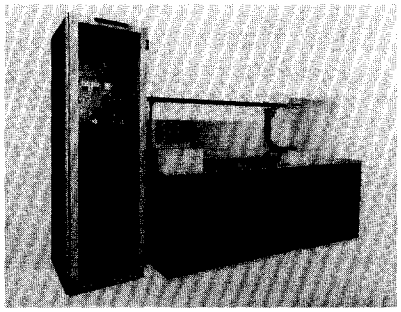
Intech Corp.

Circle No. (54) on reader service card.

Parker & Amchem, Madison Heights, Michigan, has introduced a new rinse aid for plastics, designed to ***eliminate water spotting and ensure a contamination-free surface***, excellent for painting. The Parco Plastic Rinse Aid 205 features a unique plastics chelating agent that increases surface tension to improve sheeting action. The result is a water-break-free surface that ensures complete water removal prior to painting. It is effective for a wide range of common engineering plastics, including polyurethane and polyurea RIM, SMC, ABS, PVC, and polycarbonate, and is designed for use just prior to the final deionized water rinse. Other advantages of the aid include excellent bath stability, wide operating temperature range, water-based nontoxicity/no VOC's, and low foaming suitable for spray washer application.

Circle No. (55) on reader service card.

Proven effective across a wide range of metals, the Burlytic® Deburring System from **Debur Corp.**, Chelmsford, Massachusetts, uses a ***highly selective electrolytic technique to remove the burrs and smooth the sharp edges*** that result from all metal machining and cutting operations. It offers demonstrable advantages over other commonly used deburring techniques. Typical cycle times range from 15 sec to 3 min The electrolytes are safe to handle, maintain an operating temperature of 59 °F, and are fume free. Simple and inexpen-



Debur Corp.

sive tooling allows complex parts and components to be processed more easily, at a lower cost, and with less risk than other deburring techniques. The process features a user-friendly computer operation, reduced deburring time, cleaner surfaces, improved adhesion of follow-on finishes, reduction in the surface reactivity of stainless steel, highly polished stainless, removal of EDM recast, and the extended life of mechanical components that results from reducing roughness and stress risers.

Circle No. (56) on reader service card.

A new ***phosphate-free, heavy-duty, liquid alkaline cleaner for both soaking and electrocleaning steel*** has been introduced by **Enthone-OMI, Inc.**, West Haven, Connecticut. ENPREP™ 269 can be used with current densities as high as 100 A/ft^2 (10 A/dm^2), thus enabling very effective cleaning and smut removal. It has high detergency, high stability, and is free rinsing. The inherent detergents produce a low, controlled foam blanket that holds down caustic spray. No. 269 displaces, rather than emulsifies, greases and oils which then float to the surface where they can be readily skimmed off. Thus, the cleaning solution does not become contaminated with emulsified oil and has a very long life. Biodegradable, it can be used in those areas where local, state, or federal ordinances require the use of such products.

Circle No. (57) on reader service card.

UNIVERSITY VIEW

May 16, 1992, marked the formal dedication of the new **Center for Advanced Materials Processing** at **Clarkson University**, Potsdam, New York, 3 years after groundbreaking. The new facility features 70 laboratories and 50 dedicated facilities. Operational since 1987, as the eighth New York State Center for Advanced Technology, CAMP's research focus is on colloids and surfaces, in particular on the ***production, modification, and conversion of solids for which small particles, colloidal media, or surfaces play an important role in the processing or the properties of the final product***. Technology fields, currently emphasized or identified for future development, include: (1) preparation and characterization of micro- and nanoparticles with control of physical and chemical properties; (2) formation and processing of colloidal dispersions; (3) particle transport, deposition, and removal; (4) particle generation in physical and chemical processing; (5) use of colloidal dispersions for materials processing; (6) preparation of particle/matrix composite materials; (7) particle slurries and flow; (8) preparation and characterization of supported catalysts; (9) surface reactions; and (10) film particle interactions and thin film processing.

Circle No. (58) on reader service card.

The **Advanced Technology Center for Precision Manufacturing** at the **University of Connecticut**, Storrs, Connecticut, has recently established a **Nanoprecision Manufacturing Laboratory** at the refurbished Longley Building. Basic research is being conducted toward ***producing nanostructured materials in bulk and at low cost, using a chemical synthesis and processing approach***. A pilot-scale facility for synthesizing large quantities of nanostructured powders has already been accomplished. The system includes an industrial-scale spray drying unit and a fluidized bed reactor system. Also, the chemistry and processing methodology for synthesizing several important composite materials, including an AlN/BN composite, is now complete.

Circle No. (59) on reader service card.

At **Cornell University**, Ithaca, New York, work is ongoing in the **Department of Materials Science and Engineering** to ***fabricate metal-ceramic microstructures with desirable mechanical properties at a cost that is competitive with, or undercuts, other materials used for advanced applications***. New *in situ* processing techniques for producing such materials, in which the ceramic constituent and the metal matrix are formed in a single heat treatment step, have the advantage of being relatively simple, though the size, morphology, and distribution of the various phases are of critical importance and must be carefully controlled to achieve optimum properties. Intermetallic compound alloys and several types of composites, including metal-ceramic, ceramic-ceramic, and intermetallic compound-ceramic, are currently under study.

Circle No. (60) on reader service card.

