



new materials NEWS

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METALS AND METAL PRODUCTS

Improved Carboloy (R) Grade

Higher quality and hardness, and greater wear resistance are the characteristics of the improved Carboloy (R) 78B Cemented Carbide grade recently announced. Due to improved technology, all standard tool products in grade 78 and 78B are offered at a reduction of 25% in standard unground metal base price which will mean substantial savings in initial tool costs. Carboloy (R) 78B is available in a full line of utility and precision Pre-Honed disposable inserts and in brazed tooling. Inserts are factory Pre-Honed for faster cutting and longer tool life. The line also includes most standard blanks from 0000 to 7000 styles. Special shapes and sizes are available as well.

(Metallurgical Prod. Dept., General Electric Co., Detroit 32, Mich.)

Pressed and Sintered Molybdenum and Tungsten

Large diameter pressed and sintered tungsten and molybdenum metal is now available for today's expanding rocket, missile, and high temperature applications where massive pieces of these unique metals are required. Molybdenum is available in diameters through 12", tungsten through 9". Made by hydrostatic pressing (sometimes referred to as cold pressing), molybdenum and tungsten are available in a variety of large shapes -- forging billets, consumable electrodes for vacuum arc melting, preforms, slabs, tubes, and other basic forms. Minimum density is 95% for PS (pressed and sintered) molybdenum, 92% for PS tungsten. Density can be varied in tungsten in the range from 65 to 95%, $\pm 3\%$. (Write for Marketing Letter 60-3)

(Lamp Metals & Components Dept., General Electric Co., 21800 Tungsten Road, Cleveland 17, Ohio)

Metal Hose With Teflon Core

Anaconda Metal Hose has developed and marketed their Type T-4 Hose with a core of Teflon, reinforced with closely-woven stainless steel wire braid. End fittings are mechanical, reusable type, and can be attached at job site without special tools. Descriptive engineering Bulletin TC-46 available without obligation.

(Anaconda Metal Hose, Dept. G, PO Box 791, Waterbury 20, Connecticut)

Aluminum Alloy for Screw-Machine Parts

A new aluminum alloy, to replace the older Alloy 6061-T6 for screw-machine parts, providing higher strength and improved machining qualities, is Alloy 6262-T9. It is an aluminum-magnesium-silicon alloy modified with small amounts of lead and bismuth. The tensile strength is 58,000 psi, yield strength 55,000 psi, and elongation 10%. It has the same corrosion resistance as alloy 6061-T6. It comes in round and hexagonal rods in 12 ft. lengths.

(Aluminum Company of America, Pittsburgh 19, Pa.)

High Purity Silver

Silver of a purity of 99.999% for semiconductor and other electronic uses is now available in needles of 1 mm to 3 mm size, in ingots and in wire and sheet. The metal has no more than 1.6 parts per million of iron, 1.4 parts per million of magnesium, and not more than one part per million each of copper, nickel, and silicon. The pure metal has the trade name Spectropure silver.

(Engelhard Industries, Inc., 113 Astor St., Newark 2, N. J.)

Improved Copper Alloy

An improved copper alloy for electrical parts, designated as leaded nickel-copper 831, has a nickel phosphide finely dispersed through the metal which gives increased strength and good machining properties. The alloy contains 97.8% of copper, 1% lead, 1% nickel, and 0.2% phosphorus. The nickel phosphide formed in solid solution in the alloy is dispersed by heat treatment. Minimum properties given for the alloy are: tensile strength 85,000 psi, yield strength 75,000 psi, elongation 5%, electrical conductivity 55% that of copper. Its machinability is about 80% that of a free-cutting brass. At present it is being marketed in round rods 3/32" to 1-1/4" in diameter.

(The American Brass Company, Waterbury 20, Conn.)

New High-Temperature Steel

Armco alloy 21-6-9 is a new steel for high-temperature parts that is featured as being superior to standard grades of stainless steel in physical properties, at a lower cost. It is a modification of an automotive engine valve steel, and contains about 21% chromium, 6% nickel, and 9% manganese. It comes in sheets and cold-rolled strip, and is recommended for such uses as baffles and heat-exchanger parts operating at temperatures to about 1650 F.

(Armco Steel Corporation, Middletown, Ohio)

Prehardened Die Steel

Prestem 5M21 is a new prehardened die steel for die-casting dies and for press dies where heat resistance is required. The nominal composition is: 3.3% molybdenum, 3% nickel, 0.65% manganese, 0.30% silicon, 0.15% maximum chromium, and 0.20% carbon. It is furnished in hardnesses of Rockwell C36 to C40, and Rockwell C41 to C45, but the same alloy can be had annealed for easier machining under the name of Presneal. (Heppenstall Company, 4620 Hatfield St., Pittsburgh 1, Pa.)

