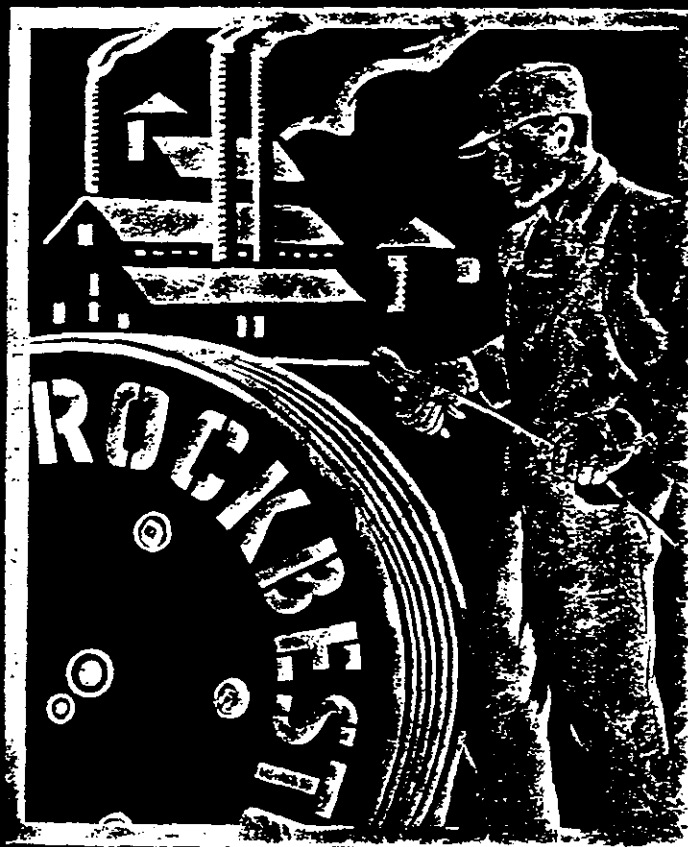


ROCKBEST



Permanently Insulated
WIRES, CABLES and CORDS
for Industry

This is the Rockbestos Handbook and Catalog No. 10-E which illustrates and describes wires, cables and flexible cords designed for use where electric wiring, either in conduit or open, is exposed to heat, fire hazard, corrosive fumes, vapors, oil or grease.

All data subject to change without notice.

ROCKBESTOS PRODUCTS CORPORATION

Main Office and Works

NEW HAVEN 4, CONNECTICUT, U. S. A.

District Offices listed on back page



World's largest factory devoted exclusively to the manufacture of permanently insulated wires, cables and cords.

MAIN OFFICE AND WORKS
ROCKBESTOS PRODUCTS CORPORATION
 NEW HAVEN 4, CONNECTICUT, U. S. A.

"Rockbestos" is the name of a wide *line* of wires, cables and cords designed to operate without failure under severe conditions.

In designing the insulation for wires which will be exposed to heat, corrosive fumes, smoke, oil, grease or fire hazard we have found asbestos to be the broad common denominator because this unique material not only remains unchanged under heat and is, therefore, absolutely fireproof but in addition, is inert and therefore unaffected by age.

But asbestos is only one ingredient of Rockbestos insulation. Other insulating materials such, for example, as varnished cambric, glass and synthetic resins contribute to the overall performance of a number of Rockbestos wires. Then there is the selection of impregnating compounds — an entire field by itself. Rockbestos has developed its own time-tested impregnating compounds and finishes with heat, flame and moistureproof characteristics but chemical research in many laboratories is producing dozens of new materials and all these are being tested without prejudice that we may utilize the best characteristics of many materials and produce wire that operates without failure *within constantly enlarging limits*.

Two lines — A.V.C. and All-Asbestos — have been standardized and constitute the bulk of the wires shown in this handbook but the explosion-proof AC secondary network cable and the moisture resisting and fireproof non-leaded vault cable are examples of the special group of Rockbestos wires where asbestos and other insulating materials or special compounds have been combined to produce a wire which will meet certain rigid specifications.

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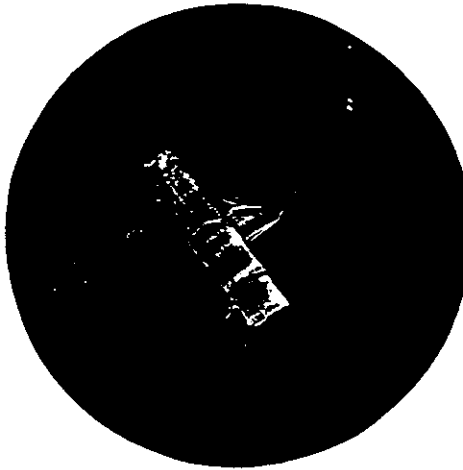
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ASBESTOS . . older than the Centuries

There's real romance in drawing on the Earth for the asbestos insulation of Rockbestos wires, cables and cords. That unique, non-metallic mineral—a natural formation in the earth—is practically as old as Earth itself, formed at the time when glowing clouds hung low over the new planet, when warm, seething, steamy seas, mud oceans and molten lava ebbed and flowed over the restless surface of our globe during the turmoil of creation . . . when Earth's crust was slowly cooling, hardening; when mountains were being upthrust by subterranean upheavals and when terrific pressures were combining water, silica and magnesia into rock-like strata which later came to be known as . . . Asbestos.

This is what science believes to be the explanation for the wide occurrence of asbestos over the Earth's surface. At any rate, all agree that Asbestos is millions of years old in its present form — that it has not changed in the memory of Man and that its present form is probably the form it first took back in the dawn of Earth's birth.



Hard as a rock in the vein, asbestos is soft as silk when fiberized. Each silky fiber is a crystal 1/500,000th of an inch in diameter.



A million-year-old handful! This asbestos has been completely fiberized and prepared and is now ready to be carded into roving.

Asbestos is found on every continent—generally in commercial quantities. Asbestos deposits vary greatly, however, and not all of it, by any means, is suitable for use as electrical insulation of wires.

Some of these deposits are relatively pure, i. e., free from iron content, while others have a high iron content so that the asbestos from these latter, unless cleaned in some way in an attempt to remove the iron particles and other impurities, is useful only for such mechanical asbestos products as shingles, fireproof board and so on.

For years we have investigated the world sources of asbestos to find and secure the softest, silkiest, purest, long fibred asbestos—and we find it in certain deposits of Chrysotile (Serpentine Group)—the aristocrat of the asbestos family.

This asbestos is mined, broken up, fiberized, subjected to special refining processes and then combed and carded into soft, fluffy roving. In this form it is applied to the conductor, impregnated with neutral insulating compounds, and compressed into the felted wall which is Rockbestos insulation — a protective covering that is not only fireproof but practically impervious to the destruction normally caused by heat, oil, grease, corrosive fumes or age. What a material to use where endurance and resistance to deterioration are important!

USES for ROCKBESTOS WIRES



RHEOSTAT WIRING

For connections between grids and from grids to faceplates use Table A and R rheostat wire and cable, pages 48 and 50. These All-Asbestos insulated wires will not deteriorate under constant high temperatures. The very nature of the All-Asbestos insulation prevents its ever growing hard and brittle and cracking as happens with rubber insulation, for example, under heat. Its initial mechanical and electrical characteristics are permanently retained.

LIGHTING AND CONTROL CIRCUITS IN CONDUIT

Use A.V.C. Boiler Room Wire, Table C, page 25, for solid conductor. For stranded conductor use A.V.C. Power Cable, Table E, page 26, or A.V.C. Control Cable page 36.

It experience shows severe condensation allowing water pockets to form and continue for long periods, use Lead Sheathed A.V.C. Power Cable, Table EL, page 28. This wire will stand up under conditions ranging from complete and continuous submersion to high and dry temperatures.



POWER CIRCUITS UP TO 5000 VOLT SERVICE

Many times important circuits are located where severe conditions prevail. Rockbestos A.V.C. Power Cable is designed to stand up without failure under conditions of heat and moisture, corrosive fumes, oil, grease or fire hazard. For applications where cable may be submerged in water specify lead sheathing.

600 Volt A.V.C. Power Cable, Table E, is described on page 26. For service voltages above 600 use Table EM, F, G or H cable shown on pages 29, 30, 31 and 32.

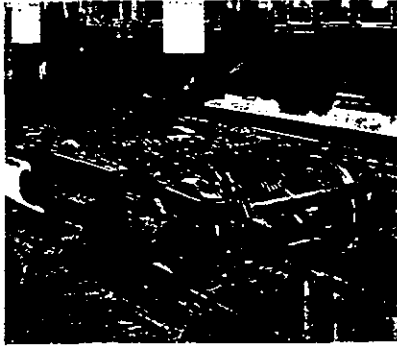
CONDUIT WIRING AROUND FURNACES, OVENS, SOAKING PITS, LEHRS, TENTER FRAMES, ETC.

Use Rockbestos A.V.C. Boiler Room Wire, Table C, or Rockbestos A.V.C. Power Cable, Table E, pages 25 and 26.

For service voltages above 600, use Rockbestos A.V.C. Power Cable, Tables EM, F, G or H shown on pages 29, 30, 31 and 32.



SUBWAY CAR AND LOCOMOTIVE WIRING

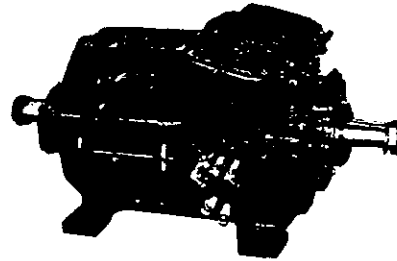


The combination of heat and vibration to which the wiring of subway cars, electrified railway locomotives, electric mine locomotives and steam locomotives is almost constantly subjected, is ruinous to ordinary wire insulation. Rockbestos A.V.C. Motor Lead and Apparatus Cable, and A.V.C. Mining Cable, designed to meet builders' requirements for heatproof and fireproof cable for railway and mine locomotives, finds several applications in electric cars and locomotives for shoe leads, trolley leads, transformer and motor leads. It remains permanently flexible due to the non-deteriorating characteristics of the insulation and its flame, heat and moisture resisting qualities are equally permanent. See pages 33 and 34. Rockbestos Flexible Cord and Headlight Wire is used by many railroads for cab lighting and gauge lighting as well as for circuits to headlights and classification lights. See pages 55, 56 and 59.

MOTOR LEADS, WINDINGS AND COIL CONNECTIONS

Rockbestos A.V.C. Motor Lead and Apparatus Cable — heat resisting, fireproof and permanently flexible — is ideal for leads and coil connections. It is widely used by steel mills, on electrified railroads and on elevated and subway railways. An important point is that it remains permanently flexible because its insulation does not grow hard or brittle with heat or age. See page 33

Another important point is that A.V.C. Cable cannot burn. When A.V.C. Cable comes in contact with a hot fire there is a small amount of black smoke given off for a minute or so and after that the cable simply glows red hot. There are *no* dense clouds of smoke at any time — *no* choking fumes — because A.V.C. insulation simply *will not burn*. The hazard of burning insulation is thereby completely eliminated when a locomotive or car is wired with Rockbestos A.V.C. Motor Lead and Apparatus Cable.



We have made special studies of motor lead applications on rolling stock from the point of view of determining the maximum flexibility of conductor. As a result of this experience we are in a position to help railroad and railway engineers write a specification for a motor lead cable which will have the maximum flexibility and at the same time possess fireproof and moisture resisting qualities.

Windings: The use of heat resisting magnet wire, replacing cotton, is on the increase. While it is somewhat higher in price than the more usual types, it is actually less expensive to use if severe operating conditions burn out windings made of ordinary wire. A motor wound with Rockbestos Magnet Wire and equipped with Rockbestos A.V.C. Cable for leads and coil connections, is just about as failureproof, electrically, as a motor can possibly be. Magnet wire is an item of such importance that we publish a separate bulletin on it.

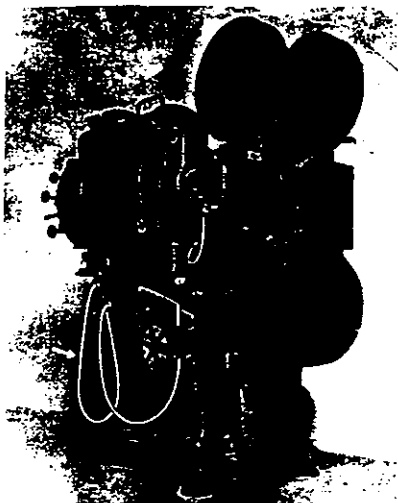
SWITCHBOARDS AND PANEL BOARDS



Rockbestos originated and patented the first switchboard wire with the A.V.C. insulation. This is a genuinely fireproof wire but besides that wiremen like it because it does not crack when sharp bends are made when wiring boards. That is because the felted asbestos wall on top of the varnished cambric (see cut, page 38) acts as a cushion, instead of being stiff and unyielding; result, a smooth, square bend.

For jumper connections to hinged panels use Rockbestos Hinge Cable, page 40, which is similar in appearance, size and electrical characteristics to the Table B Switchboard Wire.

Like Rockbestos Hinge Cable, our A.V.C. Switchboard Bus Cable matches Rockbestos Switchboard Wire in appearance and characteristics. See page 41. The use of this family of switchboard wires insures a matching appearance without painting and makes possible a real fireproof wiring job.

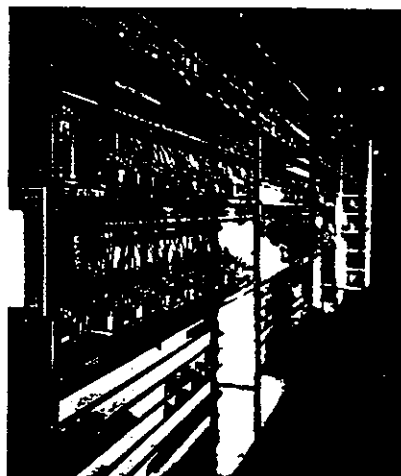


RAILROAD SIGNAL TOWERS AND SWITCHBOARDS

Signal towers are the nerve centers of railroads and their smooth and uninterrupted operation is a vital necessity. Many towers contain hundreds of thousands of feet of wire concentrated in a comparatively small space. Wherever wires are massed or banked together, as they are in signal towers and on the backs of switchboards, a fire hazard exists and it is becoming more and more common for signal engineers to insist upon a genuine fireproof wire for this use regardless of accepted standards of application. Rockbestos A.V.C. Signal Wire described on page 58 is both heatproof and fireproof.

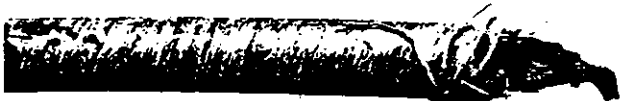
SPECIAL EQUIPMENT

Motion picture projectors are typical of certain classes of apparatus in which wire is exposed to extremely high temperatures as well as a high degree of fire hazard. Temperatures of 400°F. are not uncommon and the wire used in these installations must possess and maintain absolute incombustibility. In addition a high degree of flexibility is frequently required. The Rockbestos Extra Flexible All-Asbestos Apparatus Cable shown on page 52 meets all of these requirements — it cannot grow hard or brittle under the attack of heat, remains permanently flexible and positively will not burn.



SECONDARY NETWORK CABLE

The modern method of distributing power in densely populated communities is by means of a low voltage A.C. secondary network distribution system. Power is distributed at the using voltage, currents are heavy and the load is fed from several sources. The successful operation of a system of this kind requires that when cable faults occur they shall clear themselves cleanly and quickly with a minimum of burning and the cable shall not produce smoke, or explosive, inflammable or toxic gases. Rockbestos A. C. Secondary



Network Cable was developed as a single-purpose cable for this application. It cannot burn, cannot produce smoke or inflammable or toxic gases, clears cleanly and quickly under fault conditions. The untouched illustrations show what occurs under fault conditions. The lead sheath has partially melted off the two top cables and the one in the lower foreground reveals an unburned tube of insulation which was left when the copper melted out. The illustration below shows the fault point of a cable from which the copper melted and ran out, leaving several inches of hollow insulation. See page 62.

GENERAL CHARACTERISTICS and ANSWERS TO COMMON QUESTIONS

WHERE SHOULD ROCKBESTOS WIRES BE USED?

Wherever electric wiring is exposed to heat, heat and moisture, fumes, vapors, oil, grease or fire hazard. Throughout industry there are places where wiring is unavoidably exposed to some of these conditions.

In power stations and industrial plants interruptions to service frequently occur because wire insulation fails due to heat, fumes, vibration or age or a combination of these conditions. The use of Rockbestos wires reduces to a minimum failures from these causes because Rockbestos insulation, being inorganic, is highly resistant to these deteriorating conditions.

It is especially important to note that Rockbestos insulation does not dry out with age nor grow hard or brittle, consequently Rockbestos wire can be installed on a truly permanent basis.

IS ROCKBESTOS JUST ANOTHER NAME FOR "SLOW-BURNING" WIRE?

Not at all. Slow-burning wire — sometimes referred to in error as "that hard, white asbestos wire" — contains no asbestos whatever.

Slow-burning wire is made by applying two or three cotton braids to a wire and finishing each braid with flameproof paint. The flameproof paint finally dries up, crumbles and separates from the braid because the braid was not impregnated but simply painted with it.

The basis of Rockbestos insulation, on the other hand, is the felted wall of asbestos. This felted wall is formed as a continuous impregnated insulating sheath — uniform in thickness, firm, dense, highly compressed yet flexible and without laps, joints or seams.

The ability of asbestos to withstand heat is unquestioned, so the felted wall is not merely a flameproof but a real heat resisting insulation. Even when subjected to continuous high temperature there is practically no deterioration — it does not grow hard or brittle — does not crack. These non-deteriorating characteristics make Rockbestos unique among wire insulations.

The insulating compounds with which the felted wall is impregnated are chemically neutral and were especially developed for asbestos insulation. They are an integral part of the felted wall — not painted on afterward — and, like asbestos, they retain their characteristics indefinitely. The felted wall of asbestos is permanently flexible.

Rockbestos A.V.C. insulation is the felted wall of asbestos as just described, reinforced with an embedded high dielectric insert.

The characteristics of our insulations are such that the impregnating compounds will not drip from the wire at any temperature. At extremely high temperatures — 400 to 600 degrees F. for example — our impregnating compounds begin to vaporize and at the melting point of copper — 1083 degrees C. — they will have entirely disappeared, along with the water of crystallization of the asbestos, leaving a perfectly dry tube of insulation which usually covers the conductor but lacks mechanical strength. Exception: Rockbestos A. C. Secondary Network Cable, see page 62.

Slow-burning wire has low moisture resistance, yet a good deal of it has been put into conduit in hot places under the mistaken impression that it was Rockbestos. Naturally when condensation occurred, as it almost always does in conduit at some time or other, the moisture found its way through the cotton braided coverings, causing grounds and short circuits.

Rockbestos A.V.C. insulated wire and cable on the other hand is distinctly suitable and recommended for conduit installations. It will successfully resist heat, moisture, fumes, oil and grease and it positively will not burn or transmit flame under any conditions.

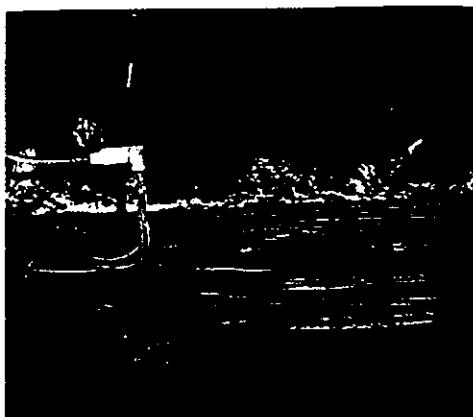
IS THERE ANY RUBBER IN ROCKBESTOS INSULATION?

No. There is, however, a similarity of appearance between a felted wall of asbestos impregnated with black insulating compound and a rubber belt insulation. Close inspection of the former, however, reveals its fibrous nature.

Except in wires and cords for special applications, such as heater cord and some railway wires in which rubber is adequately heat protected with asbestos, we use no rubber whatever in Rockbestos wires. That is because rubber has distinct temperature limitations and is unsuitable for use where a fire hazard exists.

ROCKBESTOS

HEATING CABLE



This cable is ideal for many applications where a mild heat must be distributed evenly over a fairly large area, and can often be used to better advantage than spot, space or strip heaters.

Rockbestos Industrial Heating Cable, originally developed as a heat source for the forcing of early spring plants in hotbeds and propagating benches, has been used by a number of our customers for the economical reduction of heat-loss. They found that by winding it around pipes, liquids could be kept flowing at points where they congealed. Soap, paint, varnish, chocolate, molasses, ink and sulphur are easily kept at the right consistency to prevent clogging of conveyor pipes. A steel mill uses it on roll-necks to prevent lubricants from congealing.

A power company used a quantity of Rockbestos Heating Cable in a set of specially

designed trash racks in one of its hydro-electric power stations to prevent needle-ice from sticking to the bars. In a most unique installation, the heating cable was embedded in a section of cement sidewalk for the purpose of keeping it free of snow and ice.

Some plants use Rockbestos Heating Cable to prevent wet pipe sprinkler systems, waste pipes and water lines in unheated areas from freezing. Gutters and down spouts can also be kept free and clear of ice with it. See page 64.

EXTENSION CORD

For general extension work where cord is dragged over floors, sharp corners, stones, gratings, etc. nothing excels a good rubber jacketed cord.

However, in some places where other conditions, such as heat, oil or grease, deteriorate the cord and cause failure, we recommend Rockbestos A.V.C. Flexible Cord shown on page 56. For use in dry locations such as on cord pendants, the All-Asbestos Flexible Cord on page 55 will be satisfactory.



HEATING APPLIANCES



For years we have furnished fine heater cord to many of the country's largest manufacturers of domestic heating appliances. We have also furnished heater cord for many industrial heating appliances such as soldering irons, glue pots, hot plates, heavy flatirons, branding irons, as illustrated, and many special heating forms used in the shoe industry.

The cords on these appliances are subject to a good deal more than ordinary wear so that when we recommend Rockbestos Heavy Duty Heater Cord for these uses, we do so knowing that its use will cut down replacements and cord expense. See page 57.



LIGHTING FIXTURES

Modern fixture design has produced gas filled high wattage units, indirect lighting and flush type fixtures in which the wire entering the socket is exposed to temperatures ranging between 50 and 200°C. The resulting induced heat creates high conductor temperatures from 3" to 12" back from the socket which dry out and crack ordinary insulation. Under such conditions uninterrupted service can be assured only by wiring with a genuinely heatproof wire.

For office and domestic fixtures Rockbestos single conductor heat resisting fixture wire is recommended. See detailed information on page 53. For cord pendant fixtures the permanently insulated heat resisting Rockbestos Flexible Cords described on page 54 will be found useful.

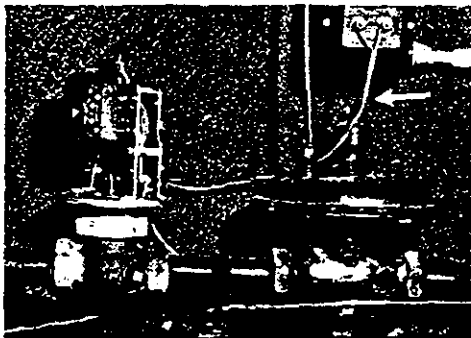
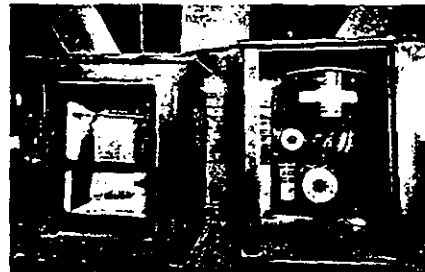
Power company and industrial plant electricians have installed millions of feet of Rockbestos A.V.C. Boiler Room Wire in the lighting circuits of boiler rooms, engine rooms, kiln rooms, steel mills and other hot places where it is giving trouble-free service. Many electricians run this same wire right into the lighting fixtures, which gives them heatproof wiring from the distribution

panel to the socket terminals. Although Rockbestos Boiler Room Wire is a little larger than the wire ordinarily used, industrial fixtures usually have enough clearance to accommodate it. See page 25.

NOTE:—Allied to lighting fixtures is the problem of providing the higher currents required by the increase, during the last few years, of the average wattage of lighting fixtures and the increase in the number of fixtures. Frequently the size of the conduit originally installed will not permit an increase in the size of the feeders. A solution in a number of cases has been to replace the old feeders, usually rubber-covered wire, with A.V.C. wires which have a higher carrying capacity rating and can be operated under higher conductor temperatures. Our engineering department will gladly make recommendations.

PYROMETER LEADS

Wherever pyrometers are installed there are high temperatures to which the wiring is usually exposed. Rockbestos insulated pyrometer wires, with their desirable heat resisting and fireproof characteristics, are being increasingly used throughout industry for pyrometer leads and fire-ends. See page 60.



INTERCOMMUNICATING, SIGNAL AND TEMPERATURE CONTROL CIRCUITS

Rockbestos Thermostat Control Wire has the permanent heat resisting and fireproof characteristics of our other wires and cables. It fills a demand for a small armored signal and control cable for use in steel mills and industrial plants where permanent installations are essential. See page 61.

ROCKBESTOS

HOW MANY TYPES OF ROCKBESTOS INSULATION?

There are two standard types —

(a) Rockbestos A.V.C. insulation, a construction originated, developed and patented by Rockbestos (U. S. Pat. No. 1,840,282 — 1,861,404) consisting of a felted and impregnated wall of asbestos with an insert of high dielectric material embedded in it.

(b) Rockbestos All-Asbestos insulated wires on which the covering consists of a felted and impregnated wall of asbestos.

Both types are usually finished with braided coverings of asbestos or cotton yarn.

IS ROCKBESTOS SUITABLE FOR CONDUIT INSTALLATIONS?

Yes. Rockbestos A.V.C. wire is designed for conduit installation. See detailed recommendation beginning on page 14.

Rockbestos A.V.C. wire is impregnated to successfully meet moisture conditions in conduit such as are caused by condensation. While it is not a submarine type of wire it has ample margin of safety for all ordinary conduit moisture. In locations where it is known that wire will be submerged for long periods we recommend lead sheathed A.V.C. constructions.