Center for Advanced Materials Processing at Clarkson University

After plugging away on a project to investigate new materials, post-doctoral fellow, William Torecki, working in the **Department of Materials Science and Engineering** at the **University of Florida**, Gainesville, Florida, has produced ***pyrolyzed black silicon carbide fibers with a low oxygen content, representing a major breakthrough***. The project was an outgrowth of an attempt to develop advanced composite materials to build the next generation of spacecraft for high-speed civil transport. The materials would have to be strong enough to withstand the extreme temperatures associated with hypersonic flight. After unintentionally over-cooking a polymer mixture that was intended as a coating—in a sealed vessel—Torecki came up with a material that was soluble, but would not melt when heated. The fibers were formed by solution spinning, rendering fibers that had a lower oxygen content. Where conventional fibers are

formed with an oxidation treatment and are useful up to 1200 °C, these new fibers have withstood temperatures up to 1700 °C, with a higher strength retention.

Circle No. (61) on reader service card.

Chain-reaction freeway collisions create surprisingly powerful forces, particularly for hapless drivers caught in the middle of them. At **Georgia Institute of Technology**, Atlanta, Georgia, researchers suggest that similar forces generated on a microscopic scale, as clusters of atoms or molecules crash into solid surfaces, may produce new chemical environments and can promote new reactions processes. This kind of collision produces a transient medium characterized by extremely high density, pressure, and temperature, and under such conditions it is likely that new chemistry will happen, according to Dr. Uzi Landman of the **School of Physics**. The findings may be especially useful for ***gaining insights into new surface processing techniques, new means for depositing surface films, and an improved understanding of the molecular-scale mechanical response of materials***.

Circle No. (62) on reader service card.

Scientists at the **University of Michigan**, Ann Arbor, Michigan, and the **French National Atomic Energy Commission** have achieved another breakthrough in the international race to create the world's most powerful beam of laser light. A 55-terawatt beam of laser light was produced at the Centre d'Etudes de Limeil-Valenton, Limeil, France. (One terawatt is equivalent to one trillion watts.) The beam was produced using the Centre's P-102 laser with a laser amplification technique and a second pre-amplifying laser. The laser beam can be focused over a spot smaller than the cross section of a human hair to produce extremely high power densities. Preliminary experiments have shown that shooting high-powered laser pulses through plasma—a state of matter made up of atomic nuclei and free electrons—creates shock waves capable of accelerating electrons close to the speed of light in very short distances. The ***development of a table-top, laser-powered particle accelerator*** has been suggested as a plausible use for the technology.

Circle No. (63) on reader service card.

North Carolina State University, Raleigh, North Carolina, has received approval from the UNC Board of Governors to establish the **Institute for Engineering, Technology, and Science.** The primary purpose of the Institute will be to stimulate and transfer technology from engineering and science to the private sector. ***Commencement efforts will focus on developing and improving technologies to protect the environment.***

Circle No. (64) on reader service card.

Perturbed Angular Correlation Spectroscopy, a method that uses radioactive probe atoms to gain information about atomic structure, is currently being used to investigate the surface of gallium arsenide semiconductor material and the crystalline structure of various ferroelectric ceramics at **Pennsylvania State University**, University Park, Pennsylvania. The technique, initially developed in the 1950s, was used to measure and describe the structure of atomic nuclei. It is now being applied, along with molecular-beam epitaxy, to study ***chemical bonding effects on surfaces of gallium arsenide wafers in an investigation on surface behavior of semiconductors*** and how it affects the way the materials work. A separate chamber is attached to the MBE equipment, so the wafers can be transported there, and indium-111 probe atoms placed, without contaminating the equipment with radioactivity. Using this system, it is possible to tell if the indium atoms have been incorporated completely into the surface of the gallium arsenide, only partially incorporated, or reside at step edges, so that the atoms lie at corners.

Circle No. (65) on reader service card.

GOVERNMENT/INTERNATIONAL LABORATORIES

A ***table-top, superconducting, linear accelerator*** is being designed and tested under a joint research project between **Argonne National Laboratory**, Argonne, Illinois, and **AccSys Technology, Inc.**, Pleasanton, California. Potential uses include making radioactive isotopes for medical use, finding explosives at airports, and diagnosing corrosion in airplanes and other aluminum or composite structures. The accelerator, made of niobium—a low-temperature superconductor—is expected to accelerate a continuous beam of any element. Using superconductivity will allow for a smaller and more energy-efficient device, as well as higher beam currents.

Circle No. (66) on reader service card.

The **Electric Power Research Institute (EPRI) Center for Materials Fabrication, Battelle Laboratories,** Columbus, Ohio, has issued a bulletin describing a ***new method of curing glue using radio-frequency heat technology***. It is particularly suitable for joining all types of wood. The radio-frequency energy selectively penetrates and cures the adhesive in 5 sec while only mildly heating the wood. Production time, rework, and labor costs are dramatically reduced. Although the technology is particularly suited for joining all types of wood, it may also be used with textiles, paper, metal casting, ceramic drying, and sealing plastics.

Circle No. (67) on reader service card.

Synthesizing, characterizing, and testing a new material can be costly and time-consuming. The newly formed **Materials Modeling Project** at the **Center for Materials Science and Industrial Partnership, Los Alamos National Laboratory**, Los Alamos, New Mexico, offers the resources an engineer needs to decide whether to pursue a novel idea or go back to the drawing board. The Project addresses the complexity of materials problems facing industry with the unified effort of many researchers using a wide variety of skills. ***Advanced modeling techniques and computer technology allow the calculation of properties of new materials faster and less expensively*** than through experimentation. A major goal of the project is to develop a "tool box" of working computer models and techniques as a national resource for new industrial programs in materials, and to then produce an engineering test bed to integrate the models on advanced computers.

Circle No. (68) on reader service card.

