

ROCKBESTOS WIRE & CABLE

**ASBESTOS
Insulated
Wire & Cable**

ROCKBESTOS WIRE & CABLE CO.

DIVISION OF CERRO CORPORATION

NEW HAVEN 4 - CONNECTICUT

RBB 00470

SC-ELEC-00052

A. I. A. File No. 31-C-672 also No. 31-C-679

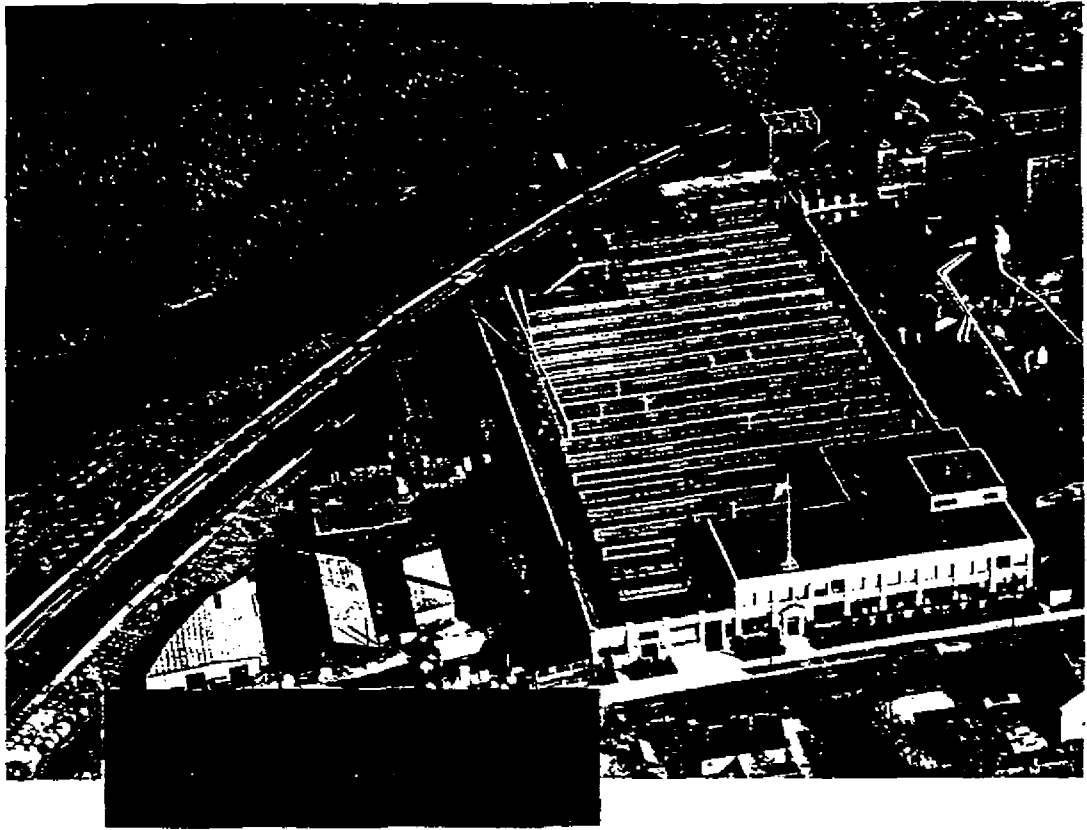
ROCKBESTOS WIRE & CABLE CO.

Division of CERRO CORPORATION

Main Office and Works

NICOLL AND CANNER STS., NEW HAVEN 4, CONN., U. S. A.

A. I. A. File No. 31-C-672 also No. 31-C-679



ROCKBESTOS is the name for a wide line of wires, cables and cords, including more than 125 different standard constructions, which have been designed and developed to give long and dependable service under severe operating conditions. Early in 1918 a small group of Rockbestos Electrical Engineers and Chemists perfected a method of applying asbestos to wires and cables as a heat resisting electrical insulation. This first step resulted in the production of wire that industry and electrical engineers had been looking for. Here was an insulated conductor resistant to high temperatures, aging, corrosive fumes, grease, oil and flame. Success from the start—and just the beginning for this company which was later to distinguish itself to be the only company in industry devoted exclusively to the manufacture of permanently insulated wires and cables. Rockbestos grew along with the then rapidly growing electrical industry, solving its electrical insulation problems as they became

apparent with this unique mineral, ASBESTOS. Other materials are often combined with asbestos, i.e. Varnished cambric, Synthetics, DuPont "Teflon" Tetrafluoroethylene resin, cotton, rayon, nylon and glass, to provide special characteristics. Two broad lines of permanently insulated wires, cables and cords—Rockbestos A.V.C. asbestos-varnished cambric insulated (N.E.C. Types AVA and AVB) and Rockbestos ALL-Asbestos (N.E.C. Types A, AA, AI, AIA and AF)—have been developed for innumerable industrial applications. Rockbestos engineering and research are constantly abreast of electrical problems in both science and industry, providing answers through the development of trouble-free, ageless electrical insulations designed for each specific application. May we offer you our research facilities for the development of special wires designed to meet any unusual requirements.

This is the Rockbestos Handbook and Catalog No. 10-H, which illustrates and describes wires and cables insulated with Asbestos Varnished Cambric, and All Asbestos insulations for use where wiring in electrical products or in the power, control and lighting circuits of industry is exposed to heat, corrosive fumes, grease, oil or fire hazard.

Also contained in this catalog are Rockbestos special constructions developed for special and specific applications.

All data subject to change without notice.

ROCKBESTOS WIRE & CABLE CO.
DIVISION OF CERRO CORPORATION

MAIN OFFICE AND FACTORY: Nicoll and Canner Streets, New Haven, Conn.

RBB 00473

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ASBESTOS . . . OUR BASIC RAW MATERIAL

In entering upon a description of Rockbestos wires and cables, a brief outline of the characteristics of asbestos, the chief material used in their insulation, is a logical beginning.

Asbestos is a mineral, consequently inorganic in its nature, and in this principal feature different from all other types of material in use for insulating wires and cables. Asbestos fibres are solid, that is to say they have no capillary opening through their center like cotton, wool or other organic fibres. Because of this fact, there is no tendency for individual asbestos fibres to act as capillaries if their ends are exposed, and it only becomes necessary to fill the voids of interstices between the fibres to produce a relatively impervious layer.

Asbestos has demonstrated its ability to withstand time without the deterioration that occurs in other forms of electrical insulating materials such as rubber and the general class of organic fibres. Furthermore, it will not rot or carbonize under any conditions. It may be fairly stated indeed that asbestos is ageless, and time, as every engineer well knows, is a much more exacting test of a material than almost any laboratory accelerated life test which can be made. During the centuries since the asbestos was formed, it has been exposed to high earth temperatures and, as earth cooled, to moisture and the wide variety of earth acids and alkalis, all with no apparent change in any of its properties.