ARE ROCKBESTOS WIRES BIGGER THAN OTHER TYPES?

In the larger sizes Rockbestos cables run slightly smaller in diameter than other types. In all but a few cases involving the smaller size wires, the same size of conduit which will accommodate a given number of other types of wires, will also take a like number of Rockbestos A.V.C. wires or cables.

For specific conditions see conduit size tables for Rockbestos Boiler Room Wire and Power Cables on pages 21 to 24.

WHAT ARE THE CARRYING CAPACITIES OF ROCKBESTOS WIRES?

Rockbestos wires and cables have greater carrying capacity than other types of insulated wires because of the well known heat-resisting characteristics of asbestos which is the basis of Rockbestos insulation. Specifically, a given size of Rockbestos insulated conductor will carry a higher current than other types of insulated wires. Conversely, where a given current is to be carried a smaller size Rockbestos wire can be safely used than would be required with wire having other types of insulation. See Table of Allowable Current Carrying Capacities on reverse side of Rockbestos Calculator in the back of this catalog.

WHAT IS THE VOLTAGE RANGE OF ROCKBESTOS WIRES?

Rockbestos wires and cables can be supplied for rated voltages up to 5000.

WHAT IS THE SIZE RANGE OF ROCKBESTOS WIRES AND CABLES?

The Rockbestos line includes various single conductor constructions ranging up to 2,500,000 C.M. in size. Multiple conductor cables can be manufactured up to a diameter of approximately 2½ inches.

ARE ROCKBESTOS WIRES APPROVED BY THE UNDERWRITERS?

Yes. All types of wire shown in this bulletin, which come within the jurisdiction of the Underwriters' Laboratories are approved.

CAN LEAD AND ARMOR COVERINGS BE SUPPLIED?

Any Rockbestos wire can be so supplied. Specify lengths desired, otherwise prices will be figured on standard shipping lengths. Lead Sheathed 600 Volt A.V.C. Power Cable is illustrated on page 28, specification information on other types on request.

STANDARD SPECIFICATIONS FOR ROCKBESTOS WIRES

See page 15 under "How to Select or Specify the Proper Rockbestos wire."

HOW TO SELECT OR SPECIFY THE PROPER ROCKBESTOS WIRE

GENERAL

There are two standard types of Rockbestos wires which are specifically recommended to fulfill the usual service conditions of conduit and open wiring:

1. A.V.C. Insulated Wires, Cables and Cords.
2. All-Asbestos Insulated Wires, Cables and Cords.

In addition to these there are special types which have been developed to meet unusual conditions in which some particular characteristic must be emphasized. These involve the use of other materials such as rubber, synthetic resins, glass, etc., in combination with asbestos.

FOR CONDUIT INSTALLATION

For all conduit wiring we recommend the A.V.C. group of wires, cables and cords. These have been designed especially for conduit installation and wherever there is a possibility of moisture collecting around the wire.

A.V.C. insulation has much higher dielectric strength than an equivalent thickness of felted asbestos alone, consequently possesses the necessary extra margin of dielectric strength to stand up without failure under moisture. We have service records on many millions of feet of Rockbestos A.V.C. wires and cables, in both single and multiple conductor form, installed in the conduits of power companies, steel mills, industrial plants, kiln rooms, electrified mining equipment, oil refineries, marine boiler rooms and continuous ovens and successfully meeting conditions of heat, fumes, oil, grease and fire hazard.

FOR OPEN WIRING

In dry places we recommend the All-Asbestos wire. It is ideal to use on rheostats — connections between grids and from grids to faceplates—for exposed lighting and control circuits, etc.

For locations where open wiring will be exposed to high humidity, steam, etc., use same recommendations as given above for conduit wiring.

IMPREGNATION AND BRAIDS

In general the felted asbestos insulating walls of all Rockbestos wires, cables and cords are impregnated with a chemically neutral, black insulating compound which is heat, moisture and flame resisting. Wherever identifying colors are required on wires having no outer braid the insulation can be furnished in white, black or plain colors.

Braids, whether they be asbestos or cotton, are also generally finished black, but white or colored finishes can be supplied on special order.

In special cases where a wire will be exposed only to extremely high temperatures and no moisture and where maximum flexibility is desired, white compound may be used both in the impregnation of the felted asbestos walls and for the finish of the braid. A felted wall so impregnated is slightly more flexible than when impregnated with moisture resisting compound. Extra Flexible Apparatus Cable illustrated on page 52 provides an example of this construction.

If wires are to be exposed to oil or grease it should be mentioned in the specifications to insure the use of the proper compounds in impregnating the insulation.

ROCKBESTOS

SPECIAL BRAIDS AND FINISHES

On any of the standard wires shown in this catalog special cotton twine, linen or jute braids can be substituted if necessary. Also a variety of special finishes such as lacquer, wax, asphalt or aluminum paint, can be applied to any selected braid.

SPECIAL CONDUCTORS

The following pages show our standard conductors for the various types of wires. On special order we can supply other types of conductors as to material, stranding, tinning, plating, etc. Alloy conductors for pyrometer wire must be supplied by the customer.

LEAD AND ARMOR COVERINGS

Any wire of our manufacture can be furnished with lead sheath, basket weave metal armor, interlocking steel or bronze armor or almost any type of special covering. Give complete specifications and state cutting lengths on order.

SPECIAL CONSTRUCTIONS

We fabricate special insulations to meet unusual conditions. If your requirements do not seem to be met by any of the types of wire described in the following pages, we will be glad to work out a construction to meet your particular conditions.

STANDARD SPECIFICATIONS FOR ROCKBESTOS A.V.C. AND ALL-ASBESTOS WIRES AND CABLES

Many companies in adopting Rockbestos insulated wires and cables have requested suggestions for a standard specification. We present the following specification outline which covers all standard types of Rockbestos wires and cables and offer it for your use.

NOTE: This specification summarizes the National Electrical Manufacturers Association Standard for Asbestos and Asbestos—Varnished Cambric Insulated Wires and Cables with which all Rockbestos wires and cables of standard construction comply. Copies of the NEMA Standard may be obtained by writing to National Electrical Manufacturers Association, 155 East 44th Street, New York City.

I GENERAL

- (a) *Purpose:* The purpose of these specifications is to insure the furnishing of wire and cable of the best quality, manufactured in accordance with best accepted practice.
- (b) *Scope:* These specifications cover the manufacturing and test requirements for all-asbestos and asbestos—varnished cambric insulated wires and cables.
- (c) *Materials and Workmanship:* All materials and workmanship involved in manufacturing wires and cables covered by these specifications shall be of high quality, carefully selected to insure a finished product best suited for the purposes intended.
- (d) *Applications*

A.V.C. Insulations.

Suitable for use at voltages up to 600, 1000, 2000, 3000 and 5000, open or in conduit, in locations where wiring is exposed to heat and moisture. The high-dielectric varnished cambric insert, adequately heat-sealed by the felted asbestos, provides ample protection against casual moisture.

Where complete submersion is encountered specify lead sheathed cables.

STANDARD SPECIFICATIONS — Continued

All-Asbestos Insulations.

Suitable for use at voltages up to 300 or 600, as specified, for exposed wiring in high temperature locations where little or no moisture is encountered. Impregnated with either flame and heat resisting, or flame, heat and moisture resisting compounds. Specify preference.

II CONDUCTORS

- (a) Conductors shall be of tinned or plain copper in accordance with ASTM Specifications B33-39 or B3-41 respectively, or latest revision thereof.
- (b) Stranded conductors shall be concentric or rope lay as required.
 - 1. The make-up of stranded or flexible conductors shall conform to accepted standards wherever practicable.
- (c) Conductors other than copper shall be specified to meet individual requirements.
- (d) Standard enameled copper shall meet the requirements of ASA Spec. C8.7—1936 insofar as it applies.

III INSULATION**(a) Asbestos**

- 1. *Material.* The asbestos insulation shall consist of best quality, long fibre, chrysotile asbestos commercially free from foreign particles of dirt, cotton seed and metallic oxides. It shall be well carded to prevent lumps and irregularities in the finished cable.

The asbestos insulation after extraction of the impregnating compound shall contain not less than 80% by weight of asbestos. The total iron content shall not exceed 4% by weight of the asbestos and the magnetic iron content shall not exceed 2% by weight of the asbestos.

The wall of felted asbestos insulation shall be applied to form a smooth wall of uniform thickness as specified in the tables, with the conductor well centered.

- 2. *Impregnation.* After the asbestos has been applied to the conductor it shall be thoroughly dried and completely saturated with flame-resisting and heat-resisting or moisture resisting compound as specified, then compressed and polished to form a dense, uniform felted asbestos wall of the specified thickness. The impregnating compound shall consist of suitable high grade ingredients and shall retain its initial qualities during the normal life of the cable. The compound shall develop no injurious chemical reaction within itself or with any component parts of the cable.

ROCKBESTOS

STANDARD SPECIFICATIONS — Continued

(b) *Varnished Cambric*

1. *Material.* The varnished cambric insulation, where used in these wires and cables, shall consist of a high grade varnished cloth substantially free from blisters or other imperfections. It shall comply with the requirements for varnished cloth in existing NEMA Standards for Varnished Cambric Insulated Cables, except that test requirements on tape removed from the finished cable shall be 60% of the values on unused tape.
2. *Application.* The varnished cambric insulation shall be applied with lubricating compound between layers and to the wall thickness specified.

IV BRAIDS

(a) *Asbestos*

1. *Material.* The asbestos from which the yarn is made shall be of good quality long-fibre chrysotile asbestos which meets the requirements of ASTM specification D-375-42 Underwriters' Grade, containing not less than 80% by weight of asbestos. The total iron content shall not exceed 6% by weight of the asbestos. The magnetic iron content shall not exceed 2% by weight of the asbestos.
2. *Application.* Asbestos yarn of the proper number of ends to insure a uniform smooth covering of the thickness specified, shall be closely woven into an asbestos outer braid.
3. *Saturation.* Asbestos outer braid shall be saturated with either a suitable flame and heat resisting, or flame, heat and moisture resisting compound as specified.

(b) *Cotton*

Cotton braids shall be closely woven of the proper number of ends of thread to insure a uniform smooth covering, and shall comply with the Standard Braid requirements of ASA Specification for Cotton Braid for Insulated Wires and Cables, C8.12-1935 or the latest revision thereof. Outside cotton braids shall be finished with either a suitable flame and heat resisting compound, or saturated and finished with a flame, heat and moisture resisting compound as specified.

V FINISHES

- (a) *Classification.* The outer covering of wires and cables under this specification, whether plain felted asbestos or braid covered, shall be finished to show a smooth even surface of uniform color as specified and shall enable the finished wire to meet the test requirements specified in the following paragraphs 1 and 2. The following classification indicates the type of finish required for different classes of wire.

ROCKBESTOS

STANDARD SPECIFICATIONS — Continued

1. *Flame and Heat Resisting.* This finish shall be standard for white or colored braided All-Asbestos insulated wires. It shall consist of suitable compounds to produce a smooth tough outer finish. It shall not be specified on wires subjected to moisture conditions.
2. *Flame, Heat and Moisture Resisting.* This finish shall be standard for black, white and colored A.V.C. wires and for black All-Asbestos braided wires and cables. It shall consist of saturating the insulation or braid with black, white or colored flame, heat and moisture resisting compound.

VI SPECIAL COVERINGS

- (a) Special coverings such as spiral, basket weave and interlocking armor for unusual applications shall be so specified on the order with applicable specifications. Cutting lengths should also be stated.
- (b) *Lead Sheath.* The lead sheath shall consist of commercially pure lead (unless an alloyed sheath is specified) and shall be tightly formed around the core. It shall comply in all respects with the requirements for lead sheath appearing in existing NEMA Standards for Varnished Cambric Cables. The thickness shall be in conformity with that required for varnished cambric cables of corresponding core diameter.

VII CABLING

- (a) For cables consisting of more than one conductor (except flat twin cables) the separately insulated conductors shall be concentrically cabled together. The lay of the conductors in each layer shall not exceed 16 times the diameter over that particular layer. The lay of the conductors in each successive layer shall be reversed and the outer layer shall have a left hand lay.
- (b) The single conductors shall have A.V.C. or All-Asbestos insulation as indicated on the order. For circuit identification the insulation of the individual conductors shall be impregnated with colored compounds or covered with cotton or rayon marker braids coded to the NEMA color chart.
- (c) When required, fillers shall be used and shall be of jute or asbestos, dry or impregnated with a moisture resisting compound as specified on the order.
- (d) In cables with coded conductors and elsewhere when required for manufacturing reasons, the cabled conductors shall be wrapped with tape.

VIII TESTS

A. Physical

1. *Materials.* The various materials used in the manufacture of wires and cables under this specification, shall meet the requirements listed in the individual sections.

R O C K B E S T O S

STANDARD SPECIFICATIONS — Continued

2. *Finished Product*

- (a) *Dimensions.* Inspection for dimensional requirements shall consist of four measurements, two to be made near each end of the sample of which the average shall comply with the requirements given in the tables. The measurements of cable $\frac{3}{4}$ " in diameter and smaller shall be made with a ratchet micrometer having $\frac{1}{4}$ " diameter faces. For cable larger than $\frac{3}{4}$ " in diameter the measurement shall be made with a circumference tape. Diameter determinations when made with the micrometer shall be the average of two measurements made at right angles to each other. The average diameter over any component layer of the insulation and braid shall not vary more than plus or minus 5 percent from the theoretical diameter over that layer based on the nominal wall thicknesses shown in the table.

- (b) *Resistance to Flame.* All of these wires and cables shall have such fire resisting properties that the test specimens will not convey flame, nor continue to burn for more than one minute after five fifteen second applications of a standard test flame, the period between applications of the flame being fifteen seconds.

NOTE: Compliance of the wire with the requirements of the preceding paragraph shall be determined with the apparatus and according to the methods described in paragraphs c and d.

- (c) *Apparatus for Testing Flame-Retarding Properties.* The apparatus for this test consists of a test chamber of sheet metal 12" wide, 14" deep and 24" high, open at top and front and provided with means for supporting the test sample in a vertical position. A Tirrill burner having a bore of $\frac{3}{8}$ " and a length of 4" above the primary air inlets, a 20° angle block for supporting the burner, a supply of ordinary illuminating gas at normal pressure, a watch or clock with a hand which makes one complete revolution each minute and flame indicators consisting of strips of gummed Kraft paper 5 mils in nominal thickness and $\frac{1}{2}$ " in width.

- (d) *Method of Testing Flame-Retarding Properties.* The test is made in a room from which all drafts are excluded. An 18" sample of wire is supported from the upper end in the test chamber and is held in vertical position by a four pound weight attached to the lower end of the wire. A paper indicator is applied to the sample so that the lower edge is 10" above the point to which the flame is to be applied. The indicator is wrapped once around the sample with the gummed side toward the conductor and the ends pasted evenly together and projecting $\frac{3}{4}$ " away from the wire, on the opposite side of the wire to that to which the flame is to be applied.

ROCKBESTOS

STANDARD SPECIFICATIONS — Continued

The height of the flame with the burner vertical is adjusted to 5" with an inner blue cone $1\frac{1}{2}$ " high. The burner is then tilted to an angle of 20° from vertical and the flame applied to the sample so that the tip of the inner blue cone touches the sample at a point approximately 3" above its lower end. The side of the flame is brought up to the sample in such a manner that the vertical plane through the axis of the burner is perpendicular to the line of approach. The flame is applied for 15 seconds and then removed for 15 seconds. This process is repeated four times.

If more than 25% of the extended portion of the indicator is burned, the wire is considered to have conveyed flame.

B. Electrical**1. Initial Dielectric Strength Tests**

- (a) All wires and cables specified herein and rated at 600 volts or more: Test voltages as specified in the tables. Test to be made on 5 ft. lengths of finished cable with the center 3 ft. section wrapped in metal foil, voltage to be applied five minutes.
- (b) 300 volt rated wires and cables: One thousand volts applied for one minute. Test to be made on 5 ft. lengths of finished cable with the center 3 ft. section wrapped in metal foil.

2. Dielectric Strength After Flame Tests.

- (a) Samples of cables having been previously subjected to the Flame Test shall be prepared with the charred area of sizes No. 6 and larger wrapped in metal foil, and sizes smaller than No. 6 buried in iron filings or fine shot and tested for one minute as follows:
 - (1) Asbestos — varnished cambric insulated wires and cables rated at 600 volts or more, $1\frac{1}{2}$ times rated voltage.
 - (2) All-Asbestos insulated wires and cables rated at 600 volts, $2\frac{1}{2}$ times the rated voltage.
 - (3) 300 volt rated wires and cables, 1000 volts.

- 3. *Dielectric Strength While Immersed.* A 5 ft. sample of finished cable having flame, heat and moisture resisting finish shall be immersed, except ends, for one hour in tap water at room temperature and while still immersed, shall withstand a dielectric test of twice the rated voltage between conductor and water for one minute.

IX. SAMPLING

- (a) Each of the required tests shall be made on one sample of each size and type of wire from each lot of 10,000 feet or fraction thereof, unless otherwise specified.
- (b) If a sample fails to meet any of the prescribed requirements, two additional samples shall be taken from the same length. If either of these samples fail the length may be rejected.
- (c) If any of the lengths fail to meet any of the requirements, samples shall be taken from each length or reel of the lot and tested for this particular requirement to determine acceptance of each reel.

CONDUIT SIZE TABLES

TABLE C 600 VOLT A.V.C. BOILER ROOM WIRE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
A.W.G.		MINIMUM SIZE OF CONDUIT								
18	.220	3/8	1/2	5/8	3/4	3/4	1	1	1 1/4	1 1/4
16	.235	3/8	1/2	5/8	3/4	3/4	1	1	1 1/4	1 1/4
14	.245	3/8	1/2	5/8	3/4	3/4	1	1	1 1/4	1 1/4
12	.265	3/8	1/2	5/8	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4
10	.285	3/8	1/2	5/8	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4
8	.310	3/8	1/2	5/8	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4
6	.335	3/8	1/2	5/8	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4
5	.405	3/8	1	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4
4	.425	3/8	1	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4
3	.450	3/8	1	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4
2	.480	3/8	1 1/4	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4
1	.530	3/8	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4	3
0	.565	3/8	1 1/4	1 1/4	2	2	2 1/4	2 1/4	3	3
00	.605	1	1 1/4	1 1/4	2	2 1/4	2 1/4	3	3	3
000	.650	1	1 1/4	2	2	2 1/4	3	3	3	3 1/4
0000	.700	1	1 1/4	2	2 1/4	3	3	3	3 1/4	3 1/4

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

TABLE E 600 VOLT A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
A.W.G.		MINIMUM SIZE OF CONDUIT								
18	.255	3/8	3/8	3/8	3/8	1	1	1 1/4	1 1/4	1 1/4
16	.270	3/8	3/8	3/8	3/8	1	1	1 1/4	1 1/4	1 1/4
14	.285	3/8	3/8	3/8	3/8	1	1 1/4	1 1/4	1 1/4	1 1/4
12	.305	3/8	3/8	3/8	3/8	1	1 1/4	1 1/4	1 1/4	1 1/4
10	.330	3/8	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
8	.360	3/8	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	2
6	.395	3/8	1	1	1 1/4	1 1/4	1 1/4	2	2	2
5	.420	3/8	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2	2
4	.445	3/8	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4
3	.470	3/8	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4
2	.505	3/8	1 1/4	1 1/4	2	2 1/4	2 1/4	2 1/4	3	3
1	.585	3/8	1 1/4	2	2	2 1/4	2 1/4	2 1/4	3	3
0	.625	1	1 1/4	2	2	2 1/4	3	3	3 1/4	3 1/4
00	.670	1	2	2	2 1/4	2 1/4	3	3	3 1/4	3 1/4
000	.720	1	2	2	2 1/4	3	3	3	3 1/4	3 1/4
0000	.780	1 1/4	2	2	2 1/4	3	3	3 1/4	3 1/4	4
250,000 C.M.	.885	1 1/4	2 1/4	2 1/4	3	3 1/4	3 1/4	4	4 1/4	4 1/4
300,000	.940	1 1/4	2 1/4	3	3	3 1/4	4	4	4 1/4	4 1/4
350,000	.995	1 1/4	3	3	3 1/4	3 1/4	4	4 1/4	4 1/4	5
400,000	1.040	1 1/4	3	3	3 1/4	4	4 1/4	4 1/4	5	5
450,000	1.085	1 1/4	3	3	3 1/4	4	4 1/4	5	5	5
500,000	1.125	1 1/4	3	3	4	4	4 1/4	5	5	5
550,000	1.165	1 1/4	3	3 1/4	4	4 1/4	5	5	6	6
600,000	1.205	2	3	3 1/4	4	4 1/4	5	5	6	6
650,000	1.240	2	3 1/4	3 1/4	4	4 1/4	5	6	6	6
700,000	1.275	2	3 1/4	3 1/4	4 1/4	5	5	6	6	6
750,000	1.310	2	3 1/4	3 1/4	4 1/4	5	6	6	6	6
800,000	1.345	2	3 1/4	4	4 1/4	5	6	6	6	6
850,000	1.375	2	3 1/4	4	4 1/4	5	6	6	6	6
900,000	1.405	2	4	4	4 1/4	5	6	6	6	6
950,000	1.435	2	4	4	4 1/4	5	6	6	6	6
1,000,000	1.465	2	4	4	5	6	6	6	6	6

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

ROCKBESTOS

CONDUIT SIZE TABLES

TABLE EL 600 VOLT
LEAD SHEATHED A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
MINIMUM SIZE OF CONDUIT										
A. W. G.										
**18	.290	1/2	3/4	1/2	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
**16	.305	1/2	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
**14	.320	1/2	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
**12	.340	1/2	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
10	.360	1/2	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
8	.390	1/2	3/4	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
6	.430	1/2	3/4	1 1/4	1 1/4	1 1/4	2	2	2	2 1/2
5	.450	3/4	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2	2 1/2
4	.480	3/4	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2 1/2	2 1/2
3	.505	3/4	1 1/4	1 1/4	1 1/4	2	2 1/2	2 1/2	2 1/2	2 1/2
2	.570	3/4	1 1/4	1 1/4	2	2	2 1/2	2 1/2	2 1/2	3
1	.620	1	1 1/4	2	2	2	2 1/2	3	3	3 1/2
0	.660	1	2	2	2 1/4	3	3	3	3 1/4	3 1/4
00	.705	1	2	2	2 1/4	3	3	3 3/4	3 3/4	4
000	.755	1	2	2 1/4	2 1/4	3	3 3/4	3 3/4	4	4
0000	.815	1 1/4	2 1/4	2 1/4	2 1/4	3 1/4	3 3/4	3 3/4	4	4 1/4
250,000 C. M.	.855	1 1/4	3	3	3	3 1/4	4	4	4 1/4	4 1/4
300,000	1.010	1 1/4	3	3	3	3 1/4	4	4 1/4	5	5
350,000	1.060	1 1/4	3	3	3	3 1/4	4	4 1/4	5	5
400,000	1.105	1 1/4	3	3	3	4	4 1/4	5	5	5
450,000	1.150	1 1/2	3	3 1/4	3 1/4	4 1/4	5	5	5	5
500,000	1.190	2	3 1/4	3 1/4	4	4 1/4	5	5	5	5
550,000	1.265	2	3 1/4	3 1/4	4 1/4	5	5	5	5	5
600,000	1.305	2	3 1/4	4	4 1/4	5	5	5	5	5
650,000	1.340	-2	3 1/4	4	4 1/4	5	5	5	5	5
700,000	1.375	2	4	4	4 1/4	5	5	5	5	5
750,000	1.410	2	4	4	4 1/4	5	5	5	5	5
800,000	1.440	2	4	4	4 1/4	5	5	5	5	5
850,000	1.470	2	4	4	4 1/4	5	5	5	5	5
900,000	1.505	2 1/4	4	4 1/4	5	5	5	5	5	5
950,000	1.535	2 1/4	4	4 1/4	5	5	5	5	5	5
1,000,000	1.560	2 1/4	4 1/4	4 1/4	5	5	5	5	5	5

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

** Sizes No. 12 A.W.G. and smaller can be supplied with 2/64" lead.

TABLE EM 1000 VOLT A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
MINIMUM SIZE OF CONDUIT										
A.W.G.	.285	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
18	.300	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
16	.315	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
14	.335	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
12	.360	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
10	.390	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
8	.425	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
6	.450	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
5	.475	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
4	.500	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
3	.535	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
2	.615	1	1 1/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
1	.655	1	1 1/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
0	.700	1	1 1/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
00	.750	1	1 1/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
000	.810	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
0000	.895	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
250,000 C.M.	.950	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
300,000	1.005	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
350,000	1.050	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
400,000	1.095	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
450,000	1.135	1 1/4	2 1/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2
500,000	1.175	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
550,000	1.215	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
600,000	1.250	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
650,000	1.285	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
700,000	1.320	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
750,000	1.355	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
800,000	1.415	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
850,000	1.475	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
900,000	1.475	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2
1,000,000	1.475	2	3 1/4	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