The **Materials Property Data Network, Inc.**, Columbus, Ohio, reports that an agreement for a joint pioneering effort has been signed with **Optiz Corp.**, St. Petersburg, Russia, to produce a new ***comprehensive database on the properties of optical materials***. The database, called OPTIMAT, will concentrate on glass, but will also include materials that exhibit optical properties such as optical glue, single crystals, optical polymers, and metals. It will cover all types of glass used for fiber

optics, laser applications, and other industrial applications such as automotive/aerospace, packaging, laboratory, and nuclear waste containment. Hundreds of specific properties will be included, with emphasis on absorption, refraction, reflection, transmittance, and mechanical, electrical, and thermal properties when appropriate. OPTIMAT is scheduled for late 1993 release.

Circle No. (69) on reader service card.

Researchers at the **Center for Solder Science and Technology, Sandia National Laboratories**, Albuquerque, New Mexico, are developing ***environmentally friendly soldering techniques for producing electronic products without using ozone-destroying chemicals***—specifically CFC solvents—used to remove fluxes from soldered printed circuit boards. The emphasis of the project is the development of fluxless soldering methods that do not use rosin-based fluxes, which require CFC solvents for removal. Studies are being conducted on the use of controlled atmospheres, thermomechanical surface activation, and protective coatings as alternative methods to produce a solderable base surface, with environmentally compatible cleanup.

Circle No. (70) on reader service card.

LITERATURE/DATA SOURCES

Technomic Publishing Co., Lancaster, Pennsylvania, offers two new materials title releases: ***Random Vibration and Reliability of Composite Structures,*** by Dr. Gabriel Cederbaum *et al.*, which presents a ***wide spectrum of problems related to the random response of composite flat and curved structures***, approached in a linear framework and providing ample illustrations by way of applications. It is a vital guide for aeronautical/aerospace, mechanical/automotive, and marine engineers and other researchers concerned with theoretical and applied mechanics. Application areas include automotive construction, helicopter rotor and gas turbine blades, aeronautical/aerospace industry, marine construction, and off-shore structures.

In addition, ***Nondestructive Characterization of Composite Media,*** by Ronald A. Kline, is a ***comprehensive guide to nondestructive evaluation of composite materials by acoustic wave propagation.*** It presents both theory and practical applications covered in detail on advanced ultrasound methods for detailed identification and measurement of defects and characterization of microstructure and mechanical properties.

Circle No. (71) on reader service card.

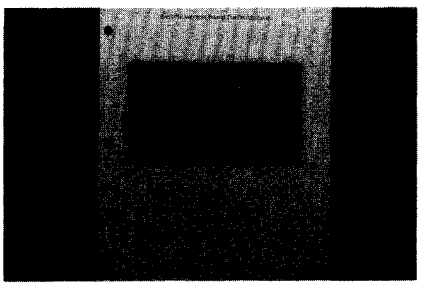
The ***World Aluminum Abstracts (WAA) database***, long recognized as the authoritative bibliographic source for aluminum technology, has been ***changed in name, source, and structure***. Available from the major on-line systems in the world, the WAA and its source journal are now known as the ***Aluminium Industry Abstracts (AIA)***. It now includes 156,000 references covering both technical and business sources and is augmented by more than 8000 new records each year. The scope of the database includes journal, conference, and technical book sources, patents, dissertations, and government reports. Extractive and physical metallurgy are fully represented, with emphasis on applications, properties, production processes, and fabrication. The AIA is produced by **Materials Information**, a joint service of ASM International® and the Institute of Materials, London, England, in cooperation with the European Aluminium Association, Dusseldorf, Germany.

Circle No. (72) on reader service card.

Fillers, by George (Jerzy) Wypych, has been published by **ChemTec Publishing**, Toronto-Scarborough, Ontario, Canada. It combines a thorough literature review with the discussion of the ***successful application of fillers***. Eight chapters focus on fillers application, function, their structure, properties, physical chemistry of filled systems, dispersion, morphology, rheology, mechanical properties of filled systems, various applications, transportation, storage, and safety. It is an important reference book for those who study and apply fillers in polymers, rubber, coatings, inks, paper, pharmaceuticals, cosmetics, and in the food industry.

Circle No. (73) on reader service card.

Formulators of polyurethane adhesives, sealants, and elastomers will find helpful information on the ***characteristics and versatile product offerings of BO polyols*** in a new brochure entitled, ***"Polybutylene Oxide Polyols for Polyurethanes: Take Steps to Improve Hydrophobicity with BO Polyols."*** The brochure, Form No. 109-01086-1091, is offered by **Dow Plastics**, Midland, Michigan. It discusses BO polyols for high-end applications in the construction, marine, and electronics markets. BO polyol-based products feature excellent hydrophobicity and moisture barrier properties, a high level of tear strength and elongation, and less susceptibility to ultraviolet and thermal degradation.



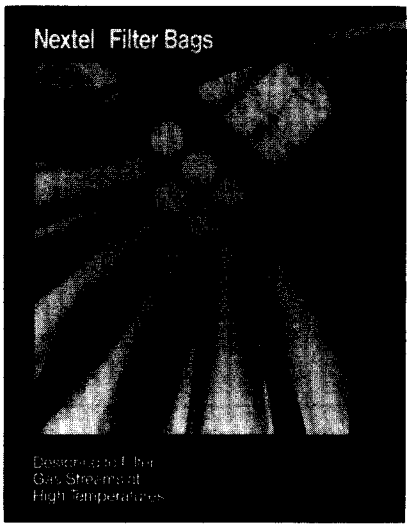
Dow Plastics

Circle No. (74) on reader service card.