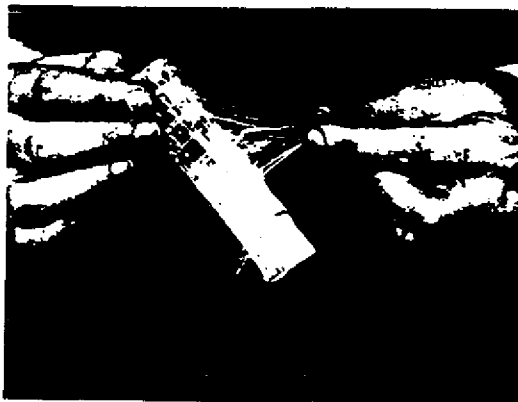
We have investigated the world's sources of asbestos to find and secure the softest, silkiest, purest, long fibred asbestos . . . and we find it in certain deposits of Chrysotile (Serpentine Group)—the aristocrat of the asbestos family.

Chrysotile is a hydrated magnesium silicate which occurs in crystalline form in veins or striations in the mother rock and is widely distributed. Each crystal is a "fibre", square in cross section, having a diameter of about 1/500,000 inch and a length equal to the width of the vein. There are a number of sources of Chrysotile fibre, the principal ones being Rhodesia, Canada, Russia, Arizona and Australia. The largest deposits are in Rhodesia and Canada.

Asbestos retains its strength and fibrous form under all conditions except extremely high temperatures. Chrysotile asbestos in crude (unopened form) begins to lose some of its water crystallization at about 450°C and is almost completely dehydrated at 850°C. It fuses at about 1500°C. When applied to wires or cables in felted form, its low heat conductivity enables it to withstand melting the copper conductor by passage of high currents without material loss of its mechanical strength. Tests of fabrics woven of Chrysotile asbestos show that after three hours at 500°C they still have their original tensile strength. Asbestos, after it is mined, is broken up, fiberized and cleaned. It is 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 that is not only fireproof but practically impervious to the destruction normally caused by heat and moisture, oil, grease, corrosive fumes or age.

What a material to use where endurance and resistance to deterioration are so important!



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.

WHY ROCKBESTOS A.V.C. WAS DEVELOPED

Since the early days of electrified industry, there has been a definite need for an electrical conductor insulation which would operate dependably in elevated ambient temperatures. High ambient temperatures were a problem then as they are today, and the performance of ordinary wires and cables at that time was restricted by the very nature of the materials used. Rubber, for instance, while known to be high in moisture resistance, was affected by high temperatures which caused it to become dry and porous limiting its length of effective service. The life of straight varnished cambric insulations too was seriously affected by high ambient temperatures which tended to cause deterioration of the tapes. Early asbestos insulations proved unsatisfactory because they consisted only of a series of asbestos braids filled with paint or other compound.

Recognizing that high temperatures and moisture were the major threats to the life of insulations, Rockbestos Engineers designed and developed their A.V.C. construction. This A.V.C. construction used as a basis dense felted walls of thoroughly impregnated asbestos to form a continuous insulation which would permanently resist heat, flame and moisture. High dielectric varnished cambric tapes were added as an insert between the felted asbestos to give added dielectric strength and moisture resistance. In this combination the felted asbestos also provided protection for the Varnished Cambric tapes against mechanical damage, deterioration from oxidation and prevents the formation of a continuous carbon path from conductor to ground. This basic construction was covered overall with either impregnated asbestos or flameproof cotton braids. This new Rockbestos A.V.C. construction was designed primarily to safely and dependably carry electrical loads in high ambient locations and to withstand additional operating hazards such as attacks of chemicals, oils, grease and fumes. Here was an insulation designed to give a long life of dependable operation under severest conditions.

Since the introduction of Rockbestos A.V.C. wires and cables in 1927, many millions of feet have been installed throughout the world under normal and abnormal operating conditions. These installations have covered a wide range of high temperatures and moisture conditions in practically every known industry. Rockbestos Field Engineers have constantly checked many of these installations in various industries since 1927 to check field conditions against long time tests run by our Research Laboratory

to confirm the ability of Rockbestos A.V.C. to meet unusual service conditions. Because of their successful operation, these asbestos-varnished cambric wires and cables were included in the National Electrical Code in the 1937 Edition and designated as N.E.C. Types AVA, AVL and AVB. The trade name "A.V.C." as registered by Rockbestos and used commercially is synonymous with National Electrical Code Types AVA, AVL and AVB. That is, A.V.C. finished with asbestos braid is Type AVA, with lead sheath is Type AVL and with cotton braid is Type AVB.

THE HI-I STORY

Maximum current carrying capacities of insulated conductors are determined within practical limits by the maximum temperature the insulation will stand without undue deterioration.

The Code in rating this original Rockbestos A.V.C. construction permitted it a higher temperature limit than ordinary insulations because its impregnated felted asbestos walls safely resisted deterioration under high ambients and the heat from current loads. Chapter 10, Tables I and II, under "Allowable Current-Carrying Capacities at 30°C" list Rockbestos A.V.C. Type AVA construction with greater current carrying capacity size for size than for cables with ordinary insulations. The practical advantages of Rockbestos A.V.C. begin here. As ambient temperatures increase and correction factors are applied, A.V.C. is de-rated far less than ordinary constructions, all because of its insulation.

At 70°C, for instance, other types of insulations are de-rated as much as 65% while Rockbestos A.V.C. is de-rated only 29%. At ambient temperatures in excess of 85°C, a limiting point for other types of insulations, Rockbestos A.V.C. rated at 110°C continues to provide permanent protection for electrical circuits.

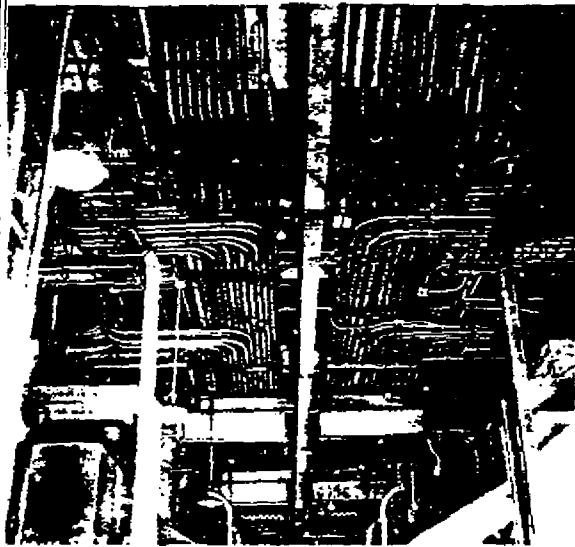
Plant layouts and expansion programs are given greater flexibility by installing Rockbestos A.V.C. because not only does it provide greater current carrying capacity for intermittent demands and future load growth in existing circuits, but the installation of heat generating equipment is not restricted by its nearness to vital electrical circuits. The fact that you can use a smaller sized cable to carry a given load can start a whole series of cumulative savings.