ROCKBESTOS

CONDUIT SIZE TABLES

TABLE F 2000 VOLT A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
		MINIMUM SIZE OF CONDUIT								
A.W.G.										
14	.365	3/8	1	1	1 1/4	1 1/4	1 1/4	1 1/4	2	2
12	.385	3/8	1	1	1 1/4	1 1/4	1 1/4	1 1/4	2	2
10	.410	3/8	1	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4
8	.440	3/4	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4
6	.475	3/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4
5	.500	3/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4
4	.525	3/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4
3	.550	3/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4	2 1/4
2	.585	3/4	1 1/4	1 1/4	2	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
1	.645	1	2	2	2	2 1/4	3	3	3	3
0	.685	1	2	2	2 1/4	2 1/4	3	3	3 1/4	3 1/4
00	.730	1	2	2	2 1/4	3	3	3 1/4	3 1/4	3 1/4
000	.780	1 1/4	2	2	3	3	3	3 1/4	3 1/4	4
0000	.840	1 1/4	2 1/4	2 1/4	3	3	3 1/4	3 1/4	4	4
250,000 C.M.	.925	1 1/4	2 1/4	2 1/4	3	3 1/4	4	4	4 1/4	4 1/4
300,000	.980	1 1/4	3	3	3 1/4	3 1/4	4	4 1/4	4 1/4	4 1/4
350,000	1.035	1 1/4	3	3	3 1/4	4	4	4 1/4	5	5
400,000	1.080	1 1/4	3	3	3 1/4	4	4 1/4	5	5	5
450,000	1.125	1 1/4	3	3	3 1/4	4	4 1/4	5	5	5
500,000	1.165	1 1/4	3	3 1/4	4	4 1/4	5	5	5	5
550,000	1.205	2	3	3 1/4	4	4 1/4	5	5	5	5
600,000	1.245	2	3 1/4	3 1/4	4	4 1/4	5	5	5	5
650,000	1.280	2	3 1/4	3 1/4	4 1/4	5	5	5	5	5
700,000	1.315	2	3 1/4	3 1/4	4 1/4	5	5	5	5	5
750,000	1.350	2	3 1/4	4	4 1/4	5	5	5	5	5
800,000	1.385	2	3 1/4	4	4 1/4	5	5	5	5	5
900,000	1.445	2	4	4	5	5	5	5	5	5
1,000,000	1.505	2	4	4	5	5	5	5	5	5

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

TABLE G 3000 VOLT A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
MINIMUM SIZE OF CONDUIT										
A.W.G.										
14	.425	3/8	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2	2
12	.445	3/8	1 1/4	1 1/4	1 1/4	1 1/4	2	2	2	2 1/4
10	.470	3/8	1 1/4	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4
8	.500	3/4	1 1/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4
6	.535	3/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4	2 1/4
5	.560	3/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	2 1/4	2 1/4
4	.585	3/4	1 1/4	1 1/4	2	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
3	.610	1	1 1/4	1 1/4	2	2 1/4	2 1/4	3	3	3
2	.645	1	2	2	2	2 1/4	3	3	3	3
1	.705	1	2	2	2 1/4	3	3	3 1/4	3 1/4	3 1/4
0	.745	1	2	2	2 1/4	3	3	3 1/4	3 1/4	4
00	.790	1 1/4	2	2 1/4	3	3	3	3 1/4	3 1/4	4
000	.840	1 1/4	2 1/4	2 1/4	3	3	3 1/4	3 1/4	4	4
0000	.900	1 1/4	2 1/4	2 1/4	3	3 1/4	3 1/4	4	4	4 1/4
250,000 C.M.	.985	1 1/4	3	3	3 1/4	3 1/4	4	4 1/4	4 1/4	4 1/4
300,000	1.040	1 1/4	3	3	3 1/4	4	4 1/4	4 1/4	5	5
350,000	1.095	1 1/4	3	3	3 1/4	4	4 1/4	5	5	5
400,000	1.140	1 1/4	3	3	4	4 1/4	4 1/4	5	5	5
450,000	1.185	2	3 1/4	3 1/4	4	4 1/4	5	5	5	5
500,000	1.225	2	3 1/4	3 1/4	4	4 1/4	5	5	5	5
550,000	1.265	2	3 1/4	3 1/4	4	4 1/4	5	5	5	5
600,000	1.305	2	3 1/4	3 1/4	4 1/4	5	5	5	5	5
650,000	1.340	2	3 1/4	3 1/4	4 1/4	5	5	5	5	5
700,000	1.375	2	3 1/4	4	4 1/4	5	5	5	5	5
750,000	1.410	2	4	4	4 1/4	5	5	5	5	5
800,000	1.445	2	4	4	5	5	5	5	5	5
900,000	1.505	2	4	4	5	5	5	5	5	5
1,000,000	1.565	2 1/4	4	4 1/4	5	5	5	5	5	5

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

CONDUIT SIZE TABLES

TABLE H 5000 VOLT A.V.C. POWER CABLE

Size	O. D.* in Inches	NUMBER OF WIRES								
		1	2	3	4	5	6	7	8	9
MINIMUM SIZE OF CONDUIT										
A.W.G.										
14	.483	3/4	1 1/4	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4
12	.505	3/4	1 1/4	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4
10	.530	3/4	1 1/4	1 1/4	2	2	2	2 1/4	2 1/4	3
8	.560	3/4	1 1/4	1 1/4	2	2	2 1/4	2 1/4	3	3
6	.595	3/4	1 1/4	1 1/4	2	2 1/4	2 1/4	3	3	3
5	.620	1	1 1/4	2	2	2 1/4	2 1/4	3	3	3
4	.645	1	2	2	2	2 1/4	2 1/4	3	3	3
3	.670	1	2	2	2 1/4	2 1/4	3	3	3	3
2	.705	1	2	2	2 1/4	2 1/4	3	3	3	3 1/4
1	.765	1 1/4	2	2	2 1/4	3	3	3 1/4	3 1/4	3 1/4
0	.805	1 1/4	2	2 1/4	3	3	3 1/4	3 1/4	4	4
00	.850	1 1/4	2 1/4	2 1/4	3	3	3 1/4	4	4	4 1/4
000	.900	1 1/4	2 1/4	2 1/4	3	3 1/4	3 1/4	4	4	4 1/4
0000	.950	1 1/4	2 1/4	3	3	3 1/4	4	4 1/4	5	5
250,000 C.M.	1.045	1 1/4	3	3	3 1/4	4	4 1/4	4 1/4	5	5
300,000	1.100	1 1/4	3	3	3 1/4	4	4 1/4	5	5	6
350,000	1.155	1 1/4	3	3 1/4	3 1/4	4	4 1/4	5	6	6
400,000	1.200	2	3	3 1/4	3 1/4	4	4 1/4	5	6	6
450,000	1.245	2	3 1/4	3 1/4	4	4 1/4	5	5	6	6
500,000	1.285	2	3 1/4	3 1/4	4 1/4	5	5	6	6	6
550,000	1.325	2	3 1/4	3 1/4	4 1/4	5	6	6	6	6
600,000	1.365	2	3 1/4	4	4 1/4	5	6	6	6	6
650,000	1.400	2	4	4	4 1/4	5	6	6	6	6
700,000	1.435	2	4	4	5	6	6	6	6	6
750,000	1.470	2	4	4	5	6	6	6	6	6
800,000	1.505	2	4	4	5	6	6	6	6	6
900,000	1.565	2 1/4	4	4 1/4	5	6	6	6	6	6
1,000,000	1.625	2 1/4	4 1/4	4 1/4	6	6	6	6	6	6

* Subject to plus or minus 5% tolerance due to variations in manufacturing processes.

ROCKBESTOS

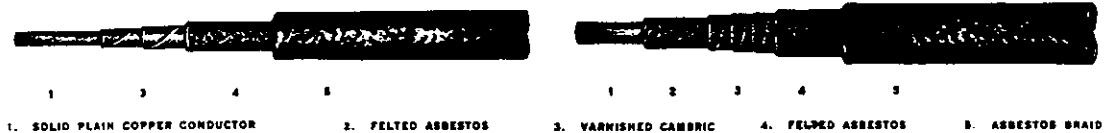
600 VOLT A.V.C. BOILER ROOM WIRE

for

GENERAL LIGHTING AND CONTROL
CIRCUITS, WIRING AROUND OVENS,
FURNACES, LEHRS, TENTER FRAMES,
BOILER ROOMS, SOAKING PITS, ELEVATOR
AND LOCOMOTIVE CONTROL PANEL WIRING, ETC.

THIS IS THE CONSTRUCTION OF SIZES 18 TO 8

THIS IS THE CONSTRUCTION OF SIZES 6 TO 4/0



This wire is recommended for open wiring and general conduit work where wiring is or may be subjected to heat, corrosive fumes, oil, grease or fire hazard.

It will operate without failure under constant high temperatures, and at the same time possesses sufficient moisture resistance to operate without failure under average conduit moisture conditions. However, if it is known that parts of a circuit will be submerged for long periods, use Table EL, Lead Sheathed A.V.C. Power Cable shown on page 28.

A.V.C. Boiler Room Wire handles and pulls into conduit the same as any other wire. See Conduit Size Table on page 21.

For the same application, but where a stranded conductor is required, use A.V.C. Power Cable, Table E, shown on page 26.

Recommended also for switchboard wiring when an asbestos braided wire is required.

This wire is National Electrical Code Type AVA, listed by Underwriters' Laboratories.

TYPE AVA—TABLE C—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 37)

Size A.W.G.	Bare Diam. — Inches	Nominal Thickness First Felted Wall — Mils	Nominal Thickness V. C. Insert — Mils	Nominal Thickness Second Felted Wall — Mils	Nominal Finished Diam.* — Inches	Approx. Net Weight per M ft. — Pounds	Standard Shipping Lengths (Feet)	
							Coils	Reels
0000	.460	15	30	30	.700	800		450
000	.410	15	30	30	.650	657		500
00	.365	15	30	30	.605	543		500
0	.325	15	30	30	.565	422		500
1	.289	15	30	30	.530	348		500
2	.258	15	30	20	.480	279		500
3	.229	15	30	20	.450	231		1000
4	.204	15	30	20	.425	193		1000
5	.182	15	30	20	.405	160		1000
6	.162	15	30	20	.385	138	500	1000
8	.128		25	20	.310	87	500	1000
10	.102		25	20	.285	62	1000	1500
12	.081		25	20	.265	47	1000	1500
14	.064		25	20	.245	38	1000	2000
16	.051		25	20	.235	31	1000	2000
18	.040		25	20	.220	27	1000	2000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 2.5 for sizes 18 to 8 and 3.0 for 6 to 4/0.

ROCKBESTOS

600 VOLT A.V.C. POWER CABLE

for { ASHPITS AND ASH ALLEYS, AROUND SOAKING PITS,
FURNACES, OVENS, LEHRS, TENTER FRAMES, STEAM TUNNELS,
ALL BOILER ROOM CIRCUITS AND FOR GENERAL HOT-SPOT WIRING



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

This cable is recommended for general power circuits as well as for the same applications as given for Table C Boiler Room Wire on the preceding page. A.V.C. Power Cable handles and pulls into conduit the same as any other cable. See conduit size table on page 21. It will operate continuously without failure under constant high temperatures, yet can also meet ordinary conduit moisture conditions without failure. If, however, it is known that parts of a circuit will be submerged for long periods, such as circuits around ashpits where ashes are wet down, we recommend Table EL Lead Sheathed A.V.C. Power Cable shown on page 28.

Rockbestos A.V.C. 600 Volt Power Cable is also available up to 2,000,000 CM. For the same type of cable for service voltages up to 5000 see Tables EM, F, G and H on pages 29, 30, 31 and 32.

This cable is National Electrical Code Type AVA, listed by Underwriters' Laboratories.

TYPE AVA—TABLE E—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 1)

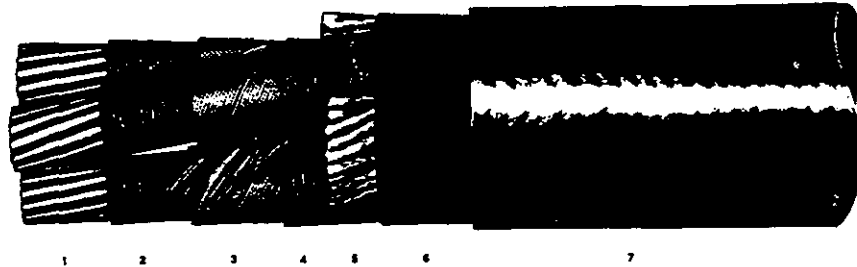
Size	Stranding	Bare Diam. Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.* Inches	Approx. Net Weight per M ft. Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels
1,000,000 CM	61/.1280	1.152	30	40	40	1.465	3510		500
950,000	61/.1248	1.123	30	40	40	1.435	3346		500
900,000	61/.1215	1.093	30	40	40	1.405	3182		500
850,000	61/.1180	1.062	30	40	40	1.375	3018		500
800,000	61/.1145	1.031	30	40	40	1.345	2854		500
750,000	61/.1109	.998	30	40	40	1.310	2689		500
700,000	61/.1071	.964	30	40	40	1.275	2524		500
650,000	61/.1032	.929	30	40	40	1.240	2359		500
600,000	61/.0992	.893	30	40	40	1.205	2193		500
550,000	61/.0950	.855	30	40	40	1.165	2027		500
500,000	37/.1162	.814	30	40	40	1.125	1860		500
450,000	37/.1103	.772	30	40	40	1.085	1692		500
400,000	37/.1040	.728	30	40	40	1.040	1525		500
350,000	37/.0973	.681	30	40	40	.995	1357		500
300,000	37/.0900	.630	30	40	40	.940	1188		500
250,000	37/.0822	.575	30	40	40	.885	1017		500
A.W.G.									
0000	19/.1055	.528	20	30	30	.780	839		1000
000	19/.0940	.470	20	30	30	.720	690		1000
00	19/.0837	.418	20	30	30	.670	571		1000
0	19/.0745	.373	20	30	30	.625	476		1000
1	19/.0664	.332	20	30	30	.585	371		1000
2	7/.0974	.292	15	30	15	.505	287		1000
3	7/.0867	.260	15	30	15	.470	238		1000
4	7/.0772	.232	15	30	15	.445	198		1000
5	7/.0688	.206	15	30	15	.420	166		1000
6	7/.0612	.184	15	30	15	.395	141	500	1000
8	7/.0486	.146	15	30	15	.360	100	500	
10	7/.0385	.116	15	30	15	.330	76	500	
12	7/.0305	.092	15	30	15	.305	59	1000	
14	7/.0242	.073	15	30	15	.285	46	1000	
16	7/.0193	.058	15	30	15	.270	39	1000	
18	7/.0151	.045	15	30	15	.255	33	1000	

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 2.5 for sizes 18 to 8, 3.0 for 6 to 4/0 and 4.0 for 250,000 to 1,000,000 CM.

ROCKBESTOS

THREE CONDUCTOR 600 VOLT A.V.C. POWER CABLE

for { SAME USES AS TABLE "E" WHERE
MULTI-CONDUCTOR CABLE IS REQUIRED



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. JUTE FILLERS
6. CABLE TAPE 7. ASBESTOS BRAID

This construction consists of three Table E 600 Volt Power Cables minus their outer braids, cabled together with jute fillers, taped and covered with a heavy asbestos braid. Asbestos fillers, lead sheathing or armoring can be furnished on specification.

NOTE:—Multi-conductor power cables for higher rated voltages, with individual conductors made up like Tables EM, F, G and H (in the following pages) though not cataloged here, are available. Specifications of any particular size on request.

TABLE EC — 600 VOLT SERVICE

Size	Stranding	Bare Diam. Inches	Nominal Single Diam.* Inches	Nominal Finished Diam.* Inches	Approx. Net. Wt. per M ft. Pounds	Standard Shipping Lengths (Feet) Reels
500,000 CM	37/.1162	.814	1.035	2.350	6076	500
450,000	37/.1103	.772	.995	2.265	5527	500
400,000	37/.1040	.728	.950	2.170	4979	500
350,000	37/.0973	.681	.905	2.070	4426	500
300,000	37/.0900	.630	.850	1.955	3869	500
250,000	37/.0822	.575	.795	1.835	3298	500
A.W.G.						
0000	19/.1055	.528	.690	1.610	2680	500
000	19/.0940	.470	.630	1.480	2189	500
00	19/.0837	.418	.580	1.370	1806	1000
0	19/.0745	.373	.535	1.275	1486	1000
1	19/.0664	.332	.495	1.190	1238	1000
2	7/.0974	.292	.415	1.015	952	1000
3	7/.0867	.260	.380	.940	793	1000
4	7/.0772	.232	.355	.885	661	1000
5	7/.0688	.206	.330	.835	560	1000
6	7/.0612	.184	.305	.780	474	1000
8	7/.0486	.146	.270	.705	352	1000
10	7/.0385	.116	.240	.640	270	1000
12	7/.0305	.092	.215	.585	217	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
Dielectric test voltages between conductors in kilovolts, 5.0 for sizes 18 to 8, 6.0 for 6 to 4/0 and 8.0 for 250,000 to 500,000 CM.
Dielectric test voltages from conductor to ground in kilovolts, 2.5 for sizes 18 to 8, 3.0 for 6 to 4/0 and 4.0 for 250,000 to 500,000 CM.

RBB 00334

ROCKBESTOS

600 VOLT LEAD SHEATHED A. V. C. POWER CABLE

for { LIGHTING, CONTROL AND POWER CIRCUITS UNDER ANY CONDITION
FROM COMPLETE SUBMERSION TO CONSTANT HIGH TEMPERATURES



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. LEAD SHEATH

This wire is our standard A.V.C. construction except that a lead sheath has been substituted for the asbestos braid. The lead sheath does not affect the ability of the construction to withstand high temperatures, but does enable it to stand up successfully when completely and continually submerged.

This is the wire to use where a conduit run is exposed to widely varying conditions throughout its length. Thus it is particularly suitable for power stations located on tidewater where certain ducts are sometimes flooded, but where another part of the same circuit is exposed to high temperature. Recommended also where condensation is especially heavy as in ashpits where it is the practice to wet down the ashes. Specify lengths desired, otherwise prices will be figured on standard shipping lengths. This cable is National Electrical Code Type AVL, listed by Underwriters' Laboratories.

NOTE: Other power and control cables are also available with lead sheath, though not specifically cataloged.

TYPE AVL—TABLE EL—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 2)

Size	Stranding	Bare Diam. Inches	Nominal Thickness First Felted Wall Mils	Nominal Thickness V. C. Insert Mils	Nominal Thickness Second Felted Wall Mils	Lead Thickness Inches	Nominal Finished Diam.* Inches	Approx. Net Weight per M. ft. Pounds	Standard Shipping Lengths (Feet) Reels
1,000,000 CM	61/.1280	1.152	30	40	40	6/64	1.560	5613	500
950,000	61/.1248	1.123	30	40	40	6/64	1.535	5407	500
900,000	61/.1215	1.093	30	40	40	6/64	1.505	5201	500
850,000	61/.1180	1.062	30	40	40	6/64	1.470	5042	500
800,000	61/.1145	1.031	30	40	40	6/64	1.440	4783	500
750,000	61/.1109	.998	30	40	40	6/64	1.410	4570	500
700,000	61/.1071	.964	30	40	40	6/64	1.375	4356	500
650,000	61/.1032	.929	30	40	40	6/64	1.340	4140	500
600,000	61/.0992	.893	30	40	40	6/64	1.305	3923	500
550,000	61/.0950	.855	30	40	40	6/64	1.265	3786	500
500,000	37/.1162	.814	30	40	40	5/64	1.190	3161	500
450,000	37/.1103	.772	30	40	40	5/64	1.150	2944	500
400,000	37/.1040	.728	30	40	40	5/64	1.105	2724	500
350,000	37/.0973	.681	30	40	40	5/64	1.060	2500	500
300,000	37/.0900	.630	30	40	40	5/64	1.010	2269	500
250,000	37/.0822	.575	30	40	40	5/64	.955	2033	500
A.W.G.									
0000	19/.1055	.528	20	30	30	4/64	.815	1516	1000
000	19/.0940	.470	20	30	30	4/64	.755	1313	1000
00	19/.0837	.418	20	30	30	4/64	.705	1144	1000
0	19/.0745	.373	20	30	30	4/64	.660	1005	1000
1	19/.0664	.332	20	30	30	4/64	.620	890	1000
2	7/.0974	.292	15	30	30	4/64	.570	774	1000
3	7/.0867	.260	15	30	30	3/64	.505	563	1000
4	7/.0772	.232	15	30	30	3/64	.480	504	1000
5	7/.0688	.206	15	30	30	3/64	.450	454	1000
6	7/.0612	.184	15	30	30	3/64	.430	412	1000
8	7/.0486	.146	15	30	30	3/64	.390	348	1000
10	7/.0385	.116	15	30	30	3/64	.360	301	1000
12**	7/.0305	.092	15	30	30	3/64	.340	267	1000
14**	7/.0242	.073	15	30	30	3/64	.320	243	1000
16**	7/.0193	.058	15	30	30	3/64	.305	224	1000
18**	7/.0151	.045	15	30	30	3/64	.290	209	1000

* Finished diameters given above are average. A tolerance of plus or minus 3% is necessary due to variations in process of manufacture.
** Sizes No. 12 A.W.G. and smaller can be supplied with 2/64" lead sheath.

NEMA dielectric test voltage for all sizes 1.5 kilovolts for five minutes on a full reel.

ROCKBESTOS

1000 VOLT A.V.C. POWER CABLE

for { GENERAL POWER WIRING IN
BOILER ROOMS, POWER PLANTS,
STEEL MILLS AND INDUSTRIAL PLANTS



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

This cable is recommended for the same general applications as Rockbestos 600 Volt A.V.C. Power Cable, Table E, except that it is designed to operate at 1000 volts or less. Lead sheathed or armored if desired. Also available in multi-conductor construction. Specification for any given size on request.

TABLE EM — 1000 VOLT SERVICE (NEMA Standard No. 39-54 Table 3)

Size	Stranding	Bare Diam.	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.*	Approx. Net Weight per M ft.	Standard Shipping Lengths (Feet)		
		Inches	Mils	Mils	Mils		Inches	Pounds	Coils	Reels
1,000,000 CM	61/.1280	1.152	30	45	40	THICKNESS OF OUTER BRAID .045" FOR ALL SIZES	1.475	3521		500
950,000	61/.1248	1.123	30	45	40		1.445	3354		500
900,000	61/.1215	1.093	30	45	40		1.415	3187		500
850,000	61/.1180	1.062	30	45	40		1.385	3020		500
800,000	61/.1145	1.031	30	45	40		1.355	2853		500
750,000	61/.1109	.998	30	45	40		1.320	2687		500
700,000	61/.1071	.964	30	45	40		1.285	2521		500
650,000	61/.1032	.929	30	45	40		1.250	2355		500
600,000	61/.0992	.893	30	45	40		1.215	2189		500
550,000	61/.0950	.855	30	45	40		1.175	2023		500
500,000	37/.1162	.814	30	45	40		1.135	1857		500
450,000	37/.1103	.772	30	45	40		1.095	1691		500
400,000	37/.1040	.728	30	45	40		1.050	1525		500
350,000	37/.0973	.681	30	45	40		1.005	1359		500
300,000	37/.0900	.630	30	45	40		.950	1193		500
250,000	37/.0822	.575	30	45	40		.895	1024		500
A.W.G.										
0000	19/.1055	.528	20	45	30		.810	857		1000
000	19/.0940	.470	20	45	30		.750	708		1000
00	19/.0837	.418	20	45	30		.700	588		1000
0	19/.0745	.373	20	45	30		.655	491		1000
1	19/.0664	.332	20	45	30		.615	413		1000
2	7/.0974	.292	15	45	15		.535	299		1000
3	7/.0867	.260	15	45	15		.500	250		1000
4	7/.0772	.232	15	45	15	.475	209		1000	
5	7/.0688	.206	15	45	15	.450	176		1000	
6	7/.0612	.184	15	45	15	.425	151	500	1000	
8	7/.0486	.146	15	45	15	.390	109	500		
10	7/.0385	.116	15	45	15	.360	84	500		
12	7/.0305	.092	15	45	15	.335	67	1000		
14	7/.0242	.073	15	45	15	.315	54	1000		

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 3.5 for sizes 14 to 8 and 4.5 for 6 to 1,000,000 CM.

2000 VOLT A.V.C. POWER CABLE

for { GENERAL POWER WIRING IN
BOILER ROOMS, POWER PLANTS,
STEEL MILLS AND INDUSTRIAL PLANTS



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

This cable is recommended for the same general applications as Rockbestos 600 Volt A.V.C. Power Cable, Table E, except that it is designed to operate at 2000 volts or less. Lead sheathed or armored if desired. Also available in multi-conductor construction. Specification for any given size on request.

TABLE F — 2000 VOLT SERVICE (NEMA Standard No. 39-54 Table 4)

Size	Stranding	Bare Diam. Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.* Inches	Approx. Net Weight per M ft. Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels
1,000,000 CM	61/.1280	1.152	30	60	40	1.505	3558		500
900,000	61/.1215	1.093	30	60	40	1.445	3230		500
800,000	61/.1145	1.031	30	60	40	1.385	2907		500
750,000	61/.1109	.998	30	60	40	1.350	2738		500
700,000	61/.1071	.964	30	60	40	1.315	2569		500
650,000	61/.1032	.929	30	60	40	1.280	2403		500
600,000	61/.0992	.893	30	60	40	1.245	2236		500
550,000	61/.0950	.855	30	60	40	1.205	2066		500
500,000	37/.1162	.814	30	60	40	1.165	1897		500
450,000	37/.1103	.772	30	60	40	1.125	1728		500
400,000	37/.1040	.728	30	60	40	1.080	1564		500
350,000	37/.0973	.681	30	60	40	1.035	1390		500
300,000	37/.0900	.630	30	60	40	.980	1225		500
250,000	37/.0822	.575	30	60	40	.925	1060		500
A.W.G.									
0000	19/.1055	.528	20	60	30	.840	878		1000
000	19/.0940	.470	20	60	30	.780	715		1000
00	19/.0837	.418	20	60	30	.730	594		1000
0	19/.0745	.373	20	60	30	.685	492		1000
1	19/.0664	.332	20	60	30	.645	412		1000
2	7/.0974	.292	15	60	25	.585	324		1000
3	7/.0867	.260	15	60	25	.550	269		1000
4	7/.0772	.232	15	60	25	.525	233		1000
5	7/.0688	.206	15	60	25	.500	197		1000
6	7/.0612	.184	15	60	25	.475	172		1000
8	7/.0486	.146	15	60	25	.440	130		1000
10	7/.0385	.116	15	60	25	.410	104		1000
12	7/.0305	.092	15	60	25	.385	85	500	1000
14	7/.0242	.073	15	60	25	.365	70	500	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 4.5 for sizes 14 to 8, 5.0 for 6 and 5, 5.5 for 4 to 2 and 6.0 for 1 to 1,000,000 CM.