A new, free video from **Sonoco Products Co. Intermediate Bulk Container Division**, Lavonia, Georgia, highlights the performance, cost-saving, and environmental benefits packagers and shippers can achieve by using the company's Sonobulk® 275 intermediate bulk container. Entitled "Sonobulk Performance IBC," the tape features punishing strength and toughness demonstrations and highlights the ***reliability, handling, and shipping benefits in transporting or dispensing bulk liquids*** such as pharmaceuticals, chemicals, food products, or ingredients using the container.

Circle No. (75) on reader service card.

3M Co., St. Paul, Minnesota, offers a four-page, full-color brochure describing its line of Nextel brand, ***high-efficiency filter bags for high-temperature gas stream filtration applications***. The continuous ceramic fiber filter bags are designed to remove particulates from gas streams up to 760 °C (1400 °F). They eliminate the need and expense of a cooling system to lower the temperature of the gas before filtration. The bags can remove more than 99.9% of solids from hot gas streams and

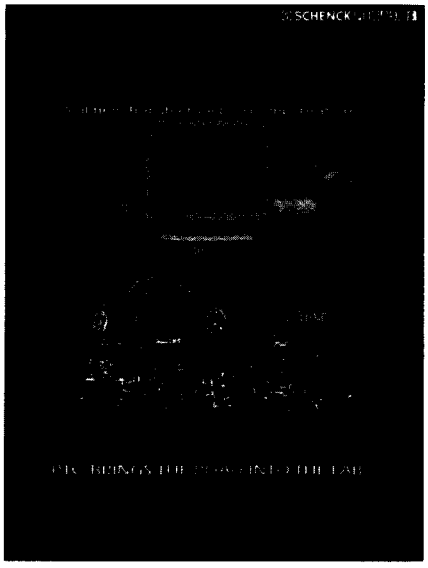


3M Co.

can withstand several thousand hours of continuous operation.

Circle No. (76) on reader service card.

RTC (Real-time Transfer Function Compensation), a new ***digital control algorithm*** developed by **Schenck Pegasus Corp.**, Troy, Michigan, is described in a 4-page, full-color brochure that highlights how it works, its benefits, features, and applications. RTC allows the test engineer to easily validate a new product by duplicating in real-time desired command signals at remote transducer locations in single- or multi-channel test rigs. Applications of RTC include structural component testing, chassis squeak, rattle and fatigue testing, road simulation, multi-axis vibration testing, multi-axis engine mounts, and the testing of shock absorbers, drive shafts, constant-velocity joints, wheel suspensions, and axles.



Schenck Pegasus Corp.

Circle No. (77) on reader service card.

Get the latest ***English translations of foreign research papers and patents*** from the **National Translations Center of the U.S. Library of Congress**, Washington, D.C., for only $35 per translation. The new clearinghouse program offers over 14,000 current scientific and technical research titles, translated into English from such diverse languages as Japanese, German, Czechoslovakian, Chinese, Italian, Hungarian, French, Arabic, Russian, and others. They have been selected by leading scientists and engineers in government and industry for their research. Approximately 1000 titles are added each month. An electronic index is available through Dialog, EAS/IRS, OCLC, NASA, DTIC, NERAC, WLN, UTLAS, FTD, and CISTI. Titles may also be obtained from EI Page One on CD-ROM and the print version of World Translations Index.

Circle No. (78) on reader service card.

Elsevier Science Publishers, Amsterdam, The Netherlands, announces the publication of ***High Temperature Superconductor Thin Films***, edited by L. Correra. It focuses on ***interdisciplinary research on superconducting oxides***. Fundamental properties to applications are examined. Interesting results for the Bi system are also reviewed. The book contains 132 papers, reporting mainly on the 1-2-3 system, indicating that the Y-Ba-Cu-O and related compounds are still the most intensively studied materials in this field. The volume attests to significant progress and reports on the challenging problems that still remain to be solved.

Circle No. (79) on reader service card.

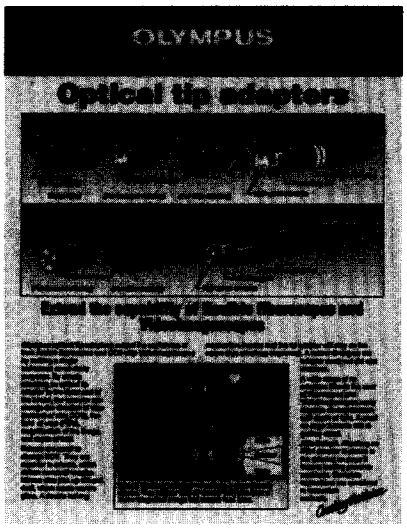
A free four-page, full-color brochure describes a new brand of ***high-temperature industrial textiles***—Nextel— from **3M** of St. Paul, Minnesota. The brochure contains eight tables displaying Nextel's physical properties under a variety of performance parameters. The polycrystalline metal oxide fibers can be formed into fabrics, tapes, and sleevings. They are designed for very demanding thermal, mechanical, and electrical applications beyond the capabilities of other high-temperature textiles, such as silica or quartz fabrics.

Circle No. (80) on reader service card.