CHEMICALS

New Catalyst for Producing Plastic Resins

A new chemical of unusual type is Lupersol 101, a liquid diperoxide with two peroxide groups of the empirical formula, $O_8C_4 \cdot O \cdot O \cdot C_4O_8$, with one carbon in each joined at one CH_2 in each group. Used as a catalyst in producing plastic resins, the material has the unique property of breaking down in two steps at different energy levels and initiating chain growth at both ends, forming longer polymer chains and giving resins of greater strength, improved elasticity and impact strength, and freedom from stress cracking. Polyethylene cross-linked with the material retains its cold-temperature properties up to the crystalline melting point, thus making it suitable for such uses as plastic piping for temperatures to above 250 F. The chemical is a stable liquid acting in both acid and alkaline conditions. Molding can be done at higher temperatures than normal for each type of resin.

(Wallace & Tiernan Inc., Buffalo 5, N. Y.)

Double-Bonded Unsaturated Glycol

Another versatile chemical now available for the first time in commercial quantities is Butenediol. It is a double-bonded unsaturated glycol produced from acetylene by condensing with formaldehyde at high temperature and pressure. The material forms esters, and also reacts with dienes such as anthracene to produce plastic polymers. Polyurethane rubber made from it has an elongation of over 300% and a tensile strength above 5000 psi. The Chemical can also serve as an intermediate for the production of fungicides and other products.

(General Aniline & Film Corp., 435 Hudson St., NY 14, NY)

Thickener for Latex Paints

Modicol VI is a new thickener for use in latex paints which gives high viscosities at low concentrations and does not yellow or cause efflorescence. It is a solution of a modified ammonium polyacrylate in the form

of a clear water-white liquid of 50% solids. It is immune to mildew or bacterial attack.

(Nopco Chemical Co., Inc., 60 Park Place, Newark, 2, N. J.)

High-Boiling Solvents for Lacquers

Two new high-boiling solvents for nitrocellulose, vinyl, and acrylic lacquers, are Pent-Oxone and Pent-Oxol. They give lacquers and varnish of low viscosity with good flow and superior gloss. In nitrocellulose lacquer they provide high blush resistance. The first is a keto ether, and the second is a glycol ether with the C:O group in the molecule replaced by a CH·OH group. The first has a boiling range of 147 C to 163 C, and the second has a range from 163.8 C to 167 C. The flash point is about 140 F. (Shell Chemical Co., Industrial Chemical Div., 50 West 50th St., NY 20)

New Catalyst Carrier

A new catalyst carrier, Macroport A, is an aluminum oxide in the form of spheres of a highly porous structure which permit gases to enter and diffuse readily. The spheres are 5/16" to 3/8" diameter with a porosity of about 45%, and a pore diameter range of 50 microns to 200 microns. The apparent specific gravity is about 3.5, with a packing density of 65 lb. per cu. ft.

(Norton Company, Worcester 6, Mass.)

PLASTICS

Miniature Nylon Screws

"Watchmaker" size Molded Nylon Machine Screws are now available in 0-80, 1-72, 2-56 and 3-48 thread sizes with fillister, flat and round heads. Stock lengths are from 3/16" to 17/32". Miniature Screws were developed to meet one or a combination of the following application requirements: electrical insulation, compactness, light weight, resistance to abrasion and corrosion, and vibration resistance (Nylon's ability to deform under load makes possible interference fits for self-locking applications). (Gries Reproducer Corporation, New Rochelle, New York)

New Viton Compound with Superior Compression Set Resistance

Haveg Grade 16075 Viton Compound is a new material especially formulated to provide superior compression set resistance under severe operating conditions. Outstanding properties include excellent resistance to high temperatures, aromatic fuels and hydraulic fluids which together with superior compression set resistance made Haveg Grade 16075 especially well suited for seal applications on all types of aircraft engines and

equipment. In addition, resistance to ozone, oxidation, weathering, flame and corrosive acids makes this new material a strong candidate for applications involving abnormally severe service. (Haveg Industries, Inc., Taunton Div., Taunton, Mass.)

Improved Plasticizer for Vinyl Resins

A new plasticizer for vinyl resins that is also a heat and light stabilizer and a fungi inhibitor, making the vinyl plastic products suitable for outdoor use is being marketed as Flexol PEP. It is a complex apoxy tetrahydro phthalate with good compatibility and plasticizing effectiveness. It is a liquid of molecular weight 466.7. As little as 5% in the resin can be used for stabilizing alone, but as much as 70% can be used for plasticization combined with stabilization.

(Union Carbide Chemicals Co., 270 Park Ave., New York 17, N. Y.)