ROCKBESTOS

3000 VOLT A.V.C. POWER CABLE

for { GENERAL POWER WIRING IN
BOILER ROOMS, POWER PLANTS,
STEEL MILLS AND INDUSTRIAL PLANTS



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

This cable is recommended for the same general applications as Rockbestos 600 Volt A.V.C. Power Cable, Table E, except that it is designed to operate at 3000 volts or less. Lead sheathed or armored if desired. Also available in multi-conductor construction. Specification for any given size on request.

TABLE G — 3000 VOLT SERVICE (NEMA Standard No. 39-54 Table 5)

Size	Stranding	Bare Diam. Inches	Nominal Thickness First Felted Wall Mils	Nominal Thickness V. C. Insert Mils	Nominal Thickness Second Felted Wall Mils		Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet) Reels
1,000,000 CM	61/.1280	1.152	30	90	40	THICKNESS OF OUTER BRAID .045" FOR ALL SIZES	1.565	3635	500
900,000	61/.1215	1.093	30	90	40		1.505	3302	500
800,000	61/.1145	1.031	30	90	40		1.445	2969	500
750,000	61/.1109	.998	30	90	40		1.410	2800	500
700,000	61/.1071	.964	30	90	40		1.375	2631	500
650,000	61/.1032	.929	30	90	40		1.340	2457	500
600,000	61/.0992	.893	30	90	40		1.305	2293	500
550,000	61/.0950	.855	30	90	40		1.265	2119	500
500,000	37/.1162	.814	30	90	40		1.225	1955	500
450,000	37/.1103	.772	30	90	40		1.185	1786	500
400,000	37/.1040	.728	30	90	40		1.140	1612	500
350,000	37/.0973	.681	30	90	40		1.095	1443	500
300,000	37/.0900	.630	30	90	40		1.040	1269	500
250,000	37/.0822	.575	30	90	40		.985	1094	500
A.W.G.									
0000	19/.1055	.528	20	90	30		.900	920	1000
000	19/.0940	.470	20	90	30		.840	766	1000
00	19/.0837	.418	20	90	30		.790	642	1000
0	19/.0745	.373	20	90	30		.745	543	1000
1	19/.0664	.332	20	90	30		.705	459	1000
2	7/.0974	.292	15	90	25		.645	383	1000
3	7/.0867	.260	15	90	25		.610	331	1000
4	7/.0772	.232	15	90	25		.585	260	1000
5	7/.0688	.206	15	90	25		.560	225	1000
6	7/.0612	.184	15	90	25		.535	195	1000
8	7/.0486	.146	15	90	25		.500	155	1000
10	7/.0385	.116	15	90	25		.470	125	1000
12	7/.0305	.092	15	90	25		.445	105	1000
14	7/.0242	.073	15	90	25		.425	90	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 7.0 for sizes 14 to 8, 7.5 for 6 and 5, 8.0 for 4 to 2, 8.5 for 1 to 4/0 and 9.0 for 250,000 to 1,000,000 CM.

ROCKBESTOS

5000 VOLT A.V.C. POWER CABLE

for { GENERAL POWER WIRING IN
BOILER ROOMS, POWER PLANTS,
STEEL MILLS, INDUSTRIAL PLANTS, ETC.



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

This cable is recommended for the same general applications as Rockbestos 600 Volt A.V.C. Power Cable, Table E, except that it is designed to operate at 5000 volts or less. Lead sheathed or armored if desired. Also available in multi-conductor construction. Specification for any given size on request.

TABLE H — 5000 VOLT SERVICE (NEMA Standard No. 39-54 Table 6)

Size	Stranding	Bare Diam. Inches	Nominal Thickness First Felted Wall Mils	Nominal Thickness V. C. Insert Mils	Nominal Thickness Second Felted Wall Mils	Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet) Reels
1,000,000 CM	61/.1280	1.152	30	120	40	1.625	3721	500
900,000	61/.1215	1.093	30	120	40	1.565	3379	500
800,000	61/.1145	1.031	30	120	40	1.505	3040	500
750,000	61/.1109	.998	30	120	40	1.470	2876	500
700,000	61/.1071	.964	30	120	40	1.435	2701	500
650,000	61/.1032	.929	30	120	40	1.400	2532	500
600,000	61/.0992	.893	30	120	40	1.365	2362	500
550,000	61/.0950	.855	30	120	40	1.325	2190	500
500,000	37/.1162	.814	30	120	40	1.285	2018	500
450,000	37/.1103	.772	30	120	40	1.245	1844	500
400,000	37/.1040	.728	30	120	40	1.200	1674	500
350,000	37/.0973	.681	30	120	40	1.155	1500	500
300,000	37/.0900	.630	30	120	40	1.100	1324	500
250,000	37/.0822	.575	30	120	40	1.045	1153	500
A.W.G.								
0000	19/.1055	.528	20	120	30	.960	967	1000
000	19/.0940	.470	20	120	30	.900	812	1000
00	19/.0837	.418	20	120	30	.850	687	1000
0	19/.0745	.373	20	120	30	.805	582	1000
1	19/.0664	.332	20	120	30	.765	497	1000
2	7/.0974	.292	15	120	25	.705	402	1000
3	7/.0867	.260	15	120	25	.670	363	1000
4	7/.0772	.232	15	120	25	.645	319	1000
5	7/.0688	.206	15	120	25	.620	285	1000
6	7/.0612	.184	15	120	25	.595	251	1000
8	7/.0486	.146	15	120	25	.560	182	1000
10	7/.0385	.116	15	120	25	.530	152	1000
12	7/.0305	.092	15	120	25	.505	132	1000
14	7/.0242	.073	15	120	25	.485	117	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltage 12.0 kilovolts on all sizes.

RBB 00339

ROCKBESTOS

600 VOLT A.V.C. MOTOR LEAD and APPARATUS CABLE

for { COIL CONNECTIONS, STEEL MILL MOTORS, TRANSFORMER LEADS,
ELECTRIC LOCOMOTIVES AND SUBWAY CARS



1. FLEXIBLE TINNED COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. ASBESTOS BRAID

Rockbestos A.V.C. Motor Lead and Apparatus Cable was developed to meet a demand for a cable capable of standing up without failure under severe heat and fire hazard conditions, as encountered in steel mills, boiler houses, electrified railway equipment, subway cars, etc.

This cable is positively fireproof — it will not burn under any condition, consequently fire cannot travel along its insulation. It withstands the attack of heat without drying out or becoming brittle and it remains permanently flexible. Can be installed the same as other cables and will not rot, bloom or swell as it is practically unaffected by fumes, vapors, oils or greases. Also supplied with extra flexible plain copper conductor, stranded as shown in Table W on page 52. This cable is National Electrical Code Type AVA.

NOTE: Although this is the cable generally recommended for motor leads, Rockbestos Flexible All-Asbestos Apparatus Cable is sometimes used where only high temperatures are encountered. See page 51.

TYPE AVA—TABLE L—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 33)

Size	Stranding Tinned	Bare Diam. Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.* Inches	Approx. Net Weight per M. ft. Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels
1,000,000 CM	427/.0480	1.295	20	40	40	1.585	3628		500
950,000	427/.0472	1.274	20	40	40	1.565	3533		500
900,000	427/.0453	1.222	20	40	40	1.515	3294		500
850,000	427/.0446	1.204	20	40	40	1.495	3199		500
800,000	427/.0427	1.153	20	40	40	1.445	2961		500
750,000	427/.0420	1.134	20	40	40	1.425	2794		500
700,000	427/.0403	1.088	20	40	40	1.380	2622		500
650,000	427/.0390	1.053	20	40	40	1.345	2428		500
600,000	427/.0380	1.027	20	40	40	1.320	2289		500
550,000	427/.0359	.969	20	40	40	1.260	2087		500
500,000	427/.0342	.923	20	40	40	1.215	1935		500
450,000	427/.0325	.878	20	40	40	1.170	1764		500
400,000	427/.0306	.826	20	40	40	1.120	1586		500
350,000	427/.0286	.772	20	40	40	1.065	1404		500
300,000	427/.0265	.716	20	40	40	1.010	1233		500
250,000	427/.0242	.653	20	40	40	.945	1055		500
A.W.G.									
0000	259/.0286	.600	15	30	30	.840	875		1000
000	259/.0255	.536	15	30	30	.775	721		1000
00	259/.0227	.477	15	30	30	.720	592		1000
0	259/.0202	.424	15	30	30	.665	492		1000
1	259/.0180	.378	15	30	30	.620	415		1000
2	133/.0224	.336	10	30	15	.540	300		1000
3	133/.0199	.299	10	30	15	.500	248		1000
4	133/.0177	.266	10	30	15	.470	210		1000
5	133/.0158	.237	10	30	15	.440	173		1000
6	133/.0141	.212	10	30	15	.415	147	500	1000
8	133/.0112	.168	10	30	15	.370	104	500	
10	105/.010	.120	10	30	15	.320	76	500	
12	65/.010	.095	10	30	15	.295	59	1000	
14	41/.010	.075	10	30	15	.275	45	1000	
16	26/.010	.059	10	30	15	.260	38	1000	
18	16/.010	.045	10	30	15	.245	32	1000	

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 2.5 for sizes 18 to 8, 3.0 for 6 to 4/0 and 4.0 for 250,000 to 1,000,000 CM.

600 VOLT A.V.C. MINING CABLE

for { ALL INTERNAL CIRCUITS OF
ELECTRIFIED MINING EQUIPMENT



1. FLEXIBLE TINNED COPPER CONDUCTOR

2. FELTED ASBESTOS

3. VARNISHED CAMBRIC

4. FELTED ASBESTOS

5. ASBESTOS BRAID

This construction is simply our standard Table L, A.V.C. Motor Lead and Apparatus Cable with diameters altered slightly so as to accurately fit the standardized bushing sizes of electrified mining equipment.

It has been used for several years by manufacturers of mine locomotives, loaders and coal cutters for motor resistor and controller connections. It is also in constant use in the maintenance operations of hundreds of mines.

Mining customers should definitely specify Table ML when requisitioning cable for all internal circuits of electrified mining equipment.

NOTE: Rockbestos A.V.C. Mining Cable is not recommended or intended for use as drag or reel cable.

TABLE ML — 600 VOLT SERVICE

Size	Stranding Tinned	Bare Diam. — Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Max. Finished Diam.* — Inches	Approx. Net Weight per M Ft. — Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels
500,000 CM	427, 61x7 (.0342)	.923	20	40	40	1.274	1935		500
450,000	427, 61x7 (.0325)	.878	20	40	40	1.226	1764		500
400,000	427, 61x7 (.0306)	.826	20	40	40	1.172	1586		500
350,000	427, 61x7 (.0286)	.772	20	40	40	1.115	1404		500
300,000	427, 61x7 (.0265)	.716	20	40	40	1.056	1233		500
250,000	427, 61x7 (.0242)	.653	20	40	40	.988	1055		500
A.W.G.									
0000	259, 37x7 (.0286)	.600	15	40	15	.849	832		1000
000	259, 37x7 (.0255)	.536	15	40	15	.779	682		1000
00	259, 37x7 (.0227)	.477	15	40	15	.716	553		1000
0	259, 37x7 (.0202)	.424	15	40	15	.669	455		1000
1	259, 37x7 (.0180)	.378	15	40	15	.620	377		1000
2	133, 19x7 (.0224)	.336	10	40	10	.546	300		1000
3	133, 19x7 (.0199)	.299	10	40	10	.506	248		1000
4	133, 19x7 (.0177)	.266	10	40	10	.473	203		1000
5	133, 19x7 (.0158)	.237	10	40	10	.428	160		1000
6	133, 19x7 (.0141)	.212	10	40	10	.405	137	500	1000
8	133, 19x7 (.0112)	.168	10	40	10	.359	98	500	
10	105/.010	.120	10	40	10	.313	71	500	
12	65/.010	.095	10	40	10	.294	54	1000	
14	41/.010	.075	10	40	10	.273	43	1000	

* Minimum diameter 92 3/4% of maximum diameter.

ROCKBESTOS

FIREPROOF ELEVATOR CONTROL CABLE



1. FLEXIBLE STEEL CORE 2. COTTON SERVING 3. STRANDED PLAIN COPPER CONDUCTOR 4. SPECIAL RUBBER
5. FELTED ASBESTOS 6. RAYON BRAID 7. ASBESTOS FILLERS 8. CABLE TAPE 9. ASBESTOS BRAID

Enough elevator fires have occurred so that there is a growing conviction among elevator manufacturers, building managers and architects that a fireproof elevator control or travelling cable is a necessity. In addition to being fireproof, it is important in this application that the cable shall be flexible and highly resistant to the deteriorating effect of almost constant flexing, heat and age.

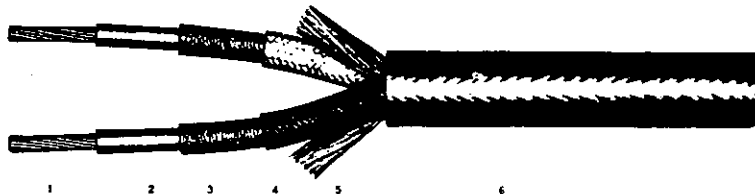
After considerable experimenting with various constructions Rockbestos developed an elevator cable the individual conductors of which are insulated with a combination of latex and felted asbestos, surmounted by a polarized rayon braid. The individual conductors are cabled around a heavily protected flexible steel core wire with the proper lay to obtain the maximum degree of flexibility. The cable assembly is then covered with a lapped, moisture-resisting cable tape and finished with a tough, abrasion-resisting asbestos yarn braid, processed with special moisture-resisting and flameproof compounds to increase its inherent fireproof characteristics. The flexible stranded steel core running through the center of the cabling is the shortest member of the assembly and thus takes the weight of the cable plus any tension to which it may be subjected. It is recommended regardless of the length of the cable required but cable can be made up without the steel core if it is so ordered. The braids of the individual conductors are polarized according to the N.E.M.A. control cable color code unless otherwise specified.

TABLE VK

Number of Conductors	Nominal Finished Diameter* Inches		Approx. Net Weight per M ft. Pounds		Standard Shipping Lengths (Feet) Reels
	No. 16 A.W.G.	No. 18 A.W.G.	No. 16	No. 18	
2	.640	.610	169	156	In
3	.640	.610	189	171	
4	.640	.610	209	186	
6	.640	.610	249	226	
8	.760	.730	332	288	Lengths
10	.860	.780	391	330	
12	.980	.880	454	383	as
14	1.100	.980	513	426	
16	1.130	1.070	593	503	Specified
18	1.130	1.070	635	535	
20	1.230	1.170	736	625	
30	1.330	1.270	1015	853	

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

FIREPROOF ELEVATOR LIGHTING CABLE



1. STRANDED PLAIN COPPER CONDUCTOR 2. SPECIAL RUBBER 3. FELTED ASBESTOS 4. RAYON BRAID 5. ASBESTOS FILLERS 6. ASBESTOS BRAID

This two conductor Rockbestos Elevator Lighting Cable is made up with individual conductors insulated the same as the conductors of the control cable, then cabled with fillers to make a round assembly and covered with a moisture-resisting and flameproof asbestos braid. Since the cable is comparatively light no steel supporting core is required. Size No. 14 AWG is usually ample for elevator lighting requirements.

TABLE VT

Number of Conductors	Nominal Finished Diameter* Inches	Approx. Net Weight per M ft. Pounds	Standard Shipping Lengths (Feet) Reels
	No. 14 A.W.G.		
2	.490	111	In Lengths as Specified

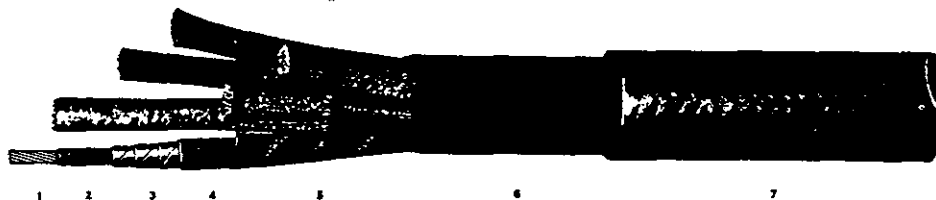
* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

ROCKBESTOS

600 VOLT A.V.C. CONTROL CABLE

for

BOILER ROOMS, POWER STATIONS,
KILN ROOMS AND OTHER LOCATIONS
WHERE CONTROL OR SIGNAL
WIRING IS EXPOSED TO HEAT



1. TINNED COPPER CONDUCTOR

2. FELTED ASBESTOS

3. VARNISHED CAMBRIC

4. FELTED ASBESTOS

5. COLOR CODED COTTON BRAIDS

6. CABLE TAPE

7. ASBESTOS BRAID

APPLICATIONS

Rockbestos Control Cable is designed for use under conditions too severe for control cables with other types of insulation. It is especially recommended for boiler rooms, kiln rooms and steel mills as a substitute for control cable with other insulations which deteriorate rapidly when exposed to the high temperatures prevailing in these places. In addition, it will operate successfully under conditions of oil, grease and corrosive fumes. It is suitable for installation either open or in conduit.

CONSTRUCTION

The insulation on the individual conductors is Rockbestos A.V.C. construction, as illustrated. The varnished cambric is sealed between the dense, impregnated walls of felted asbestos and the entire insulation is permanently flexible.

Moistureproof tape is wrapped over the cabling and this is covered with a tough jacket of braided asbestos yarn finished with special flame, heat and moisture resisting insulating compounds. The special tape wrapping adds to the moisture resisting properties of the cable and prevents the braid-finishing compounds from going through and soiling the colored cotton braids on the individual conductors.

CONDUCTORS: Number and Size

Standard strandings are 19/22 (No. 9 A.W.G.) and 19/25 (No. 12 A.W.G.) but any stranding can be furnished to order. Can be made in these strandings with any required number of conductors.

CODING

Individual wires are cotton braided in colors according to the N.E.M.A. standard color code for multi-conductor cable, which is reproduced below. Special color combinations will be supplied if desired.

Conductors	Base Color	Conductors	Base Color	Tracer	Conductors	Base Color	Tracer
1	Black	7	White	Black	14	Green	White
2	White	8	Red	"	15	Blue	"
3	Red	9	Green	"	16	Black	Red
4	Green	10	Orange	"	17	White	"
5	Orange	11	Blue	"	18	Orange	"
6	Blue	12	Black	White	19	Blue	"
		13	Red	"			

FINISH

The standard finish of the outer braided asbestos jacket is black — flame, heat and moisture resisting. A polished white finish may be supplied, however, impregnated with either flame and heat resisting, or flame, heat and moisture resisting compounds. Specify preference.

LEAD OR ARMOR COVERING

Rockbestos A.V.C. Control Cable can be supplied with lead sheath or armored covering to customer's specifications. Lead sheathing is applied directly over the tape in place of the asbestos braid. Armor can be applied either with or without lead sheath as specified.

See page 37 for specifications

RBB 00343

ROCKBESTOS

Specifications for A.V.C. CONTROL CABLE

Nominal Sizes 9 and 12 A.W.G.

1 to 19 Conductors

(See page 36 for general information)

CONSTRUCTION

Standard conductor sizes are A.W.G. No 9 - 19/22 and No. 12 - 19/25 tinned copper, insulated with a 10 mil wall of felted and impregnated asbestos, 25 mil wall varnished cambric insert, another 15 mil wall of felted asbestos and a cotton braid colored according to the N.E.M.A. Control Cable Color Code for multi-conductor cables, shown on page 36. The individual conductors are then cabled with jute fillers where necessary, a layer of cable tape is applied and finally an asbestos braid finished with black flameproof and moisture resisting compound.

The diameters of the single conductors, taken over the cotton braid, are:

No. 9 — .265"

No. 12 — .230"

Number of Conductors	TABLE MD (NEMA Standard No. 39-54 Table 16) A.W.G. No. 12 - 19/25			TABLE MT (NEMA Standard No. 39-54 Table 17) A.W.G. No. 9 - 19/22		
	Nominal Finished Diameter*	Approx. Net Weight per M feet	Standard Shipping Lengths (Feet)	Nominal Finished Diameter*	Approx. Net Weight per M feet	Standard Shipping Lengths (Feet)
	Inches	Pounds	Reels	Inches	Pounds	Reels
**1	.290	56	1000	.330	81	1000
***2	.370	176	500	.645	233	500
3	.605	204	500	.685	288	500
4	.660	249	500	.755	358	500
5	.735	281	500	.830	412	500
6	.795	333	500	.905	491	500
7	.795	343	500	.905	516	500
8	.870	395	500	.990	555	500
9	.935	441	500	1.070	670	500
10	1.020	468	500	1.170	715	500
11	1.055	516	500	1.205	790	500
12	1.055	539	500	1.205	832	500
13	1.110	592	500	1.275	915	500
14	1.110	616	500	1.275	948	500
15	1.175	675	500	1.350	1047	500
16	1.175	699	500	1.350	1100	500
17	1.245	748	500	1.430	1168	500
18	1.245	772	500	1.430	1210	500
19	1.245	795	500	1.430	1253	500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

** Single conductor has no cotton braid. Asbestos braid is applied directly over insulation

*** Can be furnished either parallel or twisted. Specify which.

NEMA dielectric test voltage on single conductors, 2.5 kilovolts.

ROCKBESTOS

600 VOLT SOLID A.V.C. SWITCHBOARD WIRE

1. SOLID TINNED COPPER CONDUCTOR 2. VARNISHED CAMBRIC 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

Switchboards which are wired with rubber insulated or slow burning wires are, in the opinion of many engineers, fire hazards that should be eliminated. The use of Rockbestos Switchboard Wire is the cheapest kind of fire insurance. It is guaranteed not to communicate fire even if it is exposed to contact with an electric arc.

Standard construction of this wire consists of a tinned copper conductor, a wall of varnished cambric, a heavy wall of felted asbestos impregnated with flame and moisture resisting insulating compounds, and a closely woven cotton braid finished with flame resisting compound. This construction complies with the N.E.M.A. Small Wiring for Switchboards Standard.

There are several distinct advantages in using Rockbestos Switchboard Wire. It is absolutely fireproof. Regardless of the amount of flame applied to it, it cannot burn and will not transmit flame because of the fireproof wall of felted asbestos lying beneath the cotton braid. Low surface leakage when the wire is damp is another desirable characteristic of Rockbestos Switchboard Wire.

Fine appearance can be secured on the completed board because no matter how sharply Rockbestos Switchboard Wire is bent, it will not crack or break open. Even if a bend is made several times in the same place the braid will not crack. The reason for this unusual performance is the felted wall of asbestos which acts like a cushion and "gives" slightly when a sharp bend is made. For this reason, boards can be wired faster than with ordinary all-cambric switchboard wire which must be handled carefully if breaks are to be avoided. The braid, made of the best grades of selected cotton and impregnated with special finishing compounds, is burnished to a smooth finish, free of moisture and dust-collecting fibres or whiskers.

On switchboards installed in locations where the wiring is exposed to high temperatures we recommend the use of our Table C, A.V.C. Boiler Room Wire shown on page 25.

APPROVED

Rockbestos Switchboard Wire, N. E. Code Type AVB is listed by the Underwriters' Laboratories and is approved by Factory Mutual Laboratories, most switchboard manufacturers and many power companies.

BRAID COLORS

Standard (stock) braid colors are gray and black. Red, yellow, blue, green, brown and white braids in plain colors or striped patterns can be furnished on special order. Be sure to specify braid color desired on order. This also applies to Switchboard Cable, Hinge Cable and Bus Cable.

TYPE AVB—TABLE B—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 12)

Size A.W.G.	Bare Diam. Inches	Nominal Thickness V. C. Mils	Nominal Thickness Felted Wall Mils	Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet)	
						Coils	Reels
0000	.460	40	40	.665	800		450
000	.410	40	40	.615	650		500
00	.365	40	40	.570	530		500
0	.325	40	40	.530	435		500
1	.289	40	40	.495	365		1000
2	.258	40	40	.465	300		1000
4	.204	40	40	.410	210		1000
6	.162	40	40	.370	155		1000
8	.128	30	20	.270	82	500	1000
10	.102	30	20	.245	59	500	1500
12	.081	30	20	.225	44	500	2000
14	.064	30	20	.205	34	500	2500
16	.051	30	20	.195	27	1000	2500
18	.040	30	20	.180	23	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 3.0 for sizes 18 to 8 and 4.0 for 6 to 4/0.

ROCKBESTOS

600 VOLT STRANDED A. V. C. SWITCHBOARD CABLE



1 STRANDED TINNED COPPER CONDUCTOR 2. VARNISHED CAMBRIC 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

This wire is identical in all characteristics to our Table B, A.V.C. Switchboard Wire, except that it has a coarse stranded conductor. Many engineers are of the opinion that the possibility of a broken conductor, due to a nick which may occur when skinning, is far less with a stranded than with a solid conductor.

APPROVED

Rockbestos A.V.C. Switchboard Cable, National Electrical Code Type AVB, is listed by the Underwriters' Laboratories, and is approved by Factory Mutual Laboratories, most switchboard manufacturers and many power companies.

BRAID COLORS

Standard (stock) braid colors are gray and black. Red, yellow, blue, green, brown and white braids in plain colors or striped patterns can be furnished on special order. Be sure to specify braid color desired on order. This also applies to Switchboard Wire, Hinge Cable and Bus Cable.

TYPE AVB—TABLE BS—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 11)

Size A.W.G.	Stranding Tinned	Bare Diam. Inches	Nominal Thickness V. C. Mils	Nominal Thickness Felted Wall Mils	Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet)	
							Coils	Reels
0000	19/.1055	.528	40	40	.735	835		500
000	19/.0940	.470	40	40	.675	675		500
00	19/.0837	.418	40	40	.625	555		500
0	19/.0745	.373	40	40	.580	460		500
1	19/.0664	.332	40	40	.540	380		1000
2	7/.0974	.292	40	40	.500	315		1000
3	7/.0867	.260	40	40	.465	263		1000
4	7/.0772	.232	40	40	.440	225		1000
6	7/.0612	.184	40	40	.390	163		1000
8	7/.0486	.146	30	20	.290	87	500	1000
10	7/.0385	.116	30	20	.260	63	500	1500
12	7/.0305	.092	30	20	.235	47	500	2000
14	7/.0242	.073	30	20	.215	36	500	2500
16	7/.0193	.058	30	20	.200	28	1000	2500
18	7/.0151	.045	30	20	.185	23	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
NEMA dielectric test voltages in kilovolts, 3.0 for sizes 18 to 8 and 4.0 for 6 to 4/0.