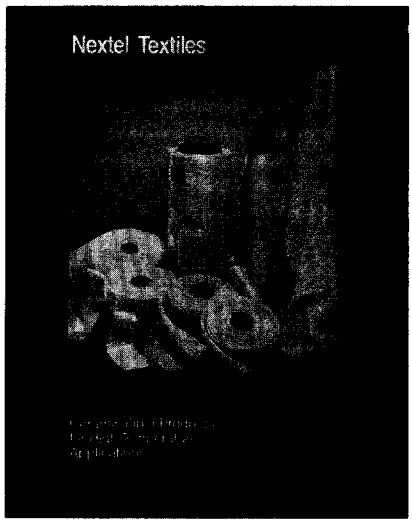
Master Bond, Hackensack, New Jersey, has developed a new ***application selector guide for an extensive line of high-performance adhesive compounds*** for tacking wires and attaching components to printed wiring boards. The adhesives are designed to offer technically superior and cost-effective solutions for a variety of attachment problems. One- and two-component epoxies, UV-curable epoxies, reactive acrylics, hot melt, and cyanoacrylate adhesives are illustrated. Application conditions and performance profiles are provided for each type of product.

Circle No. (81) on reader service card.

New literature from **Olympus Corp., Industrial Fiberoptics Division**, Lake Success, New York, describes the ***functions***



Olympus Corp., Industrial Fiberoptics Division

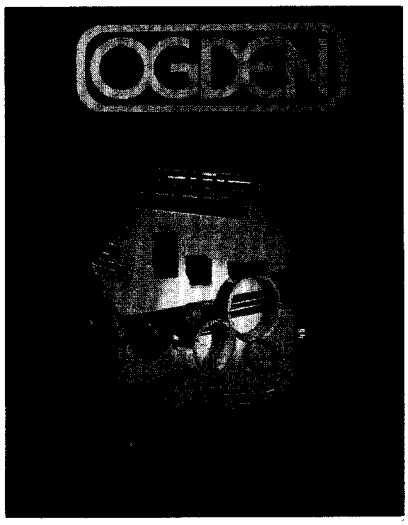


3M Co.

and characteristics of optical tip adapters for Olympus flexible fiberscopes and videoimagescopes. The adapters attach to the distal ends of the scopes and change their optical characteristics.

Circle No. (82) on reader service card.

Expanded to 216 pages, the **Ogden Manufacturing Co.**, Arlington Heights, Illinois, 1992 free catalog is now available. A clear, concise, and easy-to-use format is presented for specifying a ***complete line of process electric heat and control products***. Innovative new products and additional product listings are introduced to meet ever-increasing processing requirements.



Ogden Manufacturing Co.

Circle No. (83) on reader service card.

The **American Welding Society**, Miami, Florida, has published the sixth revision of the ***Specification for Carbon and Low Alloy Steel Rods for Oxyfuel Gas Welding*** (ANSI/AWS A5.2-92). It prescribes the ***requirements for classifying carbon and low-alloy steel rods for oxyfuel gas welding, including mechanical properties of the weld metal***. Other classification requirements included in the publication are chemical composition of the rod, and sizes, lengths, and packaging for manufacture. A guide is also included in an appendix, which explains the classification system used and the intended use of the rod.

Circle No. (84) on reader service card.

The 34th edition of the ***Official Export Register of the Federation of German Industries*** has just been published by **Verlag W. Sachon GmbH & Co.**, Mindelheim, Germany. Twenty-two thousand German industrial companies exporting goods report on their products and important company-related data, including contact partners, participation in agencies abroad, employees, capital, turnover, company history, etc. The publication is divided into 41 industrial and application groups, 202 main production groups, 12,000 product groups, and an alphabetical index with approximately 53,000 product terms.

Circle No. (85) on reader service card.

A new catalog has been published by the **Belden Brick Co.**, Canton, Ohio. It consists of three full-color sections that describe and present ***technical data on its full line of chemical-resistant brick used for chimney/tank liners and floors for commercial industrial applications***. Tables listing the number of different brick sizes required for typical application dimensions and related data are included.

Circle No. (86) on reader service card.

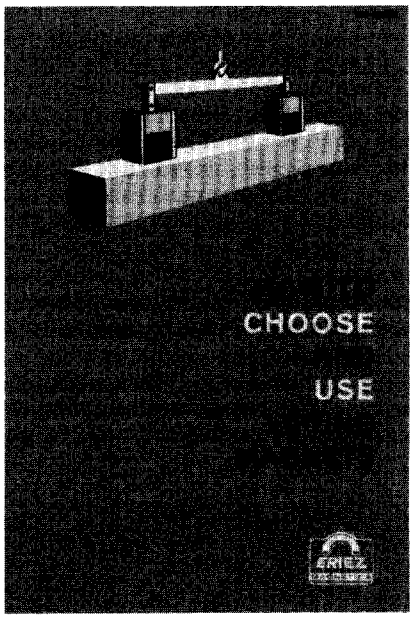
Powerful new software that ***facilitates detailed composite materials design by theoretical analysis*** and meets the needs of the burgeoning materials industry is being offered by **Technomic Publishing Co.**, Lancaster, Pennsylvania. ***"Automated System for Composite Analysis,"*** based on research by Dr. N.J. Pagano and associates at the U.S. Air Force Materials Lab, Wright-Patterson Air Force Base, Ohio, allows the user to treat more difficult problems, use more accurate models, and cover a broad range of variables. The software uses fiber and matrix properties (and coatings, if present), as well as simulated interface conditions to compute composite layer moduli in a micromechanics algorithm. It is available for IBM PC compatibles operating in MS or PC DOS. The program requires 640K memory, DOS 2.10 or higher. A math coprocessor, such as Intel 8087, is highly recommended. Delivery is on a 3.5-in diskette. A descriptive flyer is also available.

Circle No. (87) on reader service card.