Smaller cable means smaller conduit and fittings. Easier, quicker installations, plus years of dependable performance, prove Rockbestos Hi-I A.V.C. . . . Your Best Buy.

ROCKBESTOS A.V.C. CONSTRUCTION



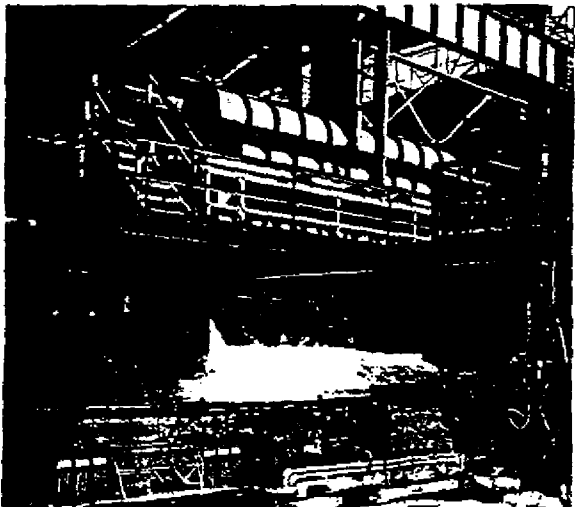
- (1) First impregnated felted asbestos wall.
- (2) Varnished cambric tapes.
- (3) Second impregnated felted asbestos wall.
- (4) Impregnated asbestos braid for Type AVA cables.
(Flameproof cotton braid for Type AVB cables.)
(Lead Sheath for Type AVL cables.)



TYPICAL APPLICATIONS FOR POWER WHERE SUBJECTED TO

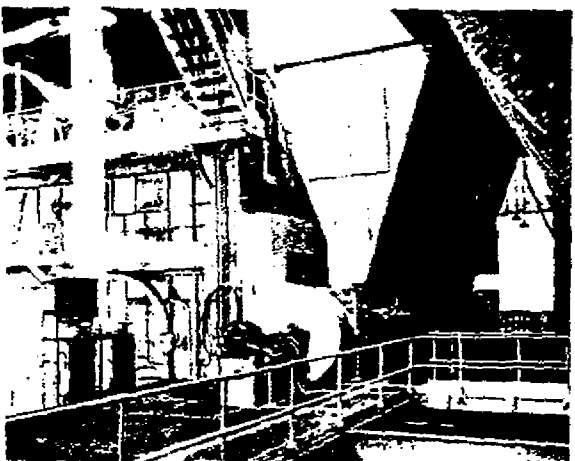
POWER CIRCUITS UP TO 5000 VOLT SERVICE

Standard Rockbestos A.V.C. (Code Type AVA) Power Cables are available in voltage ratings of 600 to 5000 volts. They are designed to protect circuits that must operate without failure under continuous exposure to high temperatures and other severe operating conditions. Copper shielding can be provided where required. They are available in single or multi-conductor constructions with either lead sheaths or asbestos braids. Interlocking armor can be furnished to special order. Rockbestos A.V.C. (Code Type AVA) Power Cable constructions are approved by the National Electrical Code, listed by the Underwriters' Laboratories and conform to NEMA standards.



CONDUIT WIRING AROUND FURNACES, OVENS, SOAKING PITS, BOILERS, ETC.

Rockbestos A.V.C. Power Cables and Lighting Wires can be run in conduit as they are built to withstand the normal moisture conditions resulting from condensation caused by heating and cooling cycles. In cases where power and lighting circuits are exposed to high temperatures in combination with excessive condensation or complete submersion, use lead sheathed Code Type AVL.



LIGHTING AND POWER CIRCUITS

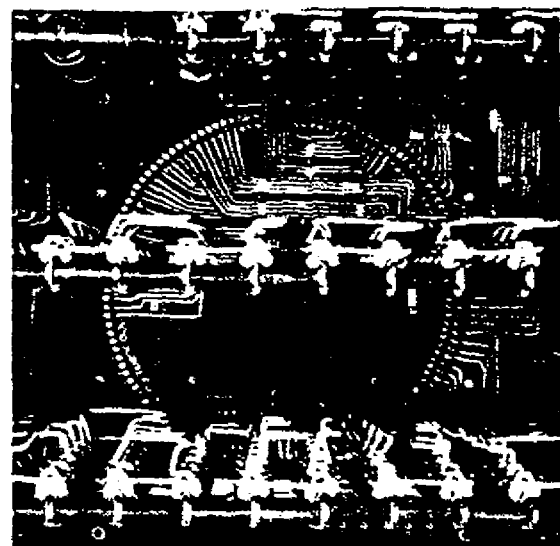
Rockbestos Hi-I A.V.C. (Code Type AVA) Lighting and Power Cables are high temperature cables. This A.V.C. construction—two layers of impregnated felted asbestos encasing the varnished cambric—permits continuous operation at copper temperatures of 230°F (110°C), thus making Hi-I cables ideal for high ambient "Hot Spot" locations or, in normal ambient installations, permitting the use of smaller cables with consequent savings of copper, conduit, fittings and man-hours of labor as compared with cables having ordinary insulation.

LIGHTING and CONTROL CIRCUITS HIGH TEMPERATURES

RHEOSTAT AND APPARATUS WIRING

Rockbestos All-Asbestos Rheostat Wires and Cables were designed primarily for open wiring. Operating temperatures of 125°C for 600 volt ratings and 200°C for 300 volt applications can be safely met as constant elevated temperatures will not cause the compounds to fall away or flake off even through repeated heating and cooling cycles.

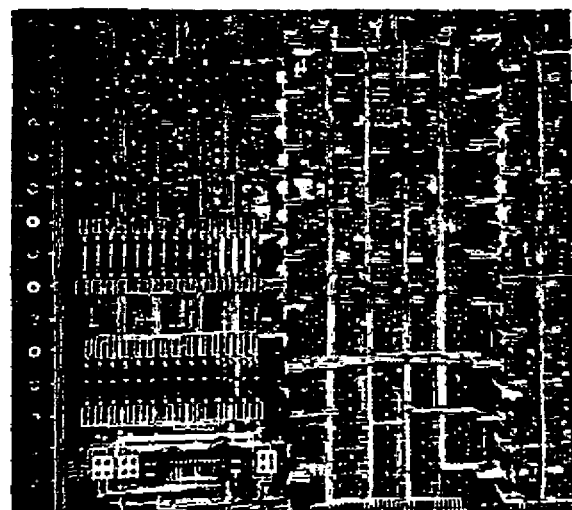
It is especially recommended for grid jumper connections from grids to faceplates, ovens and element leads on well type annealing furnaces and open wiring exposed to extremely high temperatures, corrosive fumes, grease, oil or fire hazard.