600 VOLT FLEXIBLE A. V. C. SWITCHBOARD HINGE CABLE

for { SWITCHBOARDS, PANELBOARDS AND ALSO FOR
CONDUIT WIRING WHERE A SMALL O.D. IS REQUIRED



1. STRANDED TINNED COPPER CONDUCTOR

2. FELTED ASBESTOS

3. VARNISHED CAMBRIC

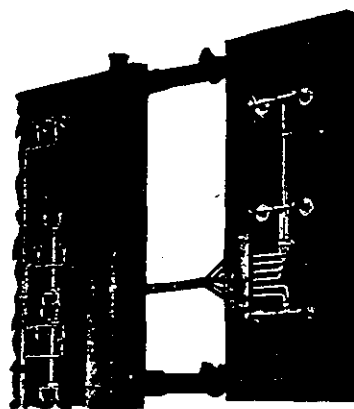
4. FELTED ASBESTOS

5. FLAMEPROOF COTTON BRAID

As a companion wire to Rockbestos Switchboard Wire, we offer Rockbestos Hinge Cable, a heat resisting and fireproof, extra flexible wire, developed and used primarily for hinge or jumper connections on swinging panels, connections to swinging synchronizing meters, lamps and the like. It is also used for conduit wiring where the larger diameters of Table E and L cannot be accommodated.

Standard construction employs a flexible stranded, tinned copper conductor, insulated with a felted wall of asbestos, an insert of varnished cambric tape, another wall of felted asbestos, impregnated with flameproof and moisture resisting insulating compounds, and a flameproof cotton braid overall.

The diameter of Rockbestos Hinge Cable is about the same as that of Table B Switchboard Wire. The same black, gray and colored finish compounds that are used on Table B wire are also used on Hinge Cable, so that when they are used on the same board they match.



Showing application of Rockbestos Table BH 600 Volt Hinge Cable to swinging instrument panel on a switchboard.

APPROVED

Rockbestos A.V.C. Hinge Cable, National Electrical Code Type AVB, is listed by the Underwriters' Laboratories and is approved by Factory Mutual Laboratories, most switchboard manufacturers and many power companies.

BRAID COLORS

The standard braid finishes are gray and black, the same as for Switchboard Wire or Cable and Bus Cable. Red, yellow, blue, green, brown and white braids in plain colors or striped patterns can be furnished on special order. Be sure to specify braid color desired on order.

TYPE AVB—TABLE BH—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 13)

Size A.W.G.	Stranding Tinned	Bare Diam. — Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.* — Inches	Approx. Net Weight per M Ft. — Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels
8	133/.0112	.168	10	25	15	.310	89	500	1000
10	105/.010	.120	10	25	15	.260	63	500	1500
12	65/.010	.095	10	25	15	.235	43	500	2000
14	41/.010	.075	10	25	15	.215	34	500	2500
16	26/.010	.059	10	25	15	.200	27	1000	2500
18	16/.010	.045	10	25	15	.185	22	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltage 2.5 kilovolts on all sizes.

ROCKBESTOS

600 VOLT A.V.C. SWITCHBOARD BUS CABLE



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. VARNISHED CAMBRIC 4. FELTED ASBESTOS 5. FLAMEPROOF COTTON BRAID

As Rockbestos A.V.C. Switchboard Wire and A.V.C. Hinge Cable have become more generally used by switchboard builders and power companies, requests have been received for insulated cable with a finish and characteristics matching these wires, to be used for bus work. For this purpose we offer Rockbestos A.V.C. Switchboard Bus Cable, made to the same specifications as A.V.C. Power Cable except that instead of a braided asbestos jacket it has a braided cotton jacket, finished in either standard gray or black to match our Switchboard Wire and Cable or Hinge Cable. White or colored braids also available on special order. Colors same as Table B on page 38. The use of this family of switchboard wires makes unnecessary the painting of the completed wiring to insure a matching appearance.

This cable is National Electrical Code Type AVB, listed by Underwriters' Laboratories.

TYPE AVB—TABLE P—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 10)

Size	Stranding	Bare Diam. — Inches	Nominal Thickness First Felted Wall	Nominal Thickness V. C. Insert	Nominal Thickness Second Felted Wall	Nominal Finished Diam.*	Approx. Net Weight per M Ft. Pounds	Standard Shipping Length (Feet)	
			Mils	Mils	Mils			Coils	Reels
1,000,000 CM	61/.1280	1.152	30	40	40	1.435	3524		500
950,000	61/.1248	1.123	30	40	40	1.405	3357		500
900,000	61/.1215	1.093	30	40	40	1.375	3190		500
850,000	61/.1180	1.062	30	40	40	1.345	3023		500
800,000	61/.1145	1.031	30	40	40	1.315	2856		500
750,000	61/.1109	.998	30	40	40	1.280	2695		500
700,000	61/.1071	.964	30	40	40	1.245	2522		500
650,000	61/.1032	.929	30	40	40	1.210	2355		500
600,000	61/.0992	.893	30	40	40	1.175	2188		500
550,000	61/.0950	.855	30	40	40	1.135	2021		500
500,000	37/.1162	.814	30	40	40	1.095	1854		500
450,000	37/.1103	.772	30	40	40	1.055	1687		500
400,000	37/.1040	.728	30	40	40	1.010	1522		500
350,000	37/.0973	.681	30	40	40	.965	1351		500
300,000	37/.0900	.630	30	40	40	.910	1186		500
250,000	37/.0822	.575	30	40	40	.855	1019		500
A.W.G.									
0000	19/.1055	.528	20	30	30	.735	820		1000
000	19/.0940	.470	20	30	30	.675	670		1000
00	19/.0837	.418	20	30	30	.625	555		1000
0	19/.0745	.373	20	30	30	.580	455		1000
1	19/.0664	.332	20	30	30	.540	350		1000
2	7/.0974	.292	15	30	15	.460	284		1000
3	7/.0867	.260	15	30	15	.425	234		1000
4	7/.0772	.232	15	30	15	.395	194		1000
5	7/.0688	.206	15	30	15	.370	163		1000
6	7/.0612	.184	15	30	15	.345	136	500	1000
8	7/.0486	.146	15	30	15	.310	98	500	
10	7/.0385	.116	15	30	15	.280	71	500	
12	7/.0305	.092	15	30	15	.255	55	1000	
14	7/.0242	.073	15	30	15	.235	43	1000	
16	7/.0193	.058	15	30	15	.220	36	1000	
18	7/.0151	.045	15	30	15	.205	30	1000	

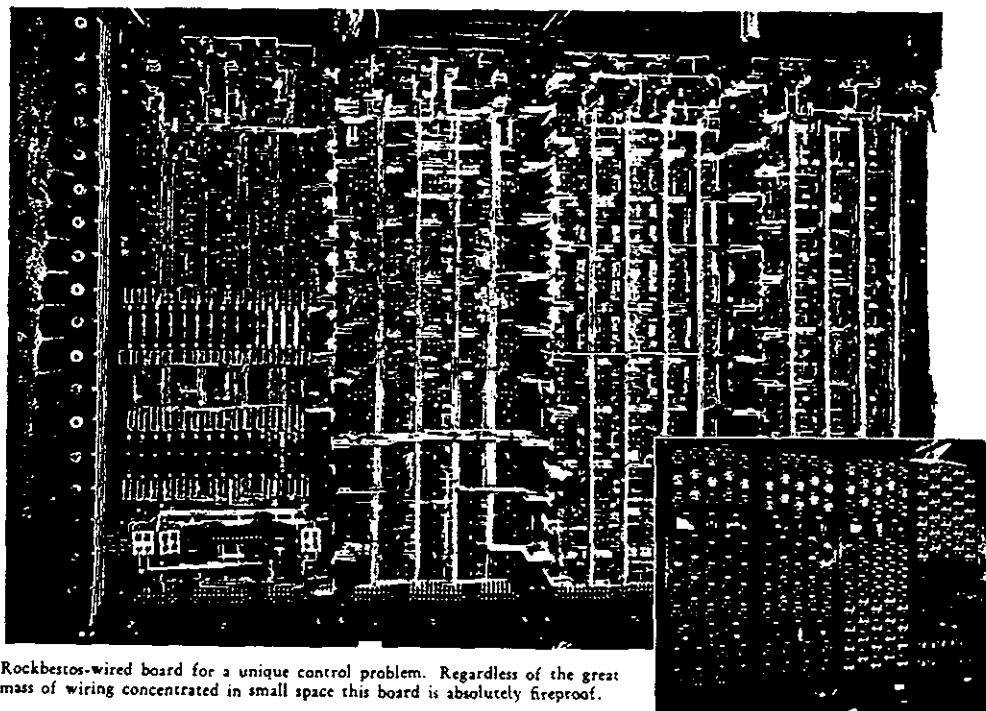
* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltages in kilovolts, 2.5 for sizes 18 to 8, 3.0 for 6 to 4/0 and 4.0 for 250,000 to 1,000,000 CM.

RBB 00348

Wired for Insurance against Fires



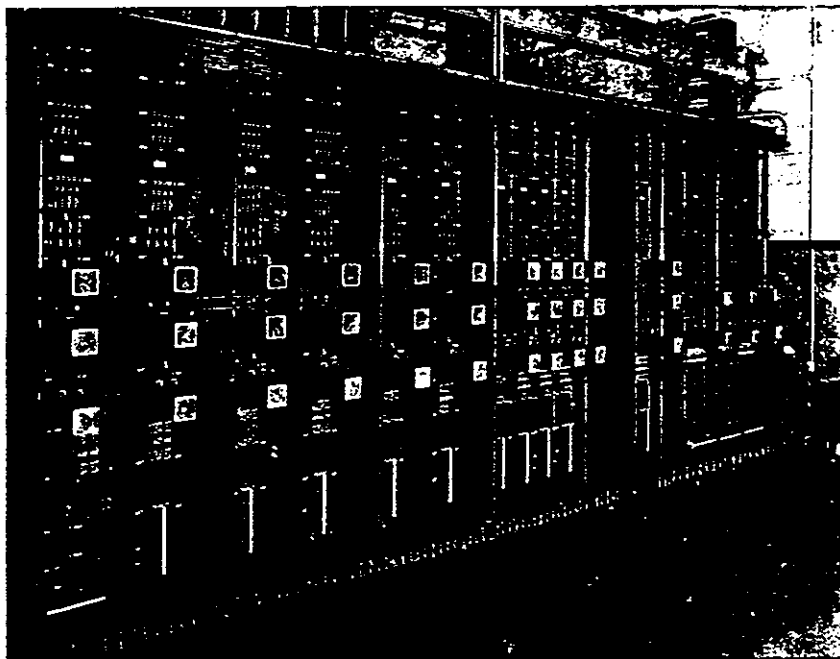
A beautifully wired board in control room of a Washington State hydro station. About 40,000 ft. of Rockbestos Switchboard Wire was used on this job.



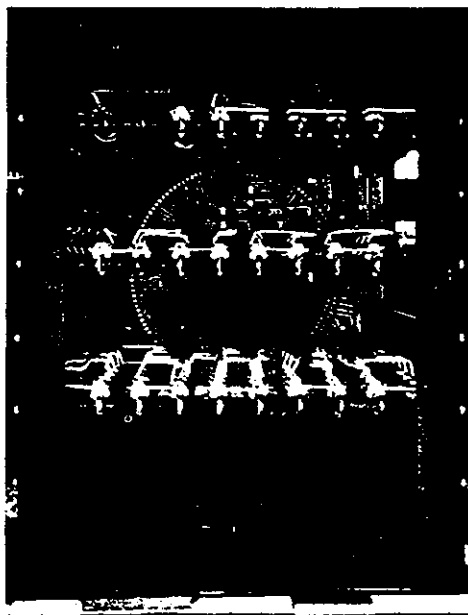
Rockbestos-wired board for a unique control problem. Regardless of the great mass of wiring concentrated in small space this board is absolutely fireproof.

ROCKBESTOS

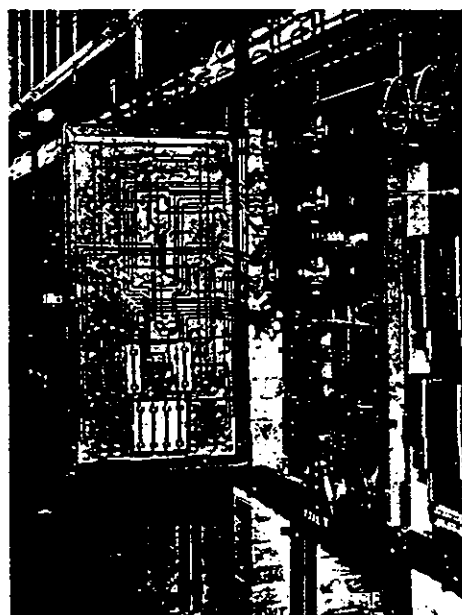
Typical Rockbestos Wired Boards



Rockbestos Switchboard Wire is uniform in finish. When future expansion necessitates additional wiring on this board, it will exactly match the existing wiring.



Beautiful wiring jobs can be done with Rockbestos Switchboard Wire.



Illustrating use of Rockbestos Hinge Cable.

ROCKBESTOS

600 VOLT SOLID

National Electrical Code Type SNA

SWITCHBOARD WIRE



1. SOLID TINNED COPPER CONDUCTOR 2. SYNTHETIC RESIN 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

SYNTHETIC RESIN AND FELTED ASBESTOS INSULATION

This new Rockbestos Switchboard Wire, insulated with a seamless synthetic sheath, felted asbestos and a flameproof cotton braid is resistant to heat, flame, oil, grease, corrosive fumes and moisture. It skins easily, takes right angle bends without cracking, and is approved for applications in temperatures ranging up to 194°F. The same insulation construction is also available in Rockbestos Type SNA Switchboard Cable with coarse stranded conductor shown on page 45, and Rockbestos Type SNA Flexible Switchboard Hinge Cable with flexible stranded conductors shown on page 46.

TWO DIAMETERS

Made in two diameters, "Small" (Table XB) for installations requiring the grouping of many wires of minimum size and weight in limited space, or "Standard" (Table XBO) in the same diameters as Rockbestos A.V.C. Switchboard Wire, Table B shown on Page 38, to permit perfect matching with previous wiring and a snug fit in cleats, clamps and fittings designed for the larger diameter.

APPROVED

This Wire is National Electrical Code Type SNA and is listed by the Underwriters' Laboratories.

BRAID COLORS

Standard braid colors are gray and black. Red, yellow, blue, green, brown and white braids in plain colors and striped patterns can be furnished on special orders. Be sure to specify braid color, size, quantity, type name, and table letters on your order. This also applies to Rockbestos Type SNA Switchboard Cable and Hinge Cable.

Size A.W.G.	Bare Diam. Inches	Nominal Thickness Synthetic Resin	Nominal Thickness Felted Asbestos	Nominal Thickness Cotton Braid	Nominal Finished Diam.*	Approx. Net Weight per M ft.	Standard Shipping Lengths (Feet)	
		Mils	Mils	Mils	Inches	Pounds	Coils	Reels
TYPE SNA—TABLE XB—SMALL DIAMETER—(NEMA Standard, No. 39-54 Table 14A)								
8	.128	22.5	20	17.5	.250	75	500	1000
10	.102	22.5	20	15.0	.220	54	500	1500
12	.081	22.5	20	15.0	.200	39	500	2000
14	.064	22.5	20	15.0	.185	30	500	2500
16	.051	22.5	20	15.0	.170	24	1000	2500
18	.040	22.5	20	15.0	.160	19	1000	3000
TYPE SNA—TABLE XBO—STANDARD DIAMETER—(Same diam. as our Table B, NEMA Table 12)								
8	.128	22.5	27.5	20	.270	79	500	1000
10	.102	22.5	27.5	20	.245	56	500	1500
12	.081	22.5	27.5	20	.225	42	500	2000
14	.064	22.5	27.5	20	.205	31	500	2500
16	.051	22.5	27.5	20	.195	26	1000	2500
18	.040	22.5	27.5	20	.180	21	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 3% is necessary due to variations in process of manufacture.
NEMA dielectric test voltage 3.0 kilovolts on all sizes.

RBB 00351

ROCKBESTOS

600 VOLT STRANDED National Electrical Code Type SNA SWITCHBOARD CABLE



1. STRANDED TINNED COPPER CONDUCTOR 2. SYNTHETIC RESIN 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

SYNTHETIC RESIN AND FELTED ASBESTOS INSULATION

A new Rockbestos Switchboard Cable insulated exactly the same as Rockbestos Type SNA Switchboard Wire, on page 44, but put up with a coarse stranded conductor for those who prefer that type to a solid wire. The laminated insulation, consisting of a seamless synthetic sheath, felted asbestos and flameproof cotton braid, skins easily, takes sharp bends without cracking, is resistant to heat, flame, oil, grease, corrosive fumes and moisture, and is approved for temperatures up to 194°F. For matching solid and flexible conductor constructions see Rockbestos Type SNA Switchboard Wire shown on page 44 and Rockbestos Type SNA Flexible Hinge Cable shown on page 46.

TWO DIAMETERS

Available in two diameters. "Small" (Table XBS) for applications necessitating the bunching of many wires in confined spaces and where weight reduction is a factor. "Standard" (Table XBSO) in the same diameters as our Rockbestos A.V.C. Switchboard Cable, Table BS, shown on page 39, to permit matching up present wiring and proper fitting of cleats and clamps designed for the larger diameter.

APPROVED

This Cable is National Electrical Code Type SNA and is listed by the Underwriters' Laboratories.

BRAID COLORS

Standard braid colors are gray and black. Red, yellow, blue, green, brown and white braids in plain colors and striped patterns can be furnished on special orders. Be sure to specify braid color, size, quantity, type name, and table letters on your order. This also applies to Rockbestos Type SNA Switchboard Wire and Hinge Cable.

Size A.W.G.	Stranding Tinned	Bare Diam. Inches	Nominal Thickness Synthetic Resin	Nominal Thickness Felted Asbestos	Nominal Thickness Cotton Braid	Nominal Finished Diam.*	Approx. Net Weight per M ft. Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils	Inches		Coils	Reels
TYPE SNA—TABLE XBS—SMALL DIAMETER—(NEMA Standard, No. 39-54 Table 14)									
8	7/.0486	.146	22.5	20	17.5	.270	79	500	1000
10	7/.0385	.116	22.5	20	17.5	.240	56	500	1500
12	7/.0305	.092	22.5	20	15.0	.210	41	500	2000
14	7/.0242	.073	22.5	20	15.0	.190	31	500	2500
16	7/.0193	.058	22.5	20	15.0	.175	24	1000	2500
18	7/.0151	.045	22.5	20	15.0	.165	20	1000	3000
TYPE SNA—TABLE XBSO—STANDARD DIAMETER—(Same diam. as our Table BS, NEMA Table 11)									
8	7/.0486	.146	22.5	27.5	20	.290	82	500	1000
10	7/.0385	.116	22.5	27.5	20	.260	59	500	1500
12	7/.0305	.092	22.5	27.5	20	.235	43	500	2000
14	7/.0242	.073	22.5	27.5	20	.215	33	500	2500
16	7/.0193	.058	22.5	27.5	20	.200	27	1000	2500
18	7/.0151	.045	22.5	27.5	20	.185	21	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
NEMA dielectric test voltage 3.0 kilovolts on all sizes.

ROCKBESTOS

600 VOLT FLEXIBLE National Electrical Code Type SNA SWITCHBOARD HINGE CABLE



1. STRANDED TINNED COPPER CONDUCTOR 2. SYNTHETIC RESIN 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

SYNTHETIC RESIN AND FELTED ASBESTOS INSULATION

Insulated with a seamless synthetic sheath, felted asbestos and flameproof cotton braid just like its companion wires, Rockbestos Type SNA Switchboard Wire and Cable, this Flexible Rockbestos Type SNA Switchboard Hinge Cable is also resistant to heat, flame, oil, grease, corrosive fumes and moisture. It is ideal for hinge or jumper connections on swinging panels, connections to swinging synchronizing meters, lamps and for general switchboard and panel work requiring a flexible conductor. Approved for installations in temperatures ranging to 194°F. Match your board wiring by using it with either Rockbestos Type SNA Switchboard Wire shown on page 44 or Rockbestos Type SNA Switchboard Cable shown on page 45.

TWO DIAMETERS

You can obtain this cable in small and standard diameters. "Small" (Table XBH) for installations requiring the grouping of many wires of minimum size and weight in limited space. "Standard" (Table XBHO) in the same diameters as Rockbestos Switchboard Hinge Cable, Table BH shown on page 40, to permit perfect matching with previous wiring and a snug fit in board fittings designed for the larger diameter.

APPROVED

This cable is National Electrical Code Type SNA and is listed by the Underwriters' Laboratories.

BRAID COLORS

Standard braid colors are gray and black. Red, yellow, blue, green, brown and white braids in plain colors and striped patterns can be furnished on special orders. Be sure to specify braid color, size, quantity, type name, and table letters on your order. This also applies to Rockbestos Type SNA Switchboard Wire and Cable.

Size A.W.G.	Stranding Tinned	Bare Diam. Inches	Nominal Thickness Synthetic Resin	Nominal Thickness Felted Asbestos	Nominal Thickness Cotton Braid	Nominal Finished Diam.* Inches	Approx. Net Weight per M ft. Pounds	Standard Shipping Lengths (Feet)	
			Mils	Mils	Mils			Coils	Reels

TYPE SNA—TABLE XBH—SMALL DIAMETER—(NEMA Standard, No. 39-54 Table 15)

8	133/.0112	.168	22.5	20	17.5	.300	85	500	1000
10	105/.010	.120	22.5	20	17.5	.250	58	500	1500
12	65/.010	.095	22.5	20	15.0	.220	42	500	2000
14	41/.010	.075	22.5	20	15.0	.200	31	500	2500
16	26/.010	.059	22.5	20	15.0	.185	25	1000	2500
18	16/.010	.045	22.5	20	15.0	.170	21	1000	3000

TYPE SNA—TABLE XBHO—STANDARD DIAMETER—(Same diam. as our Table BH, NEMA Table 13)

8	133/.0112	.168	22.5	25	20	.310	87	500	1000
10	105/.010	.120	22.5	25	20	.260	60	500	1500
12	65/.010	.095	22.5	25	20	.235	44	500	2000
14	41/.010	.075	22.5	25	20	.215	33	500	2500
16	26/.010	.059	22.5	25	20	.200	27	1000	2500
18	16/.010	.045	22.5	25	20	.185	22	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture
NEMA dielectric test voltage 3.0 kilovolts on all sizes.

ROCKBESTOS

300 VOLT ALL-ASBESTOS RHEOSTAT AND STOVE WIRES

for ELECTRIC RANGES, LABORATORY OVENS, COOKERS, HOTPLATES,
STOVES, AND MANY OTHER ELECTRICAL HEATING DEVICES.



with Solid Plain Copper, Nickel or Monel Conductors



with Stranded Plain Copper, Nickel or Monel Conductors



An all-asbestos stove wire designed for use in electric ranges, laboratory ovens, cookers, hotplates, and many other electrical heating devices requiring a heat resistant wire of this type for service voltages of 300 or lower.

Ample dielectric strength is provided by the dense, seamless, impregnated wall of felted asbestos which is applied to conductors of either solid plain copper, nickel or monel. A tough, rugged asbestos braid of 45 mils thickness, tightly woven over the impregnated felted asbestos wall, supplies mechanical strength and additional resistance to heat and flame, or heat, flame and moisture, depending upon the impregnating compound used, "Hi-

temp" or "Moistemp." Hi-temp impregnated insulation is heat and flame resistant, whereas insulation impregnated with Moistemp compound is heat, flame and moisture resistant. Be sure to specify your preference for either "Hi-temp" or "Moistemp" on your order; also the table letters indicating the type of conductor you prefer, and the braid color desired. Plain copper, nickel and monel conductors are standard, but tinned or plated copper conductors and alloy conductors other than nickel or monel can be supplied on special order.

Black, white, red, blue or grey are the standard braid finishes. Other colored braids can be processed on special order. For the same construction types for 600 volt service see pages 48 and 50.

SOLID—Specify Table AC for Copper—Table AM for Monel—Table AN for Nickel

Size A.W.G.	Bare Diam. Inches	Nominal Thickness Felted Wall Mils	Nominal Thickness Outer Braid Mils .045" For All Sizes	Nominal Finished Diameter* Inches	Approx. Net Weight Per M Ft. Pounds	Standard Shipping Lengths (Feet)	
						Coils	Reels
4	.204	40		.375	177		1000
5	.182	40		.355	148		1000
6	.162	40		.335	124	500	1000
8	.128	31		.280	78	500	1000
10	.102	31		.255	56	1000	2000
12	.081	31		.235	43	1000	2000
14	.064	31		.220	33	1000	2000
16	.051	31		.205	27	1000	2000
18	.040	31		.195	23	1000	3000

STRANDED—Specify Table ACS for Copper—Table AMS for Monel—Table ANS for Nickel

Size A.W.G.	Stranding	Bare Diam. Inches	Nominal Thickness Felted Wall Mils	Nominal Thickness Outer Braid Mils .045" For All Sizes	Nominal Finished Diameter* Inches	Approx. Net Weight Per M Ft. Pounds	Standard Shipping Lengths (Feet)	
							Coils	Reels
4	7/.0772	.232	40		.405	183		1000
5	7/.0688	.206	40		.380	152		1000
6	7/.0612	.184	40		.355	128	500	1000
8	7/.0486	.146	31		.300	82	500	1000
10	7/.0385	.116	31		.270	59	1000	2000
12	7/.0305	.092	31		.245	44	1000	2000
14	7/.0242	.073	31		.225	35	1000	2000
16	7/.0193	.058	31		.210	28	1000	2000
18	7/.0151	.045	31		.200	23	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 3% is necessary due to variations in process of manufacture.