Materials Information, a joint service of ASM International®, Materials Park, Ohio, and the Institute of Materials, London, England, has produced a new and up-to-date international report on the latest trends and developments in machining technology worldwide. ***"Machining Processes 1992: Report and Database"*** is the most recent addition to an extensive series of Industry Reports offered by MI. Every report comes with a fully searchable database on PC diskettes, which include the entire set of documents found in the reference section of the report. Information on the activities of over 600 corporate organizations involved in the research, analysis, and the practice of machining operations is included. It encompasses not only steels and ferrous and nonferrous alloys, but also new engineered plastics, polymers, composites, and ceramics.

Circle No. (88) on reader service card.

An illustrated ***application manual discussing important factors for selection of lifting magnets*** is available from **Eriez Magnetics**, Erie, Pennsylvania. It analyzes a wide range of parameters, including magnet types, shape, number, and face contour.



Eriez Magnetics

Circle No. (89) on reader service card.

The latest addition to the **ASM International®**, Materials Park, Ohio, ***ASM Handbook™*** series—Friction, Lubrication, and Wear Technology—addresses ***every aspect of tribology, from basic concepts and methods of laboratory testing and analysis to materials selection and field diagnosis of tribology problems***. Its 26 sections provide structured approaches for analyzing complex tribosystems; design, materials, and lubrication selection strategies to combat friction and wear;

choices in materials to provide alternate materials-based solutions; selection criteria to identify the right material for the job; guidelines for the selection of lubricants; and information on how specific types of materials react in friction and wear situations.

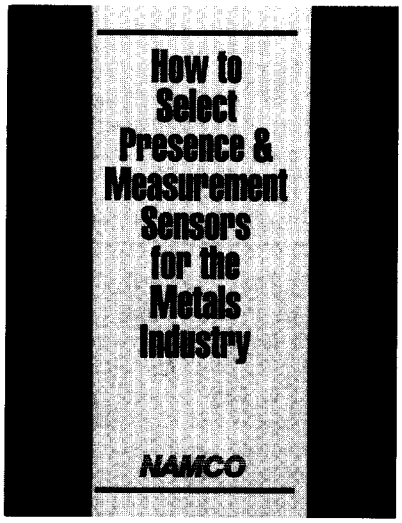
Circle No. (90) on reader service card.

A new edition of the ***"Catalog of Personal Computing Tools for Engineers, Scientists, and Technical Professionals,"*** from **Personal Computing Tools**, Campbell, California, has just been released. Over 450 hard-to-find IBM PC compatible products that ***save science and engineering laboratories thousands on automation costs*** are included. It offers a unique selection of high price/performance ratio add-ons and enhancements for scientific and engineering data acquisition and control, technical drafting and CAD, computer security, document control software, and more. Expert technical support from experienced applications engineers is free and unlimited.

Personal Computing Tools

Circle No. (91) on reader service card.

A free booklet is now available from **Namco Controls Corp.**, Mentor, Ohio, that presents an ***overview for choosing position or measurement sensors for the metals-producing and glass industries.*** Set in a question/answer format, the guide includes a number of sample applications that illustrate the more common problems encountered when choosing a sensing system for harsh environments. Proximity, photoelectric, and hot product sensors

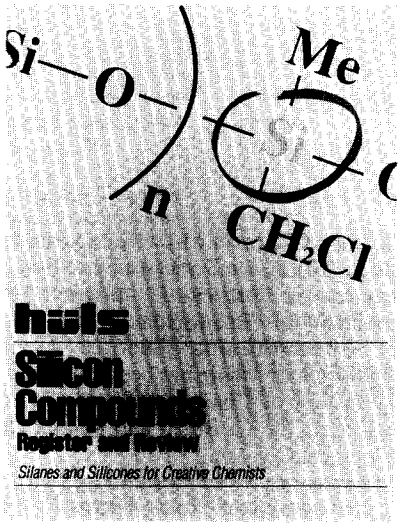


Namco Controls Corp.

(which detect infrared energy radiated from the hot object) are described, and their relative advantages and limitations are discussed.

Circle No. (92) on reader service card.

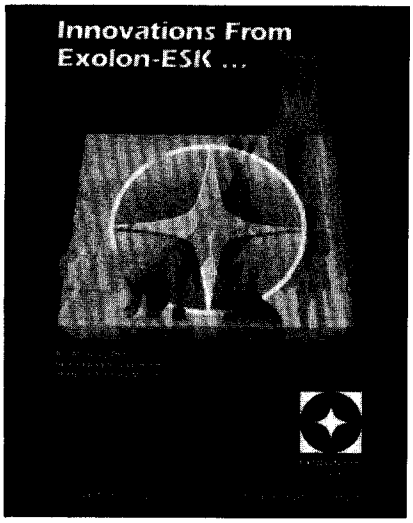
The new ***"Silicon Compounds Register and Review"*** is available from **Hüls America,** Piscataway, New Jersey. It is the most comprehensive ***compilation of silanes and silicones for chemists.*** The register describes project properties, molecular structures, and availability of nearly 1,000 silane and silicone compounds. In addition to a product cross-listing, an empirical formula index, and a section on silicones and silicon-containing polymers, the catalog features other relevant production information and technical articles.



Hüls America

Circle No. (93) on reader service card.

Exolon-ESK, Tonawanda, New York, has produced a new four-page, full-color brochure specifically for the refractory market. It features ***technical information on chemical analysis, physical properties, and applications of fused aluminum oxide and silicon carbide products*** that resist intense heat and chemical and molten slag attack.