Clear, Flexible Silicone Potting Material for Electronic Assemblies

A new clear silicone potting and embedding compound known as LTV 602 (low temperature vulcanizing) provides mechanical and dielectric protection for electronic components and assemblies. It provides excellent protection against shock, vibration, moisture, ozone and corona and other environmental hazards of the space age, and cures at 70 C to 80 C to a flexible, resilient solid which is self-supporting and non-flowing. Because of its low viscosity in uncured form (800 to 1500 centipoises), LTV-602 flows freely in and around complicated parts. Delicate parts are not damaged by stress during cure.

(Silicone Products Dept., General Electric Company, Waterford, N. Y.)

New Packing Material for Chemical Equipment

Chemical resistance, low coefficient of friction, and long wear life to cut down maintenance cost, are the features of a new Teflon braided packing for pumps and chemical equipment. It is made of Teflon fiber, and the braided material is impregnated with 35% by weight of Teflon plastic. The tensile strength is 50,000 psi, compressive strength 60,000 psi, and the coefficient of friction is 0.02. Tests indicate a wear life seven times that of asbestosgraphite packing. The material comes on spools.

(E. I. duPont deNemours & Co., Inc., Wilmington 98, Delaware)

Oil-Extended Styrene-Butadiene Rubber

A new oil-extended styrene-butadiene synthetic rubber which is claimed to process at least 30% better than conventional rubber of this type, is being

marketed as Plioflex 1778. The improved rubber is light in color and otherwise retains the properties of SBR rubber. It is a general-purpose rubber.

(Goodyear Tire & Rubber Co., Inc., Akron 16, Ohio)

Rigid Urethane Foam

Rigid urethane foam that retains up to 65% of its normal compressive strength at a temperature of 600 F, and does not begin to carbonize until above 900 F, is being marketed as Carthane 1008. It is a polymethylene polyphenyl isocyanate of low molecular weight. The foam, in densities from 3 lb. to 40 lb. per cu. ft., is recommended for structural insulation and vibration damping. The material may be had as a liquid which will flow into complicated mold shapes to form foams of good strength and shock resistance. It has long pot life.

(The Carwin Co., North Haven, Conn.)

Electrically-Conductive Gasketing Material

To meet the need for an electrically-conductive gasketing material, a new sheet material, Cohrlastic conductive gasketing, is offered. It is made of aluminum wire cloth impregnated with a silicone rubber. It comes in two grades, No. 8516 with 30-mesh wire cloth, and No. 8520 with 24-mesh cloth, both flexible enough to conform to irregular surfaces. It is impervious and chemical resistant and has an operating temperature range from minus 65 to plus 500 F. Uses include shielding between magnets, wave-guide gaskets, and in ignition harnesses.

(The Connecticut Hard Rubber Co., New Haven 9, Conn.)

LABORATORY MATERIALS

New Synthetic Fiber Paper

Now in pilot-plant production is a new synthetic fiber paper for motor and other electrical insulation at temperatures to 130 C. It is made from acrylic fibers with an acrylic resin binder, and is uniform, smooth, and fuzz-free. The dielectric strength is 750 vpm. The specific gravity (1.15) is lower than that of ordinary rag paper or polyester film. The internal tear strength is higher than that of rag paper, but the edge tear strength is lower. It has high resistance to hydrolytic degradation and has the chemical resistance of the acrylic resin.

(Rogers Corp., Rogers, Conn.)

New Synthetic Mica Sheet Material

A new synthetic mica sheet material now in pilot-plant production is Synthamica 202, recommended for motors, transformers, capacitors, and electronic equipment. It is made from a heat-resistant grade of synthetic mica flake, and is in continuous strips 3" wide, in thicknesses from 0.002" to 0.007". The dielectric strength is up to 1000 vpm, and its operating use temperature is up to 1800 F. Tensile strength is up to 10,000 psi. Outstanding advantages of built-up mica sheet over natural mica for electrical insulation are the great uniformity not found in natural mica and the production economies possible with uniform continuous strip, as compared with the small irregular pieces of natural mica.
(Mycalex Corp., 20 Passaic Ave., Caldwell Township, N. J.)

Plastic Insulating Film

Available as yet only in pilot-plant quantities is a new plastic insulating film with a dielectric strength of 1860 vpm and a remarkably high dielectric constant and low dissipation factor. The material, called Cyanocel, is a cyano ethylated cellulose, and can be had in transparent films with thicknesses down to 0.001". The tensile strength is about 5400 psi. It is recommended for capacitors and other electronic uses.
(American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.)

COMMENTS

The claims in this report are those of the manufacturer and, although screened before printing by technical personnel in various interested departments, they have not necessarily been verified. Those interested will communicate directly with the manufacturer and make their own evaluations.

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