ROCKBESTOS

600 VOLT

ALL-ASBESTOS RHEOSTAT WIRE

for

GRID JUMPER CONNECTIONS
CONNECTIONS FROM GRIDS TO FACEPLATES
SWITCHBOARD WIRING IN HOT LOCATIONS
ELEVATOR AND LOCOMOTIVE CONTROL PANEL WIRING
AND GENERAL OPEN WIRING EXPOSED TO HEAT,
FUMES, FIRE HAZARD, OIL OR GREASE



1. SOLID PLAIN COPPER CONDUCTOR

2. FELTED ASBESTOS

3. ASBESTOS BRAID

Asbestos rheostat wire was originally produced by putting two or three braids of asbestos yarn on the wire and finishing each braid with compound. This had several disadvantages. For example, its moisture resistance was very low due to the comparatively open covering so that many engineers considered that spaced wiring was necessary in order to prevent possible leakage under damp conditions. The labor cost of doing this type of wiring is high.

Another disadvantage — though really more of an annoyance — was that in working with this wire a good deal of the compound flaked off and continued to do so after the installation was completed, spoiling the appearance of an otherwise nice job.

The Rockbestos development of the felted and impregnated wall of asbestos insulation was a distinct improvement. Instead of a relatively open covering on the wire, the asbestos is applied in the form of a homogeneous insulation. The dielectric strength is thereby increased. Next, the impregnating compound is an integral part of the insulating wall, not painted on after the wall is

formed. That means that, through repeated heating and cooling cycles, the compound can never fall away from the asbestos. The dielectric strength and moisture resistance of Rockbestos Rheostat Wire are, therefore, practically constant. And there is none of the usual flaking when working with Rockbestos Rheostat Wire and Cable, with either white or black braid.

Because of its comparatively high moisture resistance Rockbestos Rheostat Wire may be bunch-wired with perfect safety. The illustrations on page 49 show several examples of rheostats bunch-wired with Rockbestos Rheostat Wire and Cable in several of the country's large power stations.

Rockbestos Rheostat Wire is recommended for all open work at 600 volts or less where wiring will be subject to heat, fumes, oil, grease or fire hazard.

The insulation is generally impregnated with black compound, but the braid finish can be either black or white. Specify which. Colors may be furnished on special order.

N. E. Code Type AI, listed by Underwriters' Lab.

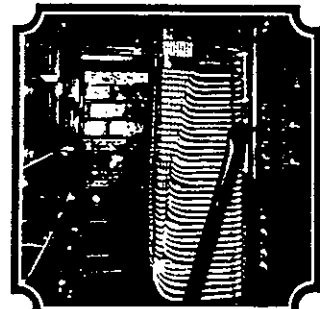
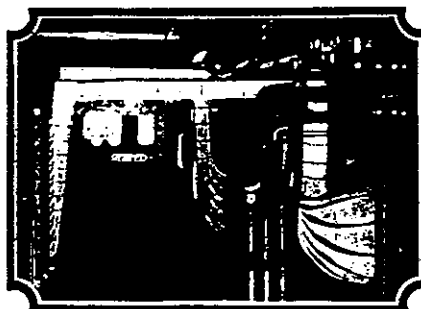
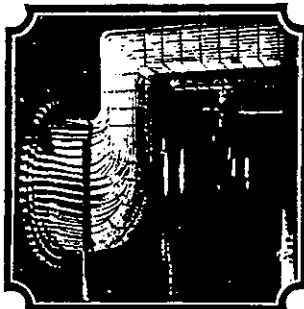
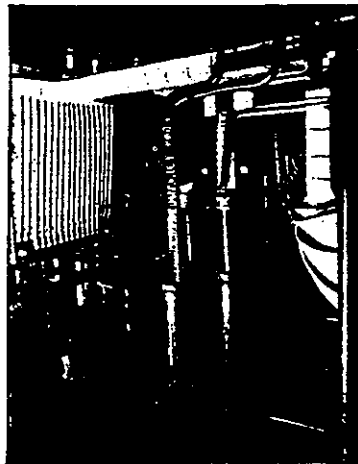
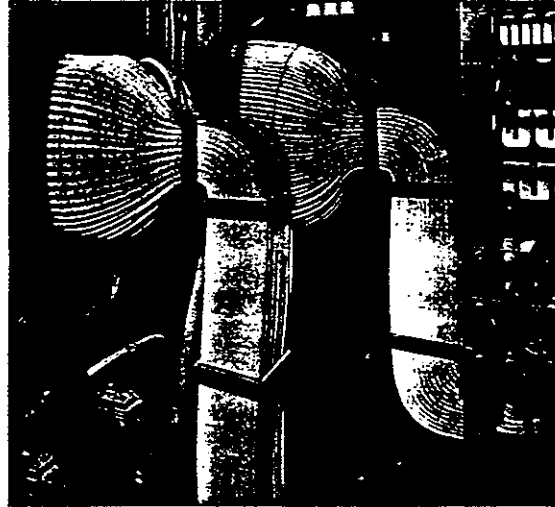
TYPE AI—TABLE A—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 20)

Size A.W.G.	Bare Diam. Inches	Nominal Thickness Felted Wall Mils	THICKNESS OF OUTER BRAID .045" FOR ALL SIZES	Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet)	
						Coils	Reels
0000	.460	60		.670	761		450
000	.410	60		.620	620		500
00	.365	60		.575	477		500
0	.325	60		.535	388		500
1	.289	60		.500	316		500
2	.258	40		.430	248		1000
3	.229	40		.400	202		1000
4	.204	40		.375	167		1000
5	.182	40		.355	138		1000
6	.162	40		.335	121	500	1000
8	.128	31		.280	79	500	1000
10	.102	31		.255	58	1000	1500
12	.081	31		.235	42	1000	1500
14	.064	31		.220	34	1000	2000
16	.051	31		.205	28	1000	2000
18	.040	31		.195	24	1000	2000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
NEMA dielectric test voltage 1.5 kilovolts on all sizes.

ROCKBESTOS

Typical Rockbestos Rheostat Wiring Installations



Labor costs are high on jobs like these. Make the labor investment but once by using Rockbestos Rheostat Wire — "the wire with permanent insulation."
(Tables A and R)

ROCKBESTOS

600 VOLT ALL-ASBESTOS POWER AND RHEOSTAT CABLE

for { SAME USES AS TABLE "A" WIRE
WHERE STRANDED CONDUCTOR
IS REQUIRED



1. STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. ASBESTOS BRAID

This cable is National Electrical Code Type AI, listed by the Underwriters' Laboratories. Standard braid finishes are black or white, colors on special order.

TYPE AI—TABLE R—600 VOLT SERVICE (NEMA Standard No 39-54 Table 21)

Size	Stranding	Bare Diam. Inches	Nominal Thickness Felted Wall Mils		Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet)	
							Coils	Reels
1,000,000 CM	61/.1280	1.152	120	THICKNESS OF OUTER BRAID .045" FOR ALL SIZES	1.485	3456		500
950,000	61/.1248	1.123	120		1.455	3291		500
900,000	61/.1215	1.093	120		1.425	3126		500
850,000	61/.1180	1.062	120		1.395	2961		500
800,000	61/.1145	1.031	120		1.365	2796		500
750,000	61/.1109	.998	120		1.330	2631		500
700,000	61/.1071	.964	120		1.295	2470		500
650,000	61/.1032	.929	120		1.260	2307		500
600,000	61/.0992	.893	120		1.225	2142		500
550,000	61/.0950	.855	120		1.185	1977		500
500,000	37/.1162	.814	120		1.145	1812		500
450,000	37/.1103	.772	120		1.105	1647		500
400,000	37/.1040	.728	120		1.060	1482		500
350,000	37/.0973	.681	120		1.015	1317		500
300,000	37/.0900	.630	120		.960	1219		500
250,000	37/.0822	.575	120		.905	982		500
A.W.G.								
0000	19/.1055	.528	90		.800	819		1000
000	19/.0940	.470	90		.740	672		1000
00	19/.0837	.418	90		.690	555		1000
0	19/.0745	.373	90		.645	462		1000
1	19/.0664	.332	90		.605	388		1000
2	7/.0974	.292	60		.505	274		1000
3	7/.0867	.260	60		.470	227		1000
4	7/.0772	.232	60		.445	188		1000
5	7/.0688	.206	60		.420	157		1000
6	7/.0612	.184	60		.395	132	500	1000
8	7/.0486	.146	40		.320	87	500	
10	7/.0385	.116	40		.290	63	500	
12	7/.0305	.092	40		.265	48	1000	
14	7/.0242	.073	40		.245	38	1000	
16	7/.0193	.058	40		.230	31	1000	
18	7/.0151	.045	40		.215	26	1000	

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture
NEMA dielectric test voltage 1.5 kilovolts on all sizes.

ROCKBESTOS

600 VOLT FLEXIBLE ALL-ASBESTOS APPARATUS CABLE

for { SAME USES AS RECOMMENDED
FOR TABLE "A" AND "R" WIRES
WHERE A FLEXIBLE CONDUCTOR
IS REQUIRED



1 FLEXIBLE TINNED COPPER CONDUCTOR 2 FELTED ASBESTOS 3 ASBESTOS BRAID

This cable has the same general uses as the solid and coarse stranded Rheostat Wires shown on pages 48 and 50.

It is recommended wherever a flexible lead must be installed under high temperature conditions and where there will be no great amount of moisture.

Although we recommend the A.V.C. Motor Lead and Apparatus Cable shown on page 33 for general motor use, some steel mills use this flexible stranded All-Asbestos cable where leads will be exposed only to high temperatures and where the possibility of moisture is remote.

This cable will not deteriorate under constant high temperatures. It positively will not burn. It will be found useful, therefore, for open work, such as jumper leads, etc., at voltages of 600 or less, under conditions of heat and fire hazard. Neither grease nor oil can rot this cable nor cause it to bloom or swell. This cable is National Electrical Code Type AI, listed by Underwriters' Laboratories.

The insulation is usually supplied impregnated with black compound but the braid finish can be either white or black. Specify which. Colored finishes on special order.

TYPE AI—TABLE RF—600 VOLT SERVICE (NEMA Standard No. 39-54 Table 34)

Size	Stranding Tinned	Bare Diam. — Inches	Nominal Thickness Felted Wall — Mils		Nominal Finished Diam.* — Inches	Approx. Net Weight per M Ft. — Pounds	Standard Shipping Lengths (Feet)	
							Coils	Reels
500,000 CM	427/.0342	.923	120	THICKNESS OF OUTER BRAID .045" FOR ALL SIZES	1.255	1910		500
450,000	427/.0325	.878	120		1.210	1735		500
400,000	427/.0306	.826	120		1.160	1560		500
350,000	427/.0286	.772	120		1.105	1385		500
300,000	427/.0265	.716	120		1.050	1211		500
250,000	427/.0242	.653	120		.985	1035		500
A.W.G.								
0000	259/.0286	.600	90		.870	860		1000
000	259/.0255	.536	90		.810	708		1000
00	259/.0227	.477	90		.750	581		1000
0	259/.0202	.424	90		.695	482		1000
1	259/.0180	.378	90		.650	407		1000
2	133/.0224	.336	60		.550	290		1000
3	133/.0199	.299	60		.510	240		1000
4	133/.0177	.266	60		.480	203		1000
5	133/.0158	.237	60		.450	166		1000
6	133/.0141	.212	60		.425	140	500	1000
8	133/.0112	.168	40		.340	92	500	
10	105/.010	.120	40		.290	65	500	
12	65/.010	.095	40		.265	49	1000	
14	41/.010	.075	40		.245	38	1000	
16	26/.010	.059	40		.230	31	1000	
18	16/.010	.045	40		.215	27	1000	

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltage 1.5 kilovolts on all sizes.

ROCKBESTOS

300 VOLT EXTRA FLEXIBLE ALL-ASBESTOS APPARATUS CABLE

for { MOTION PICTURE PROJECTORS, SUN ARCS, EFFECT MACHINES,
HIGH TEMPERATURE LIGHTING FIXTURES, SPOT LIGHTS, ETC.



1. ROPE LAY STRANDED PLAIN COPPER CONDUCTOR 2. FELTED ASBESTOS 3. ASBESTOS BRAID

This cable was originally developed to meet a specific application in the lamp houses of motion picture projectors and in sun-arc lamps. Hence its frequently used name "Motion Picture Cable."

This is a more flexible version of the Table RF cable shown on page 51. Where a 259 stranding is used in Table RF size 2/0, for example, this cable has a stranding of 5292 — the most flexible cable it is possible to design.

In standard construction both the felted asbestos insulation and the asbestos braid are impregnated with standard white heat-resisting compound. Either the insulation or the braid, or both, can be impregnated with moisture-resisting compound but with the sacrifice of some flexibility.

Rockbestos Extra Flexible All-Asbestos Apparatus Cable in dry places, such as lamp houses, arc lamps, etc., can be operated under continuous high temperatures yet will stay permanently flexible. It positively cannot support combustion even when subjected to direct contact with an electric arc. This cable is National Electrical Code Type A, listed by the Underwriters' Laboratories.

NOTE: This extra flexible stranding can also be supplied with A.V.C. insulation as shown in Table L illustration on page 33.

TYPE A — TABLE W — 300 VOLT SERVICE (NEMA Standard No. 39-54 Table 30)

Size A.W.G.	Stranding	Bare Diam. — Inches	Nominal Thickness Felted Wall — Mils	Thickness of Outer Braid .045" For All Sizes	Nominal Finished Diam.* — Inches	Carrying Capacity in Amps.	Approx. Net Weight per M. ft. — Pounds	Standard Shipping Lengths (Feet) — Coils
0000	8464/36	.675	55		.875	325	815	150
000	6713/36	.600	55		.800	275	660	150
00	5292/36	.550	55		.750	225	535	150
0	4214/36	.470	55		.670	200	430	200
1	3332/36	.425	55		.625	150	340	200
2	2646/36	.365	40		.535	125	260	200
4	1666/36	.280	40		.450	90	175	250
6	1050/36	.215	40		.385	70	125	500
8	661/36	.165	31		.320	50	80	500
10	413/36	.130	31		.285	35	55	500
12	259/36	.102	31		.255	30	39	1000
14	105/34	.077	31		.230	20	30	1000
16	65/34	.061	31		.215	10	24	1000
18	41/34	.047	31		.200	6	20	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltage 1.0 kilovolt for all sizes.

ROCKBESTOS

300 VOLT HEAT RESISTING FIXTURE WIRES

for { LIGHTING FIXTURES, SMALL MOTOR LEADS, WIRING OF ELECTRIC RANGES,
ELECTRIFIED OFFICE EQUIPMENT, RADIO APPARATUS, MINIATURE SWITCHBOARDS

NATIONAL ELECTRICAL CODE TYPE AF—PLAIN (NO BRAID)

White Asbestos Insulation

Black Asbestos Insulation

NATIONAL ELECTRICAL CODE TYPE AF—BRAIDED

Solid Color Braid

Solid Color Braid with Marker

Electrical maintenance men are frequently called on to repair burned out lighting fixtures and to make up and install new fixtures in plants, offices and public buildings. To assist them in using the proper type of wire to meet Code regulations we publish this data on Rockbestos Fixture Wires and Flexible Cords.

CODE REGULATION

Article 410, Section 4139 of the National Electrical Code stipulates that fixtures operating at not more than 300 volts between conductors, which may be subject to temperatures in excess of 194° F., (90° C.) must be wired with Type AF fixture wire, or Type AFC, AFPO or AFPD flexible cord. See page 54 for cords.

APPROVED BY UNDERWRITERS' LABORATORIES

Rockbestos Fixture Wires are approved by the Underwriters' Laboratories for lighting fixture use and bear their labels. Insulated as they are with asbestos, the basic heat-resisting and fireproof material, Rockbestos Fixture Wires are ideal for lighting fixtures because at socket temperatures (frequently as high as 350° F. in modern flush type fixtures) the insulation presents no fire hazard whatever nor will it dry out and become hard and brittle. Furthermore, this insulation has high moisture resisting characteristics, an important factor where fixtures hang in damp atmospheres.

HOW TO SELECT

For fixtures where the wiring is concealed in stems or brackets, the PLAIN type wire is recommended. It has no braid. Made in Black and White to indicate polarity.

When wiring is exposed, such as on a chain pendant fixture, the BRAIDED wire is recommended. Made in solid color braids and solid color with marker thread to indicate polarity.

CODE METHOD OF WIRING

The PLAIN type wire should be used in pairs, one White and one Black. The White wire should be placed in the grounded side of the circuit and connected to the screw shell terminals of the sockets.

BRAIDED type wires should also be used in pairs, the wire with the marker thread going in the grounded side of the circuit and connecting to screw shell socket terminals.

ORDERING INFORMATION

STANDARD PACKING: Both Plain and Braided Fixture Wire are put up on metal spools and in coils, and where quantity warrants (5000' to 10,000' ft. depending on size) on factory reels.

CONCURRENT WINDING: When a Plain Black and a Plain White Wire, for example, will be used together it is convenient to have both wires wound on the same spool or reel. To get this package specify "concurrently wound." The same applies to braided wires. A concurrently wound spool of 1000 ft. of plain single conductor wire contains 500 ft. of black and 500 ft. of white wire wound together and so stated on the tag or spool label.

Stock Colors and Braids: Rockbestos PLAIN Fixture Wire is carried in stock in Black and White in the sizes listed in the table below.

In addition to the Black and White, Rockbestos PLAIN Fixture Wire can also be supplied in Red, Blue, Green, Yellow, Gray, Brown, etc., on special order at no extra cost.

Rockbestos BRAIDED Fixture Wire is available in solid colors of Mahogany Brown, Brush Brass and Black in both glazed cotton and rayon. These colors are also available with marker threads in the braids: Red marker in the Mahogany Brown and Black braids and Olive Green marker in the Brush Brass braid.

In ordering specify:

A.W.G. size and stranding.

Whether Plain type or Braided type.

If Plain, whether half the order Black, other half White finish, or all one color.

If Braided type, whether half order solid color braid, other half with marker or all one way.

Color of Braid

Whether Rayon or Cotton Braid.

TYPE AF—TABLE FS—300 VOLT SERVICE (NEMA Standard No. 39-54 Table 50)

Size A.W.G.	Stranding	Minimum Wall Thickness Insul.	Ave. Finished Diam.* Plain	Ave. Finished Diam.* Cotton Covered	Ave. Finished Diam.* Rayon Covered	Approximate Net Weight per M feet - Pounds			Standard Shipping Lengths (Feet)	
		Inches	Inches	Inches	Inches	Plain	Cotton	Rayon	Spools	Coils
10**	105/30	.040	.205	.230	.220	47	51	50	250	500
10	105/30	.047	.220	.245	.235	51	55	53	250	500
12**	65/30	.040	.180	.205	.195	33	37	36	250	500
12	65/30	.047	.195	.220	.210	36	40	38	250	500
14	41/30	.031	.140	.165	.155	20	23	22	500	1000
16	26/30	.031	.125	.150	.140	15	17	16	500	1000
18	16/30	.031	.110	.135	.125	11	13	12	500	1000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

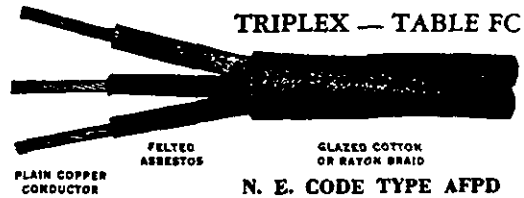
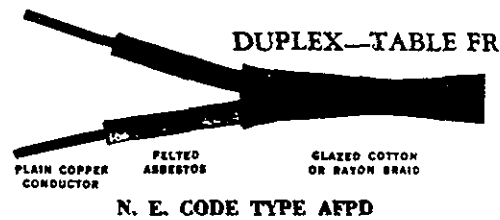
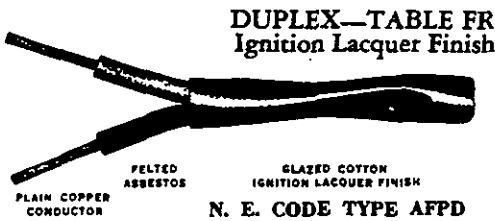
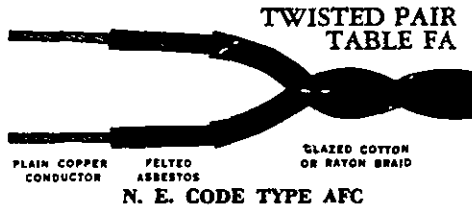
** Not approved by the Underwriters' Laboratories as fixture wire.

RBB 00360

ROCKBESTOS

300 VOLT HEAT RESISTING FLEXIBLE CORDS

for { PENDANT CORD LIGHTING FIXTURES, INSTRUMENT LEADS,
GLUE POTS AND OTHER SMALL HEATING DEVICES



These cords are useful for lighting pendants and for apparatus and test leads where a non-deteriorating heat resisting cord is required.

CODE REGULATION

Article 410, Section 4139 of the National Electrical Code stipulates that fixtures operating at not more than 300 volts between conductors, which may be subjected to temperatures in excess of 194°F. (90°C.), must be wired with Type AF fixture wire, or Type AFC, AFPO or AFPD flexible cord. See page 53 for fixture wire.

APPROVED BY UNDERWRITERS' LABORATORIES

Rockbestos Heat Resisting Flexible Cords are approved by the Underwriters' Laboratories for lighting fixture wiring under the type symbols shown beneath the illustrations.

APPLICATIONS

In lamp sockets the usual temperature rise is from 50 to 200° C. above ambient depending upon the lamp wattage, type of shade and other factors. Experience has shown that with rubber fixture cord in use, the insulation of the wires in and immediately above the socket dries up and becomes brittle until finally, with the repeated movement of the pendant, due to operation of the chain pull socket or from vibration, the insulation just above the socket cracks and crumbles, permitting the wires to short circuit.

In consideration of this condition, therefore, it is especially important to use genuinely heat-resisting cord whose insulation will

not dry up and thus crack and eventually cause short circuits. Rockbestos Duplex or Twisted Pair Cord is ideal for this purpose.

The Twisted Pair and Triplex Cords have similar uses to the Duplex. The Triplex is for lighting fixtures having pendant outlet-switches, two filament lamp fixtures, three heat appliances and leads for apparatus, meters and testing.

POLARITY MARKING

In the Twisted Pair Cord the marker thread in the braid of one wire indicates polarity. In Duplex and Triplex Cords the insulation of the individual conductors is impregnated in different colors for the same purpose.

CODE METHOD OF WIRING

The wire with the marker thread in the Twisted Pair Cord and the white wire in the Duplex Cord should be connected to the grounded side of the circuit and to the screw shell terminals of the socket.

STOCK COLORS AND BRAIDS

Twisted Pair: Mahogany Brown with Red Tracer, Black with Red Tracer, Brush Brass with Olive Green Tracer in both rayon and glazed cotton.

Duplex: Black glazed cotton only.

Triplex: Black glazed cotton only.

Other colors and rayon braids can be supplied on special order.

IN ORDERING

Specify A.W.G. size, stranding (see tables) whether twisted pair, duplex or triplex, color of braid and whether glazed cotton or rayon.

Size A.W.G.	Stranding	Approx. Finished Diameter* Inches						Approx. Net Weight per M Feet Pounds						Standard Shipping Lengths (Feet)	
		Cotton Braid			Rayon Braid			Cotton Braid			Rayon Braid				
		Table FA	Table FR	Table FC	Table FA	Table FR	Table FC	Table FA	Table FR	Table FC	Table FA	Table FR	Table FC	Spools	Coils
10**	105/30	.460	.435	.470	.440	.425	.460	104	102	151	101	100	148		500
10	105/30	.490	.465	.500	.470	.455	.490	111	109	161	108	107	158		500
12**	65/30	.410	.385	.415	.390	.375	.405	74	72	106	72	70	104		500
12	65/30	.440	.415	.445	.420	.405	.435	80	78	115	78	76	113		500
14	41/30	.330	.305	.330	.310	.295	.320	45	45	66	44	43	64	250	500
16	26/30	.300	.275	.295	.280	.265	.285	33	33	49	32	31	47	250	500
18	16/30	.270	.245	.265	.250	.235	.255	25	25	36	24	23	34	250	500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

** Not approved by the Underwriters' Laboratories as flexible cord.

RBB 00361

ROCKBESTOS

300 VOLT ALL-ASBESTOS FLEXIBLE CORDS

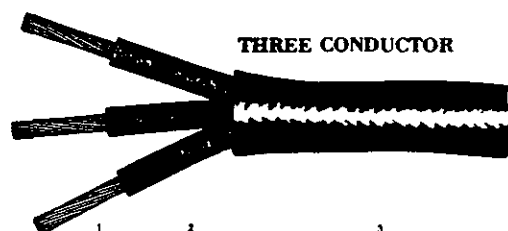
for { PENDANT DROP LIGHTING FIXTURES,
LOCOMOTIVES, BLUE PRINT MACHINES,
FLOODLIGHTS, APPARATUS LEADS, ETC.

TWO CONDUCTOR



1. STRANDED PLAIN COPPER CONDUCTOR

THREE CONDUCTOR



2. FELTED ASBESTOS

3. ASBESTOS BRAID

Rockbestos All-Asbestos Cord was originally developed for cab and gauge lighting circuits of steam locomotives to replace rubber insulated cords which failed to stand up under heat and vibration. Because of this use it is widely known in the railroad field as Cab Cord.

There is no rubber whatever in this construction. Instead the basis of the insulation is asbestos, applied to the wire by our unique insulating process and impregnated and compressed to form the felted asbestos wall. It meets a demand for a heat-resisting, fire-proof, permanently flexible cord which will operate without failure under exposure to heat, corrosive fumes, oil, grease or fire hazard.

Because it will not dry and crack under heat, it makes an ideal heavy duty cord for pendant lighting fixtures located in high temperature areas in steel

mills, boiler rooms, kilns, glass plants, etc. It is also used for leads in heat-developing apparatus and for the wiring of blueprint machines, flood and spot lights and other high wattage units which develop temperatures that are ruinous to other types of insulated wires.