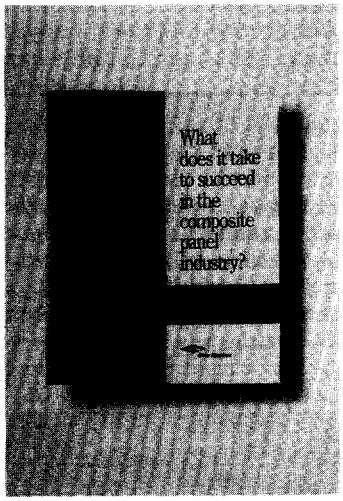
Exolon-ESK

Circle No. (94) on reader service card.

Information Handling Services, Inc., Englewood, Colorado, announces the ***ReCaL***, a database of passive electronic components including resistors, capacitors, inductors, and RCL networks. ReCaL is designed to address the needs of those involved in ***electronic design, component engineering, purchasing, specification, and maintenance.*** Information from over 280 capacitor and resistor manufacturers and 230 inductor manufacturers is included. ReCaL is the most complete database of its kind, covering over 1.1 million devices.

Circle No. (95) on reader service card.

Dow Plastics, Midland, Michigan, features ***polyurethane raw materials for wood composite products and technical development efforts*** in a new information brochure. ***"What Does It Take to Succeed in the Composite Panel Industry? The Strongest Bond You Can Make"*** reviews ISOBIND™ isocyanate binders for com-



Dow Plastics

modity and specialty wood products, and PAPI™ polymeric MDI and VORANOL™ polyether polyols for plywood patching compounds. Typical properties charts are included.

Circle No. (96) on reader service card.

Elf Atochem, Philadelphia, Pennsylvania, announces the availability of a new four-color brochure titled ***"Pebax® Resins Add the Right Touch."*** It provides ***product information and materials characteristics—including ranges of hardness, temperature, and flexibility***—of Pebax® thermoplastic elastomer resins. A comparison chart showing the hardness ranges of several comparative materials is presented.

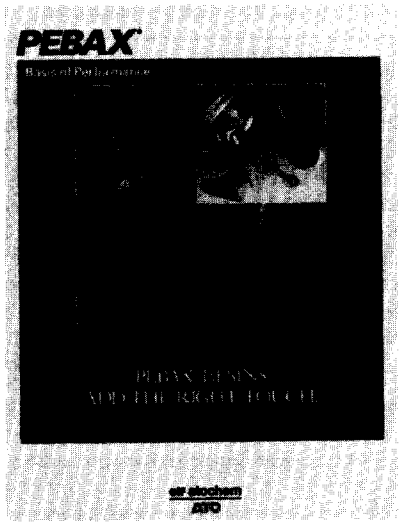
Circle No. (97) on reader service card.

The two-page product bulletin, No. V1320, describing the Model M10 in-line viscometer may be obtained from **Norcross Corp.**, Newtonville, Massachusetts. The Model M10 is used to ***determine the end point of polymerization reactions in pressurized chemical reactors.*** Engineered to measure viscosity within the limits of 0.1 to 1,000,000 cP, applications include processing of silicones, polymers, adhesives, and a variety of coating materials.

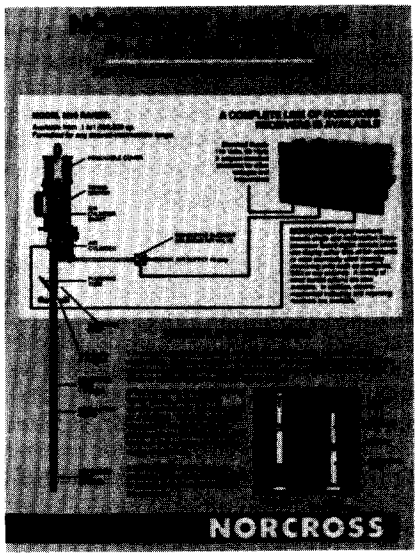
Circle No. (98) on reader service card.

A new 212-page catalog has been produced by **Air Products and Chemicals, Inc.**, which features its ***comprehensive line of specialty gases and equipment.*** It is designed to help customers optimize results in process and analytical applications. Guaranteed specifications and descriptions of each product, as well as U.S. Department of Transportation and regulatory information for gases and gas mixtures, are included along with detailed safety and safe handling procedures and troubleshooting tips.

Circle No. (99) on reader service card.



Elf Atochem



Norcross Corp.

Pace, Inc., Laurel, Maryland, has released its new fume extraction video, which vividly shows the wide ***variety of systems available for the removal of hazardous fumes created during hand soldering and other electronic production processes.*** The ARM-EVAC Systems feature articulating arms which can be fitted with a wide variety of nozzles and hoods for convenient, localized fume extraction. Low cost TIP-EVAC Systems extract soldering fumes right at the iron tip before they reach the operator's breathing zone. PRO-EVAC systems provide high-capacity fume extraction in electronic production applications including wave soldering and infrared reflow. These systems feature a proven three-stage filtration process for removal of particulates, gas, and odors with an overall efficiency of 99.997%.

Circle No. (100) on reader service card.

KUDOS

John Arimond has been promoted to Senior Design Research Engineer at **Rogers, Corp.**, Rogers, Connecticut. He has been with Rogers since 1985 and most recently held the position of Research Engineer. He will continue to work at the Lurie Research Center. His research involves the development of composite design rules and the support of automotive applications development for moldable phenolic composite materials.

The new Chairman of the Composite Institute (CI) of the Society of the Plastics Industry is ***Patrick F. Moore***, Vice President of Reinforcement Materials for **Owens-Corning Fiberglas Corp.**, Toledo, Ohio. Moore has been elected to a 3-year term as Chairman after 2 years of service on the CI Board and Market Development Council.