SWITCHBOARDS AND PANEL BOARDS

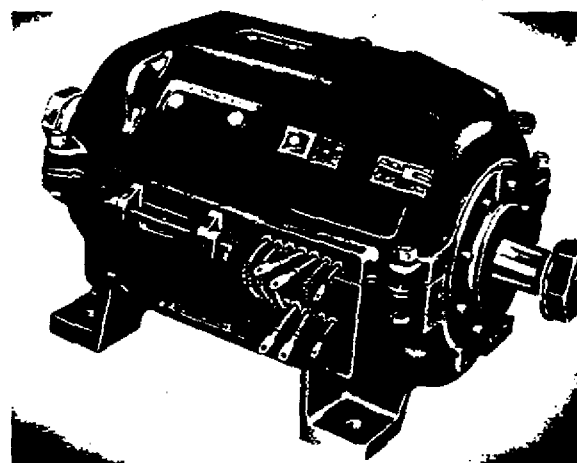
Millions of feet of Rockbestos fireproof A.V.C. (N.E.C. Type AVB) Switchboard Wire have been used by switchboard manufacturers, power stations and industrial plants since we originated and patented the A.V.C. type. Fine appearance is assured completed boards because it can be bent at right angles without cracking the braid.

Rockbestos A.V.C. Switchboard Wires have a maximum operating temperature of 90°C (194°F) and are listed by the Underwriters' Laboratories. They comply with the NEMA Small Wiring for Switchboards Standard and are approved by Factory Mutual Laboratories, switchboard manufacturers and power companies. See Page 42 for Rockbestos synthetic and asbestos insulated switchboard wires, N.E.C. Type TA constructions.



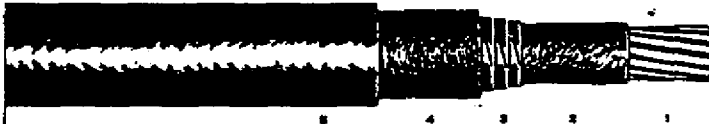
MOTOR LEADS

Mill motors and other heavy duty stationary and traction types use Rockbestos A.V.C. Motor Lead and Apparatus Cable for protection against conductor-heating overloads and high ambient temperatures. This cable retains its flexibility indefinitely because it won't dry out with heat or age, won't rot or bloom from contact with oil or grease and won't burn or carry flame. These performance-protecting characteristics make it ideal for motor wiring in steel mills, generating stations, all types of coal mining equipment, industrial plants—and numerous electrical apparatus applications.



POWER CABLE

NEC TYPE AVA—ROCKBESTOS A.V.C.
600 TO 5,000 VOLT RATINGS



SINGLE CONDUCTOR—STRANDED

APPLICATIONS

Rockbestos A.V.C. (N.E.C. Type AVA) Power Cables are designed to operate at voltages from 600 to 5000 volts. They are especially recommended for circuits exposed to severe operating conditions in power stations, steel mills, refineries, tanneries, smelters, etc. and for apparatus which operates under high ambient temperatures.

On the higher voltage rated cables, suitable copper shielding tapes may be specified to eliminate effects of corona on the primary dielectric—the varnished cambric. Voltage rating of all Rockbestos Hi-I A.V.C. Power Cables is maximum phase to phase voltage. This applies to either grounded or ungrounded systems.

The cables listed in this section have ample moisture resistance for average conditions, but if there is a possibility that circuits may be submerged in water for long periods, use lead sheathed constructions in the AVL section of this catalog. The wires and cables in this section are approved National Electrical Code Types, listed by the Underwriters' and fulfill the requirements of NEMA for Asbestos-Varnished Cambric wires and cables.

SPECIFICATIONS

Construction

1. Stranded plain copper conductor
2. Felted asbestos
3. Varnished cambric
4. Felted asbestos
5. Asbestos braid

Maximum conductor operating temperatures are as follows:

600 Volt	110°C	(230°F)
1000 Volt	110°C	(230°F)
2000 Volt	109°C	(228°F)
3000 Volt	106°C	(222°F)
4000 Volt	103°C	(217°F)
5000 Volt	100°C	(212°F)

Standard finish colors: Black and white.

Authorized Stock item: (600 volt-Table E only) Black.

Flexible strandings may be specified on all constructions up to 5000 volts.

All constructions listed can be covered with lead sheath, armor, or lead sheath and armor, if desired. Interlocking armor can be furnished to special order.

ROCKBESTOS A.V.C. SINGLE CONDUCTOR POWER CABLE

TABLE E, 600 VOLTS
MAX. OPERATING TEMP.
110°C (230°F)

TABLE H, 5000 VOLTS
MAX. OPERATING TEMP.
100°C (212°F)