For applications in which moisture may be encountered, use Rockbestos A.V.C. Flexible Cord described on page 56. Both types can be supplied with polarized conductors if so desired. If a perfectly round construction is desired it can be made up with fillers on special order at a slight additional cost.

RAILROADS NOTE: For lighting circuits in locomotives equipped with train control apparatus we recommend using Rockbestos A.V.C. Flexible Cord because of its higher insulation resistance.

300 VOLT SERVICE

Table CA—Two Conductor

(NEMA Standard No. 39-54 Table 25)

Table CAC—Three Conductor

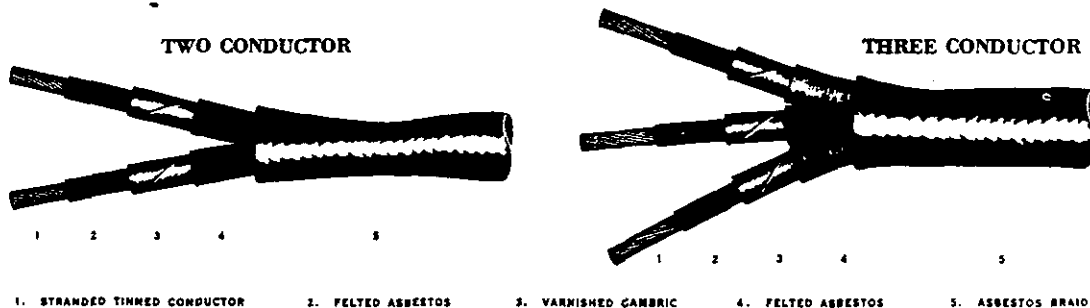
Size A.W.G.	Stranding	Nominal Thickness Felted Wall Mils	Nominal Thickness Asbestos Braid Mils	Two Conductor — Table CA			Three Conductor — Table CAC		
				Nominal Finished Diam.*	Approx. Net Weight Per M Ft.	Standard Shipping Lengths (Coils)	Nominal Finished Diam.*	Approx. Net Weight Per M Ft.	Standard Shipping Lengths (Coils)
				Inches	Pounds	Feet	Inches	Pounds	Feet
10	105/30	31	45	.460	121	250	.485	168	250
12	65/30	31	45	.400	84	500	.430	118	250
14	41/30	31	45	.350	63	500	.385	85	500
16	26/30	31	45	.320	50	500	.350	65	500
18	16/30	31	45	.295	41	500	.320	51	500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
NEMA dielectric test voltage 1.0 kilovolt on all sizes.

RBB 00362

600 VOLT A. V. C. FLEXIBLE CORDS

for { EXTENSION CORDS EXPOSED TO HEAT, OIL AND GREASE
IN STEEL MILLS, BOILER ROOMS, LOCOMOTIVES, REFINERIES, ETC.
ALSO FOR PENDANT DROP LIGHTING FIXTURES AND
FLOODLIGHTS EXPOSED TO HEAT AND MOISTURE



Rockbestos A.V.C. Flexible Cord was a natural development of the All-Asbestos Cab Cord and because of its much higher insulation resistance found a special application in railroad locomotives equipped with train control apparatus.

This rugged cord has ample moisture resistance in its combination of thoroughly impregnated felted asbestos and the embedded high-dielectric insert which makes up the familiar A.V.C. insulation. It has a heavy asbestos braid, the same heat-resistant and fireproof qualities as the All-Asbestos type and is practically impervious to deterioration which ordinarily results from exposure to corrosive fumes or contact with oil or grease.

Rockbestos A.V.C. Flexible Cord should be used for the wiring of industrial type pendant lighting fixtures in hot locations where high humidity or moisture is prevalent. It is also the correct type of cord

to use in heat-developing electrical equipment and high wattage lighting units that may be operated where moisture exists. Approved for these uses, with polarized conductors, by the Underwriters' Laboratories under a 300 volt rating as Style V flexible cord. If so desired specify on order.

For general extension use where cord may be dragged over masonry and rough floors nothing is better than a good rubber jacketed cord but in places where it is exposed to heat, oil and grease such cords often fail electrically before they wear out mechanically. In such service Rockbestos A.V.C. Flexible Cord frequently lasts longer.

For high dry temperatures use Rockbestos All-Asbestos Flexible Cord described on page 55. Both cords can be supplied with polarized conductors if so ordered. If a perfectly round construction is desired it can be made with fillers at a slight additional cost.

600 VOLT SERVICE

Table CV — Two Conductor

(NEMA Standard No. 39-54 Table 26)

Table CVC — Three Conductor

Size A.W.G.	Stranding Tinned	Nominal Thickness	Nominal	Nominal	Asbestos Braid Thickness	Two Conductor — Table CV			Three Conductor — Table CVC		
		First Felted Wall	Thickness V. C. Insert	Thickness Second Felted Wall		Nominal Finished Diam.*	Approx. Net Weight Per M Ft.	Standard Shipping Lengths (Coils)	Nominal Finished Diam.*	Approx. Net Weight Per M Ft.	Standard Shipping Lengths (Coils)
		Mils	Mils	Mils		Mils	Inches	Pounds	Feet	Inches	Pounds
10	105/30	10	25	15	45	.515	134	250	.565	185	250
12	65/30	10	25	15	45	.470	101	500	.510	136	250
14	41/30	10	25	15	45	.430	79	500	.465	104	500
16	26/30	10	25	15	45	.390	64	500	.430	84	500
18	16/30	10	25	15	45	.360	41	500	.400	70	500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.
NEMA dielectric test voltage 2.5 kilovolts on all sizes.

ROCKBESTOS

A.V.C. SIGNAL WIRE — continued from page 58

Coarse Stranding TABLE SC—600 VOLT SERVICE—TABLE SF Flexible Stranding

Size A.W.G.	Stranding Tinned		Bare Diam. Inches	Nominal Thickn's V. C. Mils	Nominal Thickn's Felted Wall Mils	Braid Thickness Mils	Nominal Finished Diam.* Inches	Approx. Net Wt. per M Ft. Pounds	Standard Shipping Lengths (Feet)	
	Coarse	Flexible							Coils	Reels
0000	19/.1055	37/.0756	.528	40	40	27	.745	862		500
000	19/.0940	37/.0673	.470	40	40	27	.685	700		500
00	19/.0837	37/.0600	.418	40	40	27	.635	578		500
0	19/.0745	37/.0534	.373	40	40	27	.590	481		500
1	19/.0664	37/.0476	.332	40	40	27	.550	400		1000
2	7/.0974	19/.0591	.292	40	40	27	.510	334		1000
3	7/.0867	19/.0526	.260	40	40	27	.475	285		1000
4	7/.0772	19/.0469	.232	40	40	27	.450	242		1000
5	7/.0688	19/.0417	.206	40	40	27	.425	208		1000
6	7/.0612	19/.0372	.184	40	40	27	.400	178		1000
8	7/.0486	19/.0295	.146	30	25	25	.310	96	500	1000
10	7/.0385	19/.0234	.116	30	25	25	.280	71	500	1000
12	7/.0305	19/.0185	.092	30	25	25	.255	54	500	2000
14	7/.0242	19/.0147	.073	30	25	25	.235	41	500	2000
16	7/.0193	19/.0117	.058	30	25	25	.220	33	500	2000
18	7/.0151	19/.0092	.045	30	25	25	.205	27	500	2500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

600 VOLT A. V. C. HEADLIGHT WIRE

for { LOCOMOTIVE LIGHTING AND CONTROL CIRCUITS
IN WHICH A SINGLE CONDUCTOR WIRE IS PREFERRED.

1. STRANDED TINNED COPPER CONDUCTOR 2. VARNISHED CAMBRIC 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

For certain applications on railway locomotives a single conductor wire is more convenient to use than duplex A.V.C. Flexible Cord construction shown on page 56.

Rockbestos A.V.C. Headlight Wire has the same characteristics that are to be found in other A.V.C. constructions — ample dielectric strength and insulation resistance, absolutely fireproof and highly resistant to heat and moisture, oil, grease and corrosive fumes. Under high temperatures the insulation will not flow or bloom to cause plugging of pipes or conduit. Recommended for all locomotive lighting circuits and similar applications where a single conductor wire of small diameter is preferred.

TABLE T — 600 VOLT SERVICE (NEMA Standard No. 39-54 Table 29)

Size A.W.G.	Stranding Tinned	Nominal Thickness V. C. Mils	Nominal Thickness Felted Wall Mils	Nominal Finished Diameter* Inches	Approx. Net Weight Per M Ft. Pounds	Standard Shipping Lengths (Feet)	
						Coils	Reels
10	19/.0234	25	25	.255	59	500	1500
12	19/.0185	25	25	.230	44	500	2000
14	19/.0147	25	25	.210	34	500	2500
16	19/.0117	25	25	.195	28	1000	2500
18	19/.0092	25	25	.185	24	1000	3000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture. NEMA dielectric test voltage 2.5 kilovolts on all sizes.

ROCKBESTOS

A.V.C. AND ALL-ASBESTOS PYROMETER WIRE

All-Asbestos Type
Single Conductor — Table YS



Two Conductor — Table YA



A.V.C. Type
Single Conductor — Table YC



Two Conductor — Table YV



1. CONDUCTOR 2. VARNISHED CAMBRIC 3. FELTED ASBESTOS 4. ASBESTOS BRAID

In brick plants, steel mills and petroleum refineries pyrometer lead wire, variously known as compensating lead or extension wire, has always been a source of considerable trouble.

Rubber insulated wire was generally used, either with or without a lead sheath, or with a so-called "slow-burning" covering consisting of two or three cotton braids finished with flameproof paint. These constructions were unsatisfactory because heat dried out and cracked the rubber and oil caused it to bloom and rot, setting up short circuit possibilities and permitting the picking up of stray ground potentials and admission of moisture which affected the accuracy of the readings. The lead sheath construction took care of moisture and protected the rubber from oil and fumes but proved to be a liability when fires involving pyrometer circuits melted the lead and rubber. This frequently plugged the conduit to such an extent that it was often impossible to remove the wire, and conduit as well as wire had to be replaced. When engineers sought to avoid this trouble by using "slow-burning" insulation they found that it had no moisture resistance and that it took up moisture which was occasionally present in the conduit with the result that the readings were thrown off.

Thermocouples or "fire-ends" have also presented a problem as those in which the wire is insulated with lava beads require considerable time for assembly, are fragile and slow in delivery. In another type the conductor is tediously wound with asbestos yarn and then dipped several times in silicate of soda to produce a poor makeshift for an homogenous wall of insulation.

Obviously, these applications require a wire that is not only heat and moisture resisting but fireproof as well, and that is what we offer in Rockbestos Pyrometer Wire.

It will not grow hard or brittle nor crack under temperatures that would be destructive to other types of insulation, neither will it rot or bloom even if exposed constantly to oil, oil fumes or grease. If fires involve the circuits there will be no plugging of conduit and in many cases the wire will continue to operate properly. These qualities are inherent because the insulation is made from asbestos, the basic heat-resisting and fireproof material.

TWO TYPES OF INSULATION

We offer Rockbestos Pyrometer insulation in two types the same as we apply to cable. If preferred either construction may be had with lacquer finished cotton braid instead of an asbestos braid.

HOW TO SELECT THE PROPER TYPE

If the conduits in which the leads are located are all indoors with no very long runs, and generally subjected only to heat, oil or fumes and no more than casual moisture, the All-Asbestos insulation will be satisfactory. If the conduit run is both outside and inside heavy condensation is likely and in that case, and whenever you are doubtful, we recommend the A. V. C. insulation. Varnished cambric embedded in the felted asbestos wall of the A. V. C. insulation gives the extra dielectric strength necessary under moisture conditions.

For thermocouples the use of single conductor All-Asbestos Pyrometer Wire is invariably dictated by the high temperatures to which they are exposed but for applications where the thermocouple is extended to form a lead the A. V. C. type is recommended because of the possibility of excessive humidity or moisture.

HOW TO ORDER

We can supply All-Asbestos or A. V. C. insulated single conductor pyrometer wire with solid or stranded iron, or solid or stranded copper conductors. These insulations are also applied to conductors furnished by the customer. *See last paragraph.

We also offer the parallel construction illustrated above but can furnish a duplex construction if the conductors are stranded. Both are covered with an asbestos braid and polarity identification can be had without extra charge by means of either colored asbestos insulation or a marker thread.

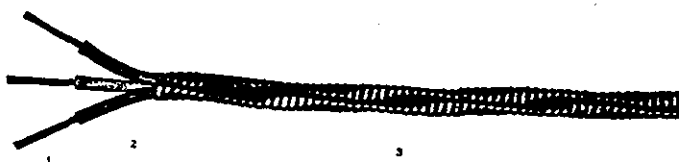
There are so many combinations of solid or stranded conductors and dissimilar metals that it is impossible to tabulate them but we will quote prices on any combination on request. Let us know size, whether solid or stranded, enameled or plain copper, what combination of copper, iron or alloy conductors you are using, and whether you want to use two single conductors or to combine both under one braid and we will draw up specifications and quote.

*NOTE: When specifications call for an alloy conductor it must be furnished by the customer as we cannot accept the responsibility of supplying alloy conductor having the proper thermoelectric characteristics.

ROCKBESTOS

THERMOSTAT CONTROL WIRE

for { LOW VOLTAGE SIGNAL AND
INTERCOMMUNICATING SYSTEMS,
AUTOMATIC FUEL BURNER CONTROL, ETC.



1. ENAMELED COPPER CONDUCTOR

2. POLARIZED FELTED ASBESTOS

3. CADMIUM PLATED STEEL ARMOR OR TINNED COPPER BRAID

The wiring of the control systems of early automatic coal and oil burning installations formerly gave frequent trouble. To get short runs it was often installed close to, or actually resting on, hot water or steam pipes and the heat naturally deteriorated ordinary insulated wire to the point where trouble frequently occurred. Cases are on record where serious damage has resulted from faulty control wiring.

Abrasion, too, has always been a source of trouble when fishing ordinary control wire, particularly in buildings already up. Sharp corners, brickwork, plaster, protruding nails and rough beams all tend to damage the insulation.

With these conditions in mind, and with the wide adoption of automatic fuel burning systems, a large manufacturer of heat control apparatus asked us to design a wire which would be heatproof and abrasion resisting — and Rockbestos Thermostat Control Wire was the result.

Rockbestos Thermostat Control Wire is very strong mechanically because of its firm felted asbestos insulation and its rugged, abrasion resisting spiral steel armor or metal braid. It is heatproof and will not dry out under heat or with age. It eliminates fire hazard because it cannot burn. Neither can rats damage it as has been known to happen occasionally with unprotected wires. Where resistance to abrasion or protection against rodents is not essential, a cotton braid may be specified instead of metallic sheath. With these advantages it is of value for control and intercommunicating systems or for any similar application where a low voltage, multi-conductor cable is required.

Rockbestos Thermostat Control Wire is designed to be used at low voltages, usually fed by a step-down transformer. For this application the 12½ mil wall insulation is generally used. However, some users prefer the 25 mil insulation thickness for its added mechanical and dielectric strength. Where this cable is to be used direct on 115 volt circuits a minimum insulation thickness of 31 mils is required. Data for cables with all three insulations is listed in the table below.

NOTE: The metal braid covering mentioned in the fourth paragraph is an optional suggestion.

TABLE TC

Size A.W.G.	Number of Conductors	Nominal Wall Thicknesses Finished Diameters* (Inches)			Approximate Net Weights per M Feet (Pounds)			Standard Shipping Lengths (Feet) Coils
		For Low Voltage Service		115 Volt Service	For Low Voltage Service		115 Volt Service	
		12½ Mil *O. D.	25 Mil *O. D.	31 Mil *O. D.	12½ Mil	25 Mil	31 Mil	
16	2	.175	.225	.265	35	43	47	500
16	3	.185	.240	.285	46	56	62	500
16	4	.210	.270	.315	58	69	79	500
16	5	.235	.305	.355	69	84	97	500
18	2	.155	.205	.245	26	34	37	500
18	3	.165	.215	.260	34	43	49	500
18	4	.180	.240	.290	43	53	61	500
18	5	.205	.275	.325	50	64	75	500
20	2	.135	.185	.225	21	28	31	500
20	3	.145	.200	.240	26	35	40	500
20	4	.160	.220	.270	32	42	50	500
20	5	.180	.250	.300	38	51	61	500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

ROCKBESTOS

125 VOLT A.C. SECONDARY NETWORK CABLE



1. STRANDED PLAIN COPPER CONDUCTOR 2. SPECIAL ROCKBESTOS INSULATION 3. LEAD SHEATH

Rockbestos Low Voltage A.C. Secondary Network Cable was developed exclusively for secondary network distribution systems but several utility companies have extended its use, where regulations permit, to include service installations in which limited space, high ambient temperature and emergency overloads must be considered.

The problem of power companies operating secondary network distribution systems is to distribute power at high currents and low voltage. The circuits are tied in solid without the usual protective devices.

When a fault occurs in a cable, which may happen from any one of a number of causes, the successful operation of the network system depends upon the cable clearing itself. Obviously there should be sufficient transformer capacity to permit of this taking place. If, instead of clearing at once, the insulation of the cable burns, produces smoke, generates toxic, inflammable and explosive gases, experience has repeatedly shown that the arc is supported by the gas and smoke so that large amounts of cable and manhole equipment are sometimes destroyed. More important, the smoke-filled manholes delay trouble crews in making repairs and restoring service.

Under the worst fault conditions, whether single, two, or three-phase, loose or solid, Rockbestos A.C. Secondary Network Cable will clear cleanly and quickly without burning or generating toxic, inflammable or explosive gases. It also definitely eliminates the smoke nuisance because neither the insulation, which is pure asbestos, nor the impregnating compounds will burn.

Another advantage is positive resistance to deterioration normally resulting from age or heat. Under overloads, when the cables become warm, there need be no fear of failure as the insulation will remain intact up to the melting point of copper. Practically, however, the melting point of the solder joints and the copper temperature at which regulation difficulties would be experienced, determine the load the cable can carry.

JOINT TAPE:

We have developed an asbestos tape especially for this new secondary network cable. It has similar characteristics to the new cable insulation so that its use is consistent with the use of Rockbestos A.C. Secondary Network Cable. Made in $\frac{3}{4}$ " width, foil wrapped, 5 yards to the package.

TABLE UL

Size	Stranding	Bare Diam. Inches	Nominal Insulation Thickness Mils	Nominal Diameter over Insulation Inches	Thickness of Lead Sheath Inches	Nominal Diameter over Lead* Inches	Approx. Weight with Lead Pounds	Maximum Manufacturing Lengths (Feet)
500,000 CM	37/.1162	.814	93	1.000	7/64	1.220	3640	1500
450,000	37/.1103	.772	93	.958	6/64	1.150	3130	1500
400,000	37/.1040	.728	93	.914	6/64	1.105	2895	2000
350,000	37/.0973	.681	93	.867	6/64	1.055	2665	2500
300,000	37/.0900	.630	93	.816	6/64	1.005	2425	2500
250,000	37/.0822	.575	93	.761	6/64	.950	2175	3000
A.W.G.								
0000	19/.1055	.528	93	.714	6/64	.905	1980	3000
000	19/.0940	.470	93	.656	6/64	.845	1745	3000
00	19/.0837	.418	93	.604	6/64	.795	1555	3000
0	19/.0745	.373	93	.559	6/64	.750	1390	3500
1	19/.0664	.332	93	.518	6/64	.710	1255	4000
2	7/.0974	.292	93	.478	6/64	.670	1140	4000
3	7/.0867	.260	93	.446	6/64	.635	1045	4000
4	7/.0772	.232	93	.418	6/64	.610	980	4000

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

ROCKBESTOS

FIREPROOF LOW VOLTAGE VAULT CABLE



1 STRANDED PLAIN COPPER CONDUCTOR 2 SPECIAL ROCKBESTOS INSULATION 3. SYNTHETIC WALL 4. ASBESTOS BRAID

Rockbestos low voltage vault cable was designed to provide a heatproof, fireproof and moistureproof cable for bus installation in underground vaults of low voltage distribution systems. The typical installation is between transformers and network protectors, mounted on porcelain insulators without phase to phase or phase to ground contact.

The special insulation on Rockbestos Vault Cable is like the insulation in Rockbestos Secondary Network Cable — impregnated pure asbestos which is unaffected by heat or age and positively will not burn. In addition, to seal the insulation against the moisture so often encountered in underground vaults, a thin layer of waterproof synthetic tape material is applied over the asbestos insulation, under the asbestos braid.

With extreme overheating or actual fault conditions the only smoke or gas generated is from the decomposition of the synthetic waterproof tape layer, and is of such small quantity, due to the thin layer, that it is negligible and does not interfere with prompt access to the vault for service restoration.

Supplied with standard concentric stranding or segmental conductor.

TABLE UV

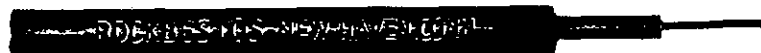
Size	Stranding	Bare Diam. Inches	Nominal Thickness Felted Wall Mils	Nominal Thickness Synthetic Wall Mils	Thickness of outer braid .045" for all sizes	Nominal Finished Diam* Inches	Approx. Net Weight Per M Ft. Pounds	Maximum Manufacturing Lengths Feet
2,000,000 CM	127/.1255	1.632	155	20		2.075	6838	500
1,500,000	91/.1284	1.412	155	20		1.855	5209	500
1,000,000	61/.1280	1.152	120	20		1.525	3482	1000
750,000	61/.1109	.998	120	20		1.370	2667	1000
500,000	37/.1162	.814	93	20		1.130	1796	1500
450,000	37/.1103	.772	93	20		1.090	1631	1500
400,000	37/.1040	.728	93	20		1.045	1467	2000
350,000	37/.0973	.681	93	20		1.000	1301	2500
300,000	37/.0900	.630	93	20		.950	1135	2500
250,000	37/.0822	.575	93	20		.895	967	3000
A.W.G.								
0000	19/.1055	.528	93	20		.845	838	3000
000	19/.0940	.470	93	20		.790	689	3000
00	19/.0837	.418	93	20		.735	570	3000
0	19/.0745	.373	93	20		.690	474	3500

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

ROCKBESTOS

INDUSTRIAL HEATING CABLE

for { THE EVEN DISTRIBUTION OF
MILD HEAT OVER A LARGE AREA



LEAD SHEATH

FELTED
ASBESTOSSPECIAL
ALLOY WIRE

Originally developed to provide a controllable heat source for forcing early plants in hotbeds, millions of feet of this heating cable is put in operation each spring by market gardeners, florists and amateur horticulturists.

Industry too, has discovered that this unique heating cable can be used in many applications to better advantage and more economically than spot or strip heaters. Pliable, easily bent and formed, it can be threaded through apertures, made to conform with irregular shaped objects and wound around pipe to accomplish the even distribution of mild heat over a large area. We can only touch on a few typical applications but they may give you an idea of the varied uses that can be made of the cable.

In many plants the cable is used as a safeguard against frozen water pipes making unnecessary the rearrangement of piping or costly replacement. Waste pipes, gutters and down spouts can also be kept free and clear of ice.

Paint, soap, varnish, ink, chocolate, molasses and sulphur, to name a few, can be kept at fluid temperatures, insuring against irregular flow and clogged conveyor pipes.

Wet pipe sprinkler systems located in unheated areas are easily heated and kept at non-freezing temperatures that assure positive operation.

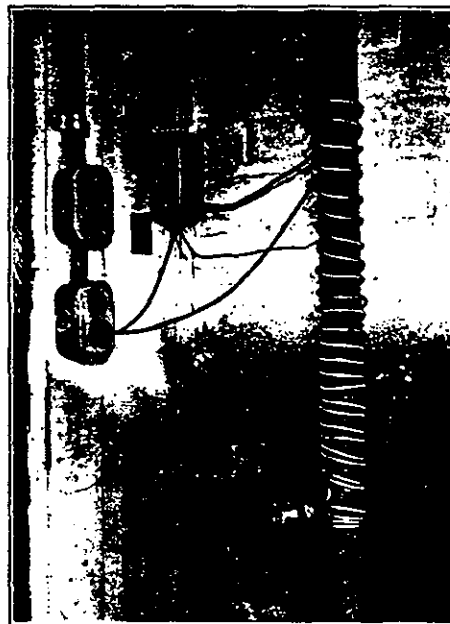
Steel mills use it around roll-necks to prevent the lubricant from congealing and a utilities engineer wound the cable around the pipes connecting the conservator tank to the main tank of a conservator type transformer, covered it with lagging, and eliminated congealing of oil and freezing of condensate.

The resistance of Rockbestos Industrial Heating Cable is approximately 0.5 ohms per foot. In order to keep the temperature low enough so that the insulation will not be injured, the generally recommended length across 115 volts, is 60 feet. However, installations as short as 40 feet have been made with no evident harm to the insulation resulting from the higher temperature. The recommended wattage limit is 7 watts per foot. At 115 volts a 60 ft. length is rated at 400 watts, 6.66 watts per ft. Across 230 volts use a 120 ft. length for the same current value and double the total wattage.

When installed permanently, Rockbestos Industrial Heating Cable should be covered by some form of heat insulating material for operating economy.

Precise temperature control is established by means of a low priced thermostat available from a number of manufacturers. We will be glad to refer you to several.

The characteristics of this particular heating cable are given simply because it is a standard product and usually available from stock. We are equipped, however, to make up heating cable with special characteristics to your specifications.



(We have literature describing and illustrating industrial and soil heating applications. Tell us which you are interested in.)

TABLE LH

Size A.W.G.	Conductor	Approx. Resistance Ohms per ft.	Bare Diam. Inches.	Nominal Thickness Felted Wall Mils	Lead Sheath Inches	Nominal Finished Diam.* Inches	Approx. Net Weight per M Ft. Pounds	Standard Shipping Lengths (Feet)
19	Nickel Chrome	.5015	.036	40	4/64	.245	198	60 and 120 and in bulk on reels

* Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variations in process of manufacture.