Retired consultant, ***Harry Farrar IV***, has been named a 1992 recipient of the ASTM Award of Merit for his distinguished service in the advancement of voluntary consensus standardization through participation in Committee E-10 and for contributions in the areas of reactor dosimetry and radiation processing.

Wean Industries, Youngstown, Ohio, has named ***Charles E. Coffey*** as Director of Manufacturing. Prior to his appointment, he was Production Manager of the Naval Systems Division of FMC Corp., Minneapolis, Minnesota.

Ed Clack has been promoted to Director of Coating Services, Southwest Region, for **Sermatech, International, Inc.**, Limerick, Pennsylvania.

The appointment of ***Gert F. Baumann*** as the new chairman of the **Miles, Inc. Polyurethane Division**, New York, New York, has been announced. He was previously the Division Vice Chairman.

Jeffrey G. Clevenger has been named a new Senior Vice President of **Cyprus Copper Co.**, Denver, Colorado. Clevenger joins Cyprus from Phelps Dodge Corp., where he served as President of Phelps Dodge Morenci mining complex in Arizona.

Recently named President of **Praxair Asia, Inc.**, Danbury, Connecticut, ***Jose L. Travassos*** will be responsible for the company's Asian operations, which include Union Gas Co., Ltd., Korea; PT, Sepanjang Surya Gas, Indonesia; and Iwatani Industrial Gases Corp., a joint venture in Japan. He was previously International Director for Praxair, Inc.

John J. Easton, Jr., has been sworn in by U.S. Secretary of Energy James D. Watkins, as Assistant Secretary for Domestic and International Energy Policy at the **U.S. Department of Energy**, Washington, D.C., He had been General Counsel at DOE.

The ASC Award of the Adhesive and Sealant Council, Inc., Washington, D.C., has been bestowed on ***William E. Leuchten***, Chief Executive Officer, **Essex Specialty Products, Inc.**, for his contributions of original research and significant scientific attainment toward advancing the adhesive and sealant industry, particularly in the areas of automotive glass bonding, auto adhesives, and fast-curing sealants.

Materials and the Environment

In an effort to preserve and maintain the fragile ecology of our planet, these selected abstracts are presented to help readers of ***Journal of Materials Engineering and Performance*** stay current on legislation and compliance with global environmental issues and regulations. They are reprinted from Metals Abstracts and Materials Business File with permission from Materials Information, a joint service of ASM International®, Materials Park, Ohio, and The Institute of Materials, London, England.

July - September, 1992

Ecology in the Anodizing Shop. An overview is given of revised environmental regulations as they affect water-consuming and waste-generating enterprises. The regulations concern packaging materials, water purification, rinsing baths, degreasing, etching, neutralization, anodizing, electrocoloration, densification, recovery of chemicals, and cleaning of waste waters. Reduction of sulfates constitutes the major challenge in the anodizing process, and this challenge requires motivation of all employees.
O. Gretler. Cited: *Oberflache Surface*, 32(8), 1991, 8-12, [in German]. ISSN: 0048-1270. PHOTOCOPY ORDER NUMBER: 199208-71-0184.

Make New From the Old—Avoiding, Rejuvenating and Disposing of Used Foundry Sands According to the Regulations of the Environmental Protection Office. German environmental regulations are reviewed as to their application to used foundry sands. Such sands may become waste products only when they can no longer be used. Some sands containing resins are subject to further regulation. Regulations define that the sands to be disposed of must be sorted according to the metal for which they were used, because of residual metal contents.
A. Schonfeld. Cited: *Maschinenmarkt*, 97, (29), 1991, 34-36, 38-39, [in German]. ISSN: 0341-5775. PHOTOCOPY ORDER NUMBER: 199208-51-1101.

Treatment of An Anodizing Waste to Water-Quality-Based Effluent Limits. Treatability tests performed on anodizing wastewaters demonstrated that hydroxide precipitation was a very effective treatment process for removal of Al, Cu, Ni, and Zn. The tests showed that water-quality-based limits for these metals could be achieved by single-state precipitation consisting of pH adjustment, clarification, and filtration. The optimum pH range for precipitation was 7.0 to 8.0. Because one set of tests showed optimum metal performance at pH values of 7.0 and 9.0, two-stage metal precipitation capabilities were incorporated into the design. Under this arrangement, the first stage would consist of pH adjustment to 9.0, followed by clarification, and the second stage would consist of pH adjustment to 7.5 followed by filtration.
M. Naziruddin, G.C. Patrick, and L. McCune. Cited: *Metal Finishing*, 90, (2), 1992, 69-74 [in English]. ISSN: 0026-0576. PHOTOCOPY ORDER NUMBER: 199208-43-0211.

Waste Management in the Steel Industry—A Suggested Approach. Integrated iron and steel works use approximately 5 to 6 tons of raw materials such as fuel, air, water, and power to produce 1 ton of steel. Almost all the steel produced in India comes from the conventional blast furnace route, where approximately 4 to 5 tons of waste are generated per ton of steel produced. At present, 15 to 20% of these wastes are used in the process of iron and steelmaking and the rest are dumped in the surroundings. The utilization figure in advanced countries is >80%, and in one of the steel plants in Japan, it is 98%. The utilization of waste largely depends on the technology adopted and the quality of raw materials. Such utilization reduces the production cost and ensures a better environment. There is tremendous scope for proper management of wastes in Indian integrated steel works. The nature of wastes and their present and proposed utilization are discussed. The alternate route of steelmaking through direct reduction and the mini steel