Size	Stranding	Bare Diam. Inches	Nominal Thickness — Mills				*Nominal Finished Diameter Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			1st Felted Wall	VC Insert	2nd Felted Wall	Asbestos Braid				
TABLE E			600 VOLTS				TYPE AVA			
**18 AWG	7/.0152	.046	10	30	15	40	.235	30	500' C	37
**16	7/.0192	.058	10	30	15	40	.250	35	500' C	43
14	7/.0242	.073	10	30	15	40	.265	45	500' C	56
12	7/.0303	.092	10	30	15	40	.285	55	500' C	68
10	7/.0385	.116	10	30	15	40	.310	70	500' C	87
8	7/.0486	.146	10	30	15	45	.350	95	500' C	118
6	7/.0612	.184	15	30	20	45	.405	140	500' R	175
5	7/.0688	.206	15	30	20	45	.430	165	500' R	206
4	7/.0772	.232	15	30	20	45	.455	200	500' R	250
3	7/.0867	.260	15	30	20	45	.480	240	500' R	300
2	7/.0974	.292	15	30	20	45	.515	285	500' R	356
1	19/.0664	.332	20	30	30	45	.585	370	500' R	462
0	19/.0745	.373	20	30	30	45	.625	450	500' R	562
00	19/.0837	.419	20	30	30	45	.670	545	500' R	681
000	19/.0940	.470	20	30	30	45	.720	665	500' R	831
0000	19/.1055	.528	20	30	30	45	.780	815	500' R	1018
250,000 CM	37/.0822	.575	25	40	40	45	.875	985	500' R	1231
300,000	37/.0900	.630	25	40	40	45	.930	1155	500' R	1443
350,000	37/.0973	.681	25	40	40	45	.985	1325	500' R	1656
400,000	37/.1040	.728	25	40	40	45	1.030	1490	500' R	1862
450,000	37/.1103	.772	25	40	40	45	1.075	1660	500' R	2075
500,000	37/.1162	.813	25	40	40	45	1.115	1825	500' R	2281
550,000	61/.0950	.855	30	40	40	45	1.165	2005	500' R	2506
600,000	61/.0992	.893	30	40	40	45	1.205	2175	500' R	2718
650,000	61/.1032	.929	30	40	40	45	1.240	2340	500' R	2925
700,000	61/.1071	.964	30	40	40	45	1.275	2505	500' R	3131
750,000	61/.1109	.998	30	40	40	45	1.310	2675	500' R	3343
800,000	61/.1145	1.031	30	40	40	45	1.345	2835	500' R	3543
850,000	61/.1180	1.062	30	40	40	45	1.375	3000	500' R	3750
900,000	61/.1215	1.093	30	40	40	45	1.405	3165	500' R	3956
950,000	61/.1248	1.123	30	40	40	45	1.435	3330	500' R	4162
1,000,000	61/.1280	1.152	30	40	40	45	1.465	3490	500' R	4362
1,250,000	91/.1172	1.289	30	50	50	45	1.640	4375	500' R	5468
1,500,000	91/.1284	1.412	30	50	50	45	1.765	5155	500' R	6443
1,750,000	127/.1174	1.526	30	50	50	45	1.880	6030	500' R	7537
2,000,000	127/.1255	1.632	30	50	50	45	1.985	6760	500' R	8450
TABLE H			5000 VOLTS				TYPE AVA			
10 AWG	7/.0385	.116	15	120	25	45	.530	150	500' R	187
8	7/.0486	.146	15	120	25	45	.560	190	500' R	237
6	7/.0612	.184	15	120	25	45	.595	230	500' R	287
5	7/.0688	.206	15	120	25	45	.620	260	500' R	325
4	7/.0772	.232	15	120	25	45	.645	295	500' R	368
3	7/.0867	.260	15	120	25	45	.670	345	500' R	431
2	7/.0974	.292	15	120	25	45	.705	395	500' R	493
1	19/.0664	.332	20	120	30	45	.765	490	500' R	612
0	19/.0745	.373	20	120	30	45	.805	555	500' R	693
00	19/.0837	.419	20	120	30	45	.850	670	500' R	837
000	19/.0940	.470	20	120	30	45	.900	795	500' R	993
0000	19/.1055	.528	20	120	30	45	.960	955	500' R	1193
250,000 CM	37/.0822	.575	25	120	40	45	1.035	1120	500' R	1400
300,000	37/.0900	.630	25	120	40	45	1.090	1300	500' R	1625
350,000	37/.0973	.681	25	120	40	45	1.145	1480	500' R	1850
400,000	37/.1040	.728	25	120	40	45	1.190	1660	500' R	2075
450,000	37/.1103	.772	25	120	40	45	1.235	1825	500' R	2281
500,000	37/.1162	.813	25	120	40	45	1.275	2010	500' R	2512
550,000	61/.0950	.855	30	120	40	45	1.325	2185	500' R	2731
600,000	61/.0992	.893	30	120	40	45	1.365	2360	500' R	2950
650,000	61/.1032	.929	30	120	40	45	1.400	2530	500' R	3162
700,000	61/.1071	.964	30	120	40	45	1.435	2700	500' R	3375
750,000	61/.1109	.998	30	120	40	45	1.470	2870	500' R	3587
800,000	61/.1145	1.031	30	120	40	45	1.505	3040	500' R	3800
850,000	61/.1180	1.062	30	120	40	45	1.535	3210	500' R	4012
900,000	61/.1215	1.093	30	120	40	45	1.565	3360	500' R	4200
950,000	61/.1248	1.123	30	120	40	45	1.595	3530	500' R	4412
1,000,000	61/.1280	1.152	30	120	40	45	1.625	3720	500' R	4650

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

ROCKBESTOS A.V.C.
600 VOLT CONTROL CABLE
TYPE AVA—ROCKBESTOS A.V.C.

MAXIMUM OPERATING TEMPERATURE: 110°C (230°F)



APPLICATIONS

Modified in design from our Soaking Pit Cable for cover door control wiring which must withstand the intense heat of red-hot ingots when adjacent covers are off, this A. V. C. control cable has proven resistance to high temperatures.

This cable finds its use in steel mills, power stations, boiler rooms, automotive, ceramic and glass plants or other industries in which control and signal circuits or control apparatus are exposed to heat or fire hazard. It is especially recommended for use in circuits and apparatus in metal making mills, boiler rooms, and power plants as it is highly resistant

to heat, corrosive fumes, oil, grease and flame and has ample moisture resistance for installation either open or in conduit. Under exposure to flame this cable will maintain vital control and alarm system circuits for longer periods than other types of insulated cables.

SPECIFICATIONS

1. Tinned copper conductor
2. Felted asbestos
3. Varnished cambric
4. Felted asbestos
5. Color coded cotton braids
6. Cable tape
7. Asbestos braid

This cable is NEMA TYPE AVA with a maximum operating temperature of 110°C (230°F).

Conductors

The standard strandings furnished on these Rockbestos A.V.C. Control Cables is 19/22 (No. 9 A.W.G.) and 19/25 (No. 12 A.W.G.) but any desired stranding can be furnished to order and cabled into any required number of conductors.

Insulation

The insulation of the individual conductors is the same type as that on the power cables described on the previous pages with the exception of the outer braid which is a color coded cotton braid to obtain circuit identification. When furnished for single conductor use asbestos braid replaces cotton braid. Impregnated felted asbestos walls seal the varnished cambric from heat, flame and oxidation. Moisture-proof tape is wrapped over the cabled conductors and the

outer covering of tough, braided asbestos yarn is finished with heat, flame and moisture resisting compounds.

Coding

The individual wires are braided in colors according to the NEMA standard color code for multi-conductor cable, which is reproduced below. Special color combinations can be furnished to specification.

Lead or Armor Covering

These cables may be made up with either lead sheath, armor, or lead sheath and armor covering. Synthetic sheathing is optional also where temperatures permit.

Finish

The standard finish of the outer braided asbestos jacket is a black, flame, heat and moisture resisting compound.

NEMA STANDARD COLOR CODE FOR MULTI-CONDUCTOR CONTROL CABLE

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

600 VOLT
CONTROL CABLE
TYPE AVA—ROCKBESTOS A.V.C.

Nominal sizes—9 and 12 AWG 1-19 Conductors
(See Opposite Page for General Information)

Standard conductor sizes are AWG No. 9-19/22 and No. 12-19/25 tinned copper, insulated with a 10 mil wall of felted and impregnated asbestos, 30 mil wall varnished cambric insert, another 15 mil wall of felted asbestos and a cotton braid colored according to the NEMA Control Cable Color Code for Multi-Conductor Cables, listed on the opposite page. 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, flame, heat and moisture resisting compound.