RBB 00369

ROCKBESTOS

Permanently Insulated

WIRES, CABLES AND CORDS

not included in this bulletin are

ROCKBESTOS FIREWALL AVIATION WIRE

ROCKBESTOS FIREWALL RADIO HOOKUP WIRE

and

NUMEROUS SEMI-SPECIAL AND SPECIAL CONSTRUCTIONS
THAT HAVE BEEN DEVELOPED FOR THE MANUFACTURERS OF:

AIRCRAFT EQUIPMENT

MARITIME EQUIPMENT

AUTOMOTIVE EQUIPMENT

MINING MACHINERY

ELECTRICAL APPARATUS

RADIO APPARATUS

ELECTRONIC CONTROLS

RAILROAD EQUIPMENT

LIGHTING FIXTURES

STEEL MILL MACHINERY

SWITCHGEAR

AND FOR THE MAINTENANCE OF EQUIPMENT AND POWER, LIGHTING AND CONTROL
CIRCUITS EXPOSED TO SEVERE OPERATING CONDITIONS IN ELECTRICAL
POWER PLANTS AND MISCELLANEOUS INDUSTRIES.

*If a solution to your puzzling wiring problems is suggested by the listing above,
write to us or the district office nearest you, furnishing as much detail as
possible and we will be glad to make a recommendation.*

ROCKBESTOS PRODUCTS CORPORATION

P. O. Drawer 1102, New Haven 4, Connecticut, U. S. A.

DISTRICT SALES OFFICES

NEW YORK 17,
5942 Grand Central Terminal

LOS ANGELES 13,
320 East Third St.

ST. LOUIS 1,
2125 Railway Exchange Bldg.

CLEVELAND 14,
1159 Union Commerce Bldg.

PORTLAND 4, ORE.,
209 S. W. First Ave.

SAN FRANCISCO 3,
367 Ninth St.

CHICAGO 3,
1449 Field Bldg.

BUFFALO 3,
564 Ellicott Sq. Bldg.

SEATTLE 4,
1714 First Ave., So.

PITTSBURGH 19,
2137 Koppers Bldg.

Manufactured in Canada by Phillips Electrical Works, Ltd. and distributed by
Automatic Electric (Canada) Limited, 284 King Street, West, Toronto
Montreal—Brockville—Ottawa—Hamilton—Winnipeg—Regina—Edmonton—Vancouver

Manufactured in England and distributed by British Insulated Cables, Ltd., Prescott, Lancashire

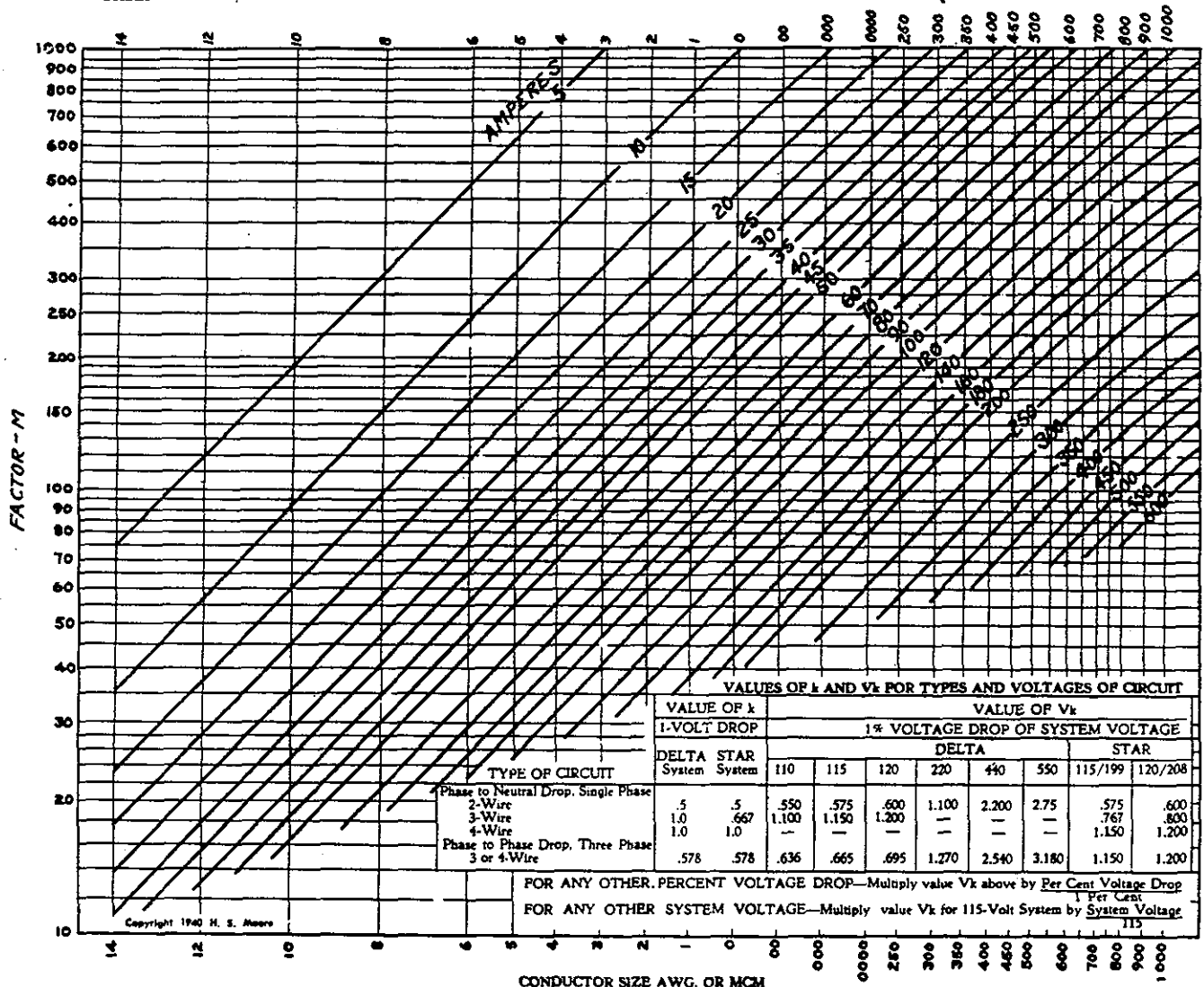
ROCKBESTOS CALCULATOR

FOR

CABLE SIZE--CIRCUIT LENGTH--LOAD--VOLTAGE DROP

FOR

ANY TYPE OF 600 VOLT INSULATED CONDUCTOR IN IRON CONDUIT REGARDLESS OF TYPE OF CIRCUIT--ROOM TEMPERATURE
 --NUMBER OF CONDUCTORS OR POWER FACTOR.
 BASED ON 3--1/C CABLES IN A CONDUIT--ROOM TEMPERATURE 30°C.--100% POWER FACTOR--BALANCED CIRCUITS.



$$\text{FACTOR } M = \frac{\text{CIRCUIT LENGTH}}{V_k}$$

CIRCUIT LENGTH is complete circuit including return wires.

TO FIND CABLE SIZE REQUIRED FOR ANY LOAD--CIRCUIT LENGTH--VOLTAGE DROP

Divide known Circuit Length by value of V_k in table for type of circuit and Circuit Voltage to find FACTOR M. Follow line for FACTOR M thus found until it intersects the line for the known Circuit Amperes. From this point READ the cable size. If this point is between two vertical cable size lines, the line to the right of the point should be the cable size.

Example: Find size cable required to carry 50 Amperes on a 3-wire single phase 120-volts branch circuit, 240 ft. long and to have 1% Voltage Drop. From table, value of V_k is 1.2. Then FACTOR M = $\frac{240}{1.2} = 200$. Reading from Chart, the FACTOR M LINE for 200 intersects the 50 Ampere line between wire sizes 0 and 00; therefore a 00 cable would be required.

TO FIND CIRCUIT LENGTH FOR ANY LOAD--CABLE SIZE--VOLTAGE DROP

From chart find FACTOR M from the intersection of the known cable size and load in amperes. Multiply the FACTOR M thus found by the value V_k found in the table for the type of circuit and circuit voltage to get the Circuit Length.

Example: Find Circuit Length permissible for 1% voltage drop on a 2-wire 110-volt circuit of #8 conductors with a load of 25 Amperes. From chart, the line for a #8 conductor intersects the 25 Ampere line to give a FACTOR M value of 57. Value of V_k from table for a 2-wire 110-volt circuit and 1% voltage drop is .550. Then the permissible circuit length is 57 x .550 = 31.3 feet.

TO FIND MAXIMUM LOAD FOR ANY CABLE SIZE—CIRCUIT LENGTH—VOLTAGE DROP

Divide known Circuit Length by value of V_k in table for type of circuit and circuit voltage to find FACTOR M. Follow line for FACTOR M thus found until it intersects the line for the known cable size and read the permissible Ampere Load.

Example: Find the maximum load in amperes that can be carried on a three-phase 440-volt circuit using #2 conductor for a circuit length of 600 feet and not exceeding 3% Voltage Drop. From the note under the table, the value of V_k must be increased due to 3% voltage drop permissible by $\frac{1}{3}$. Therefore, the value of V_k will be 2.54 the value shown in the table for a three phase 440-volt circuit multiplied by 3 or $2.54 \times 3 = 7.62$. FACTOR M will, therefore, be $\frac{600}{7.62} = 78.7$. Following FACTOR M line for 78.7 until it intersects the line for a #2 conductor the maximum Ampere Load is found to be 70 Amperes.

TO FIND THE VOLTAGE DROP FOR ANY LOAD—CABLE SIZE—CIRCUIT LENGTH

From chart, find FACTOR M from the intersection of the known cable size and load in amperes. Divide the Circuit Length by FACTOR M thus found and then divide this result by the value of k (not V_k) shown in the table for the type of circuit. This gives the voltage drop in volts. To find the per cent regulation, divide the voltage drop thus found by the system voltage.

Example: Find the voltage drop for a 2-wire 115-volt circuit of #2 conductor with a load of 20 amperes and a circuit length of 150 feet. From the chart, FACTOR M for the intersection of #2 conductor and 20 amperes is 295. Then dividing the circuit length of 150 feet by FACTOR M thus found gives $\frac{150}{295} = .508$. Then dividing this by value of k for a 2-wire circuit which is .5 gives $\frac{.508}{.5} = 1.016$ volts drop.

TO FIND ABOVE VALUES FOR OTHER ROOM TEMPERATURES

The current rating of conductors are reduced when operating at a room temperature above 30°C. also if more than three conductors are in the conduit. So in using chart, be sure current value used or found does not exceed the value permitted by the National Electrical Code for these conditions. The accuracy of the chart may be affected as much as five percent when using these reduced current ratings, but will usually give a voltage drop higher rather than lower, so it is therefore conservative.

FOR OTHER POWER FACTORS THAN 100% POWER FACTORS

Divide the value of k or V_k shown in the table by the POWER FACTOR Correction Factor given in the table of Current Ratings. Actually a separate table of Power Factor Correction Factors for conductors size 0 and larger should be given for each type of insulation. The maximum degree of error for 1000 MCM by using the single table below is only about 10 percent, and as the table gives a higher rather than lower voltage drop for insulated conductors having high copper temperature ratings, it is on the safe side.

ALLOWABLE CURRENT CARRYING CAPACITIES OF CONDUCTORS IN AMPERES

Based on National Electrical Code For Not More Than Three Conductors in Raceway or Cable (Based on Room Temperature of 30°C. 86°F.)						POWER FACTOR CORRECTION FACTORS			
Size AWG MCM	Rubber Type RW Type R Type R	Synthetic Type SN Latex Type RU Rubber Type RPT Type RP	Rubber Type RHT Type RH	Paper Synthetic Type SNA Asbestos Var-Cam. Type AVB Var-Cam. Type V	Asbestos Var-Cam. Type AVA AVL	90%	80%	70%	60%
14	15	18	22	23	28	.91	.81	.72	.62
12	20	23	27	29	36	.91	.82	.73	.62
10	25	31	37	38	47	.92	.82	.74	.63
8	35	41	49	50	60	.92	.83	.75	.65
6	45	54	65	68	80	.93	.86	.77	.67
5	52	63	75	78	94	.95	.87	.79	.70
4	60	72	86	88	107	.96	.89	.81	.72
3	69	83	99	104	121	.98	.91	.83	.74
2	80	96	115	118	137	1.00	.93	.86	.77
1	91	110	131	138	161	1.02	.96	.89	.81
0	105	127	151	157	190	1.11	1.09	1.05	.99
00	120	145	173	184	217	1.15	1.15	1.12	1.07
000	138	166	199	209	243	1.20	1.22	1.20	1.16
0000	160	193	230	237	275	1.28	1.32	1.32	1.29
250	177	213	255	272	315	1.33	1.40	1.41	1.40
300	198	238	285	299	347	1.41	1.50	1.53	1.54
350	216	260	311	325	392	1.48	1.60	1.65	1.67
400	233	281	336	361	418	1.54	1.68	1.74	1.77
500	265	319	382	404	468	1.66	1.85	1.94	2.00
600	293	353	422	453	525	1.79	2.02	2.15	2.24
700	320	385	461	488	562	1.90	2.19	2.34	2.45
750	330	398	475	502	582	1.95	2.24	2.40	2.52
800	340	410	490	514	600	2.00	2.31	2.48	2.61
900	360	434	519	556	...	2.10	2.45	2.64	2.80
1000	377	455	543	583	681	2.18	2.57	2.79	2.95
1250	409	493	589	643	...	CONSTRUCTION NOTE All Voltage Drops based on resistance of conductor at actual temperature of conductor for each value of Load Amperes. Example: No. 2 Type R Rubber has a copper temperature of 50°C. with an 80-Ampere load and the resistance of the conductor at this temperature is .0181 ohms per 1000 ft. For a load of 50 Amperes, the copper temperature is 40°C. and its resistance .0174 ohms per 1000 ft. The reactance values were calculated on a spacing of the outside diameter of the cable plus 10%, and for cable sizes 0 and larger, the reactance value was increased 50% to compensate for the proximity effect and effect of the iron conduit.			
1500	434	522	625	698	784				
1750	451	544	650	733	...				
2000	463	558	666	774	839				
C. F. CORRECTION FACTOR FOR ROOM TEMPERATURES OVER 30°C.									
40 104	.71	.82	.88	.90	.94				
50 122	.00	.58	.75	.80	.87				
60 140	...	.00	.58	.67	.79				
70 158	...	...	.35	.52	.71				
80 176	...	...	...	.30	.61				
90 194	...	...	...	...	.50				
100 212	...	...	...	...	...				

ROCKBESTOS PRODUCTS CORPORATION

NEW HAVEN - - - CONNECTICUT

RBB 00372

ED. HEERY, SALESMAN-BY-MAIL

for

ROCKBESTOS PRODUCTS CORPORATION

NEW HAVEN, CONNECTICUT



asks

would this novel

Heating Cable

be useful to You?

Rockbestos Industrial Heating Cable

ROCKBESTOS-NEW HAVEN, CONN.

4/64" Waterproof Lead Sheath

Rockbestos
Felted
Asbestos
Insulation

Special Alloy
Resistance
Heating
Conductor

HERE'S a heating device all wrapped up in a small pliable cable that you can bend and form to fit 'most anything. Better than that, it distributes a mild even heat over almost any area you might want to cover, which makes it much more adaptable for many jobs than spot, space or strip heaters.

This heating cable was developed primarily as a substitute heat source for manure for starting early plants from seed in hotbeds, but it proved so useful a device that we're now selling more footage for industrial purposes than for the original application.

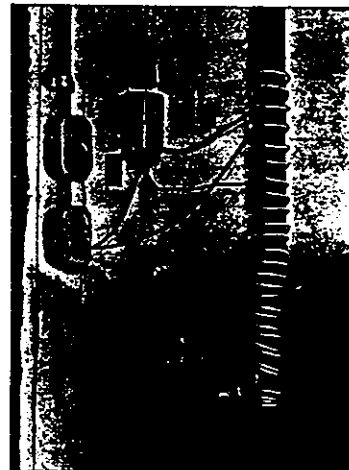
You simply take a standard 60 or 120 ft. length of this Rockbestos Heating Cable, wrap it around a drain pipe or a valve, put some lagging over it to conserve the heat, hook it up to a 115 or 220 volt line and there you have it. You can control it manually or with an inexpensive thermostat.

But wait! Instead of my describing this, I'm just going to ask you to read excerpts from some of our sales reports. They'll give you the idea and may suggest ways of using the cable to prevent pipes from freezing in the winter and to keep sluggish fluids flowing.

... "sprinkler pipes in a wet pipe system located in unheated portions of the plant are kept at non-freezing temperatures with its even application of mild heat" ...

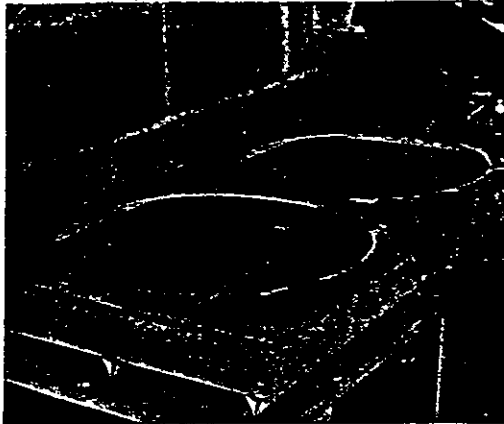
... "soap is kept at the right consistency to flow smoothly through the conveyor pipes, by winding them with cable sufficient to keep them at the correct heat" ...

... "candy manufacturers are using it because it keeps chocolate pipes flowing steadily" ...



RBB 00373

ROCKBESTOS INDUST



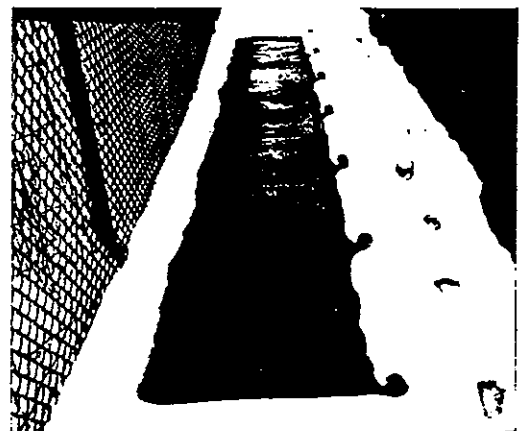
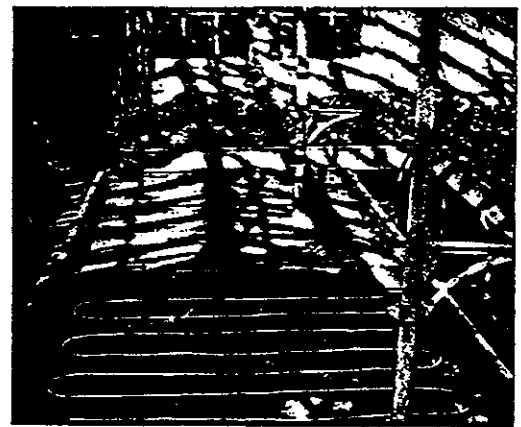
... "Mr. _____, engineer for the company, an amateur movie photographer, coiled the heating cable in his developing tanks to maintain the solution at proper temperature." NOTE: In heating liquids, engineers have told us that strip heaters are sometimes unsuitable because the solution becomes too hot immediately at the heater, sometimes to the extent of breaking down chemically. The heating cable overcomes this weakness because of its low (about 7) wattage per foot.

... "water and sewerage pipes in certain sections of the plant were wound with heating cable and covered with lagging for retention of heat. This has prevented freeze-ups and eliminated costly maintenance under the most adverse conditions" ...



... "a roundhouse foreman on the _____ Railroad got disturbed when he discovered his men putting in a lot of time around a barrel of journal grease. When they told him that the cold weather stiffened the grease so much that it was almost impossible to remove it, he got busy. Fresh barrels had a 60 ft. coil of heating cable sunk in the grease before it got hard ... now it's always 'pretty soft' " ...

... "Nursery men and florists use heating cable instead of manure. The cable gives a thermostatically controlled minimum temperature, impossible to get with manure, resulting in faster and more uniform growth, a greater percentage of rooted plants and a sturdier root system. In cold frames it gives definite assurance against freezing plants" ...



... "and you can even shovel snow with it!" ... Industrial Heating Cable was embedded 1" below the surface of a concrete walk, laid out to a 40 watt per sq. ft. consumption. This provided an estimated temperature rise of about 20°, which eliminated snow and prevented ice formation at temperatures as low as 15° F. above zero.

---AND A FEW SUGC

INDUSTRIAL HEATING CABLE

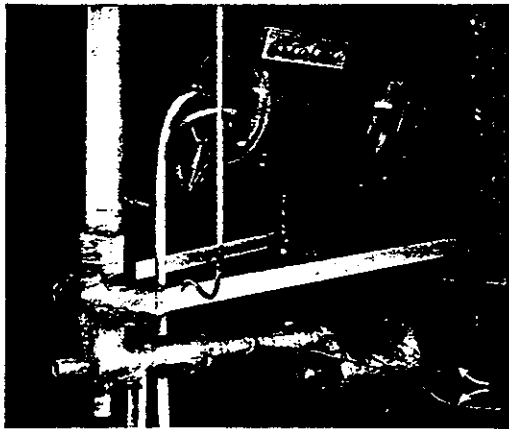
... "a steel mill uses it around roll-necks to prevent the lubricant from congealing" ...

... "one of the biggest paint and varnish manufacturers in this territory uses it to keep production flowing smoothly through the conveyor pipes" ...

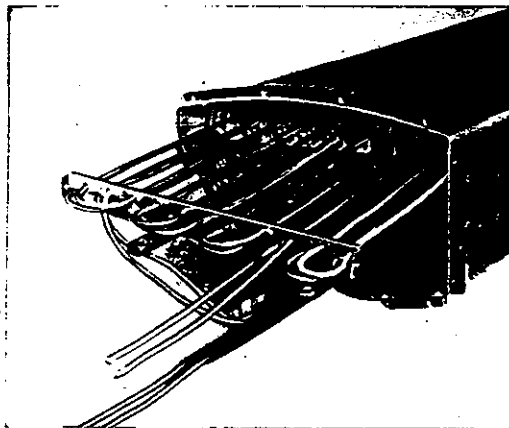
... An engineer in the ——— Chemical Co. said "this line is used to convey molten sulphur and is wrapped with Rockbestos Heating Cable between pipe and insulation (see arrows below) to prevent the sulphur from cooling in transit. At present we are using four of these installations of substantially the same design and construction to good advantage. The temperature of the sulphur is controlled by means of a thermostat used with the heating cable" ...



... "This picture will show you how one of the electric utilities engineers used our heating cable. A conservator type transformer acted up in cold weather when the oil congealed and then there was always the possibility that the condensate would freeze. He got around it by winding the cable around the pipes connecting the conservator tank to the main tank (see arrows above) and covering it with lagging. Now he has an all-weather installation" ...



... "low temperatures and condensation caused the pneumatic tube messenger system of a large packing house to get balky. A few applications of our heating cable around the trouble spots eliminated these annoying unscheduled stops" ...



... "this manufacturer makes his positive dry print developing machine turn out better prints by building into it a steady, evenly diffused heat with our Industrial Heating Cable."



... "Molasses doesn't run slow in January in this feed mill. Four 60 ft. lengths of cable coiled around suction pump inlets develop 1600 watts and make pumping easy" ...

APPLICATIONS FOR ITS USE

... "The _____ Power Co. tried compressed air and other methods of keeping the trash racks in their hydro dams free from needle ice without complete success until we suggested our heating cable installed in pipes. It worked so well last year that they intend to adopt the method as standard and make similar installations in all their dams this winter." (Reference on request.)

... "a big forge plant uses it on oil feeder lines to keep fuel oil fluid enough to permit quick starting of furnaces" ...

... "an oil company uses it to prevent freezing of 6" water valves" ...

We could tell you more, but this is one of those things that goes on and on, so we can only hope that these few stories of widely diversified types of installations will suggest ways in which you may use Rockbestos Industrial Heating Cable to prevent freezeups, reduce maintenance expense, supply an even and controlled heat where it is needed, or to keep liquid production flowing more smoothly. And you can do it for pennies because the cable costs only 5 to 7 cents a foot in small quantities!

INSTALLATION INFORMATION

Standard heating cable stocked in 60 ft. and 120 ft. lengths; 60 ft. for 115 volt circuits, 120 ft. for 230 volt circuits. Also supplied in continuous pieces of any length.

Resistance approximately 1/2 ohm per foot.

Current consumption approximately 3.8 amps for 60 ft. lengths on 115 volts or a 120 ft. length on 230 volts.

Wattage developed approximately 400 for a 60 ft. length on 115 volts; 800 for a 120 ft. length on 230 volts.

The 60 ft. and 120 ft. lengths can be shortened if necessary, but the recommended limit is approximately 7 watts per foot, the temperature naturally varying with particular conditions of installation such as how fast heat is taken off cable, etc. Our Engineering Dept. will be glad to advise in your particular heating problem.

CONSTRUCTION SPECIFICATIONS

Size: No. 19 A.W.G.
Conductor: Nickel Chromium
Bare Diameter: .036"
Resistance: .5015 ohms per ft.

Felted asbestos insulation: .040"
Lead sheath: 4/64" thick
Finished diameter: .245"
Net weight per M feet: 198 lbs.

NET PRICES

	2000 ft. and over	600 to 1999 ft.	240 to 599 ft.	Less than 240 ft.
Approx.	\$.05 per ft. (\$51.50 per M)	\$.05½ per ft. (\$55.10 per M)	\$.06¼ per ft. (\$62.50 per M)	\$.07 per ft. (\$69.80 per M)

Why not check up on what you have to protect from freeze-ups or keep fluid, and make out your requisition for a trial order of this heating cable?

Specify "Rockbestos No. 19 Industrial Heating Cable" and mark your order for the attention of our "Mail Sales Dept."

Thanks for your time—and I'll hope to see your order in the next few days.

Cordially yours,

Ed Heery

Salesman-by Mail
for

ROCKBESTOS PRODUCTS CORPORATION



RBB 00377