The standard make-up on two conductor construction is to cable the conductors with fillers to make round, but it can also be furnished in parallel construction. Parallel must be specified if desired.

Lead sheath, armor, lead sheath and armor or synthetic sheathing can be substituted instead of asbestos braid. Specify preference.

These Rockbestos A.V.C. control cables can also be made up with No. 14, 16 and 18 A.W.G. conductors.

TABLE MD (AWG No. 12-19/25) 600 VOLTS TYPE AVA

Number of Conductors	Stranding	Bare Diam. Inches	Braid Thickness	Finished Diam. Inches *Nominal	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
**1	19/25	.090	40	.280	52	500' R	65
***2	19/25	.090	45	.345	145	500' R	181
3	19/25	.090	45	.585	180	500' R	225
4	19/25	.090	45	.645	230	500' R	228
5	19/25	.090	45	.710	260	500' R	325
6	19/25	.090	45	.780	305	500' R	381
7	19/25	.090	45	.780	330	500' R	413
8	19/25	.090	45	.850	380	500' R	475
9	19/25	.090	45	.920	435	500' R	544
10	19/25	.090	45	1.000	470	500' R	588
11	19/25	.090	45	1.000	495	500' R	619
12	19/25	.090	45	1.035	535	500' R	669
13	19/25	.090	45	1.065	580	500' R	725
14	19/25	.090	45	1.095	620	500' R	775
15	19/25	.090	45	1.135	670	500' R	838
16	19/25	.090	45	1.160	705	500' R	881
17	19/25	.090	45	1.205	755	500' R	944
18	19/25	.090	45	1.230	790	500' R	988
19	19/25	.090	45	1.230	815	500' R	1019

TABLE MT (AWG No. 9-19/22) 600 VOLTS TYPE AVA

Number of Conductors	Stranding	Bare Diam. Inches	Braid Thickness	Finished Diam. Inches *Nominal	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
**1	19/22	.127	40	.320	80	500' R	100
***2	19/22	.127	45	.630	215	500' R	269
3	19/22	.127	45	.670	275	500' R	344
4	19/22	.127	45	.740	340	500' R	425
5	19/22	.127	45	.820	395	500' R	494
6	19/22	.127	45	.900	475	500' R	594
7	19/22	.127	45	.900	535	500' R	669
8	19/22	.127	45	.985	590	500' R	758
9	19/22	.127	45	1.070	670	500' R	838
10	19/22	.127	45	1.160	735	500' R	919
11	19/22	.127	45	1.160	795	500' R	994
12	19/22	.127	45	1.200	845	500' R	1056
13	19/22	.127	45	1.235	915	500' R	1144
14	19/22	.127	45	1.275	970	500' R	1213
15	19/22	.127	45	1.320	1040	500' R	1300
16	19/22	.127	45	1.350	1105	500' R	1381
17	19/22	.127	45	1.405	1180	500' R	1475
18	19/22	.127	45	1.430	1245	500' R	1556
19	19/22	.127	45	1.430	1310	500' R	1638

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †R—Reels
**Single conductor has no cotton braid. Asbestos braid is applied directly over insulation.
***Can be furnished either parallel or cabled with fillers to make round. Specify which.

ROCKBESTOS A.V.C.

LIGHTING WIRE

NEC TYPE AVA—ROCKBESTOS A.V.C.
600 VOLT SOLID CONDUCTOR

MAXIMUM OPERATING TEMP. 110°C (230°F)

Sizes 18-8



Sizes 6-4/0



APPLICATIONS

This wire is recommended for lighting and control circuits in boiler rooms, steel mills, steam tunnels, power, chemical and food processing plants. Also around furnaces, ovens, glass lehrs, forging presses, tenter frames, soaking pits—and in locomotives, resistors, cranes, steam tables, etc. for circuits exposed to heat.

You can safely use this lighting wire either open wired or in conduit, ducts or raceways which are exposed to heat and moisture, corrosive fumes, grease, oil or fire hazard. It is also used in electrical apparatus for panel and control wiring to insure performance under severe operating conditions. This construction permits continuous operation under temperatures ranging up to a maximum of 230°F.

It has ample moisture resistance for average conditions, but if there is a possibility that circuits may be submerged for long periods use Table CL, Rockbestos A.V.C. (N.E.C. Type AVL) 600 volt lead sheathed lighting wire on page 14.

SPECIFICATION

Construction—Sizes 6-4/0

1. Solid Plain Copper Conductor
2. Felted Asbestos
3. Varnished Cambric
4. Felted Asbestos
5. Asbestos Braid

National Electrical Code Type AVA—listed by Underwriters' Laboratories, maximum conductor operating temperature 110°C (230°F).

Construction—Sizes 18-8

1. Solid Plain Copper Conductor
3. Varnished Cambric
4. Felted Asbestos
5. Asbestos Braid

National Electrical Code Type AVA—listed by Underwriters' Laboratories, maximum conductor operating temperature 110°C (230°F).

Standard finish colors: Black and white.

Authorized stock items: Black, (white also in sizes, Nos. 10, 12 and 14.)

TABLE C

600 VOLTS

TYPE AVA

Size	Bare Diam. Inches	Nominal Thickness — Mills				*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
		1st Felted Wall	VC Insert	2nd Felted Wall	Asbestos Braid				
**18 AWG	.040		30	20	40	.220	28	500' C	35
**16	.051		30	20	40	.235	33	500' C	41
14	.064		30	20	40	.245	40	500' C	50
12	.081		30	20	40	.265	50	500' C	62
10	.102		30	20	40	.285	65	500' C	81
8	.128		30	20	40	.310	89	500' C	111
6	.162	15	30	20	45	.385	135	500' R	168
5	.182	15	30	20	45	.405	160	500' R	200
4	.204	15	30	20	45	.425	190	500' R	237
3	.229	15	30	20	45	.450	230	500' R	287
2	.258	15	30	20	45	.480	275	500' R	343
1	.289	20	30	30	45	.540	350	500' R	437
0	.325	20	30	30	45	.575	430	500' R	537
00	.365	20	30	30	45	.615	525	500' R	656
000	.410	20	30	30	45	.660	640	500' R	800
0000	.460	20	30	30	45	.710	785	500' R	981

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils, R—Reels
**Not listed in National Electrical Code.

ROCKBESTOS A.V.C.
600 VOLT FLEXIBLE CONDUCTOR
MOTOR LEAD and APPARATUS CABLE

NEC TYPE AVA—ROCKBESTOS A.V.C.
MAXIMUM OPERATING TEMP. 110°C (230°F)



APPLICATION

This cable was designed and developed to meet the demand for greater resistance to conductor-heating overloads, high ambient temperatures, other destructive conditions and fire hazard. It is widely used in electrical apparatus for coil connections and motor leads on either AC or DC. Because of its A.V.C. construction it is ideal for wiring transformers, resistors, hoists, cranes, traction and mill motors which must function under exposure to heat and moisture, corrosive fumes, grease or oil.

SPECIFICATIONS

Construction

1. Flexible tinned copper conductor
2. Felted asbestos
3. Varnished cambric
4. Felted asbestos
5. Asbestos braid

This cable is National Electrical Code Type AVA, maximum operating temperature 110°C (230°F) listed by the Underwriters' Laboratories.

Rockbestos Motor Lead and Apparatus Cable is available in voltage ratings up to 5000 volts and may be furnished with extra-flexible conductors.

Standard finish colors: Black and white.

Authorized stock items: Black.

TABLE L

600 VOLTS

TYPE AVA

Size	Stranding	Bare Diam. Inches	Nominal Thickness—Mils				*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			1st Felted Wall	VC Insert	2nd Felted Wall	Asbestos Braid				
**18 AWG	16/.010	.045	10	30	15	40	.235	30	500' C	36
**16	26/.010	.059	10	30	15	40	.250	35	500' C	41
14	41/.010	.075	10	30	15	40	.265	45	500' C	51
12	65/.010	.095	10	30	15	40	.285	55	500' C	61
10	104/.010	.120	10	30	15	40	.310	75	500' C	81
8	133/.0111	.167	10	30	15	45	.370	100	500' C	106
6	133/.0140	.210	15	30	20	45	.430	150	500' R	187
5	133/.0158	.237	15	30	20	45	.460	175	500' R	218
4	133/.0177	.266	15	30	20	45	.490	210	500' R	262
3	133/.0199	.299	15	30	20	45	.520	255	500' R	318
2	133/.0223	.335	15	30	20	45	.555	305	500' R	381
1	259/.0180	.378	20	30	30	45	.630	385	500' R	481
0	259/.0202	.424	20	30	30	45	.675	470	500' R	587
00	259/.0227	.477	20	30	30	45	.730	570	500' R	712
000	259/.0255	.536	20	30	30	45	.790	700	500' R	875
0000	259/.0286	.601	20	30	30	45	.855	850	500' R	1062
250.000 CM	427/.0242	.653	25	40	40	45	.955	1030	500' R	1287
300.000	427/.0265	.716	25	40	40	45	1.020	1205	500' R	1506
350.000	427/.0286	.772	25	40	40	45	1.075	1380	500' R	1725
400.000	427/.0306	.826	25	40	40	45	1.130	1555	500' R	1943
450.000	427/.0325	.878	25	40	40	45	1.180	1740	500' R	2175
500.000	427/.0342	.923	25	40	40	45	1.225	1905	500' R	2381
550.000	427/.0359	.969	30	40	40	45	1.280	2100	500' R	2625
600.000	427/.0375	1.013	30	40	40	45	1.325	2305	500' R	2881
650.000	427/.0390	1.053	30	40	40	45	1.365	2440	500' R	3050
700.000	427/.0405	1.094	30	40	40	45	1.405	2570	500' R	3212
750.000	427/.0419	1.131	30	40	40	45	1.445	2780	500' R	3475
800.000	427/.0433	1.169	30	40	40	45	1.480	2855	500' R	3568
900.000	427/.0459	1.239	30	40	40	45	1.550	3223	500' R	4028
1,000.000	427/.0484	1.307	30	40	40	45	1.620	3590	500' R	4487

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils, R—Reels

**Not listed in National Electrical Code.

LEAD SHEATHED

POWER CABLE

NEC TYPE AVL—ROCKBESTOS A.V.C.

600 TO 5,000 VOLT RATINGS



SINGLE CONDUCTOR—STRANDED

APPLICATIONS

These Rockbestos Lead Sheathed Power Cables are used for Power and Lighting Circuits exposed to high temperatures in combination with excessive condensation or complete submersion.

Use this cable where a conduit run is exposed to widely varying conditions throughout its length, particularly in power stations located on tidewater where certain ducts are sometimes flooded but where another section of the same circuit is exposed to high temperatures. Also around ash pits where the wetting down of the ashes results in abnormal condensation.

The Cables listed in this section all conform to NEMA Standards for Asbestos Varnished Cambric wires and cables with lead sheath.

The lead sheath has no effect on the ability of these cables to withstand high temperatures but affords protection against abnormal condensation or complete submersion.

SPECIFICATIONS

Construction

1. Stranded plain copper conductor
2. Felted Asbestos
3. Varnished cambric
4. Felted asbestos
5. Lead sheath

This cable is National Electrical Code Type AVL, listed by the Underwriters' Laboratories and is available in sizes up to 2,000,000 CM. Maximum operating temperatures are as follows:

600	Volt	110°C	(230°F)
1000	Volt	110°C	(230°F)
2000	Volt	109°C	(228°F)
3000	Volt	106°C	(222°F)
4000	Volt	103°C	(217°F)
5000	Volt	100°C	(212°F)

These cables are our Standard Power Cable constructions with a lead sheath instead of an asbestos braid.

LIGHTING WIRE LEAD SHEATHED (SOLID)

MAXIMUM OPERATING TEMP: 110°C (230°F)



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

Size	Bare Diam. Inches	Nominal Thickness — Mils			Lead Sheath Thickness Inches	*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	*Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
		1st Felted Wall	VC Insert	2nd Felted Wall					
TABLE CL 600 VOLTS TYPE AVL									
18 AWG	.040		30	25	3/64	.245	170	500' R	212
16	.051		30	25	3/64	.255	180	500' R	225
14	.064		30	25	3/64	.270	200	500' R	250
12	.081		30	25	3/64	.285	220	500' R	275
10	.102		30	25	3/64	.310	250	500' R	312
8	.128		30	25	3/64	.335	285	500' R	356
6	.162	15	30	25	3/64	.400	380	500' R	475
5	.182	15	30	25	3/64	.420	420	500' R	525
4	.204	15	30	25	3/64	.440	465	500' R	581
3	.229	15	30	25	3/64	.465	520	500' R	650
2	.258	15	30	25	3/64	.495	585	500' R	731
1	.289	20	30	30	4/64	.575	830	500' R	1037
0	.325	20	30	30	4/64	.610	940	500' R	1175
00	.365	20	30	30	4/64	.650	1070	500' R	1337
000	.410	20	30	30	4/64	.695	1225	500' R	1531
0000	.460	20	30	30	4/64	.745	1415	500' R	1768

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. *R—Reels
**Not listed in National Electrical Code.

ROCKBESTOS A.V.C.
LEAD SHEATHED
SINGLE CONDUCTOR POWER CABLE

MAX. OPERATING TEMP.
103°C (217°F)

MAX. OPERATING TEMP.
100°C (212°F)

Size	Stranding	Bare Diam. Inches	Nominal Thickness — Mils			Lead Sheath Thickness Inches	*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			1st Felted Wall	VC Insert	2nd Felted Wall					
TABLE EL			600 VOLTS					TYPE AVL		
••18 AWG	7/.0152	.046	10	30	25	3/64	.270	195	500' R	243
••16	7/.0192	.058	10	30	25	3/64	.285	205	500' R	256
14	7/.0242	.073	10	30	25	3/64	.300	225	500' R	281
12	7/.0305	.092	10	30	25	3/64	.320	250	500' R	312
10	7/.0385	.116	10	30	25	3/64	.340	275	500' R	343
8	7/.0486	.146	10	30	25	3/64	.370	325	500' R	406
6	7/.0612	.184	15	30	25	3/64	.420	395	500' R	493
5	7/.0688	.206	15	30	25	3/64	.440	445	500' R	556
4	7/.0772	.232	15	30	25	3/64	.470	490	500' R	612
3	7/.0867	.260	15	30	25	3/64	.495	550	500' R	687
2	7/.0974	.292	15	30	25	4/64	.560	745	500' R	931
1	19/.0664	.332	20	30	30	4/64	.620	875	500' R	1093
0	19/.0745	.373	20	30	30	4/64	.660	1000	500' R	1250
00	19/.0837	.419	20	30	30	4/64	.705	1125	500' R	1406
000	19/.0940	.470	20	30	30	4/64	.760	1290	500' R	1612
0000	19/.1055	.528	20	30	30	4/64	.815	1490	500' R	1862
250,000 CM	37/.0822	.575	25	40	40	5/64	.945	1985	500' R	2481
300,000	37/.0900	.630	25	40	40	5/64	1.000	2240	500' R	2800
350,000	37/.0973	.681	25	40	40	5/64	1.050	2445	500' R	3056
400,000	37/.1040	.728	25	40	40	5/64	1.095	2665	500' R	3331
450,000	37/.1103	.772	25	40	40	5/64	1.140	2925	500' R	3656
500,000	37/.1162	.813	25	40	40	5/64	1.180	3095	500' R	3868
550,000	61/.0950	.855	30	40	40	6/64	1.265	3780	500' R	4725
600,000	61/.0992	.893	30	40	40	6/64	1.300	3870	500' R	4837
650,000	61/.1032	.929	30	40	40	6/64	1.340	4130	500' R	5162
700,000	61/.1071	.964	30	40	40	6/64	1.375	4250	500' R	5312
750,000	61/.1109	.998	30	40	40	6/64	1.405	4515	500' R	5643
800,000	61/.1145	1.031	30	40	40	6/64	1.440	4720	500' R	5900
850,000	61/.1180	1.062	30	40	40	6/64	1.470	5030	500' R	6287
900,000	61/.1215	1.093	30	40	40	6/64	1.500	5140	500' R	6425
950,000	61/.1248	1.123	30	40	40	6/64	1.530	5395	500' R	6743
1,000,000	61/.1280	1.152	30	40	40	6/64	1.560	5540	500' R	6925
1,250,000	91/.1172	1.289	30	50	50	7/64	1.770	7135	500' R	8918
1,500,000	91/.1284	1.412	30	50	50	7/64	1.890	8140	500' R	10175
1,750,000	127/.1174	1.526	30	50	50	7/64	2.005	9210	500' R	11512
2,000,000	127/.1255	1.652	30	50	50	7/64	2.110	10120	500' R	12650
TABLE HL			5000 VOLTS					TYPE AVL		
10 AWG	7/.0385	.116	15	120	25	4/64	.565	615	500' R	768
8	7/.0486	.146	15	120	25	4/64	.595	674	500' R	842
6	7/.0612	.184	15	120	25	4/64	.630	750	500' R	937
5	7/.0688	.206	15	120	25	4/64	.655	820	500' R	1025
4	7/.0772	.232	15	120	25	4/64	.680	860	500' R	1075
3	7/.0867	.260	15	120	25	4/64	.705	930	500' R	1162
2	7/.0974	.292	15	120	25	4/64	.740	1010	500' R	1262
1	19/.0664	.332	20	120	30	4/64	.800	1150	500' R	1437
0	19/.0745	.373	20	120	30	5/64	.870	1480	500' R	1850
00	19/.0837	.419	20	120	30	5/64	.915	1645	500' R	2056
000	19/.0940	.470	20	120	30	5/64	.970	1830	500' R	2287
0000	19/.1055	.528	20	120	30	5/64	1.025	2055	500' R	2568
250,000 CM	37/.0822	.575	25	120	40	5/64	1.105	2305	500' R	2881
300,000	37/.0900	.630	25	120	40	5/64	1.160	2544	500' R	3180
350,000	37/.0973	.681	25	120	40	6/64	1.240	3095	500' R	3868
400,000	37/.1040	.728	25	120	40	6/64	1.290	3335	500' R	4168
450,000	37/.1103	.772	25	120	40	6/64	1.330	3565	500' R	4456
500,000	37/.1162	.813	25	120	40	6/64	1.375	3800	500' R	4750
550,000	61/.0950	.855	30	120	40	6/64	1.425	4040	500' R	5050
600,000	61/.0992	.893	30	120	40	6/64	1.465	4280	500' R	5350
650,000	61/.1032	.929	30	120	40	6/64	1.500	4495	500' R	5618
700,000	61/.1071	.964	30	120	40	6/64	1.535	4715	500' R	5893
750,000	61/.1109	.998	30	120	40	6/64	1.570	4930	500' R	6162
800,000	61/.1145	1.031	30	120	40	6/64	1.600	5145	500' R	6431
850,000	61/.1180	1.062	30	120	40	6/64	1.630	5398	500' R	6747
900,000	61/.1215	1.093	30	120	40	6/64	1.665	5570	500' R	6962
950,000	61/.1248	1.123	30	120	40	7/64	1.725	6254	500' R	7792
1,000,000	61/.1280	1.152	30	120	40	7/64	1.755	6450	500' R	8037

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †R—Reels

SPECIAL CONSTRUCTIONS FOR ROCKBESTOS POWER AND CONTROL CABLES

This Rockbestos A.V.C. Control Cable illustrated is one of the many multi-conductor cables designed to meet specific requirements in control and power circuits. They are made up as shown or with either lead sheath or armor only as specified and in ratings ranging from 600 to 5000 volts. (Synthetic sheathings may also be specified for control cables where temperatures permit.) This type of cable not only protects operation of circuits exposed to heat and moisture and other severe operating conditions, but also increases the flexibility of wiring systems and makes circuits more easily accessible.

The felted asbestos insulation, impregnated with heat, flame and moisture resisting compounds, withstands high temperatures, corrosive fumes, aging and conductor-heating overloads. The lead sheath protects it from excessive condensation resulting from heating and cooling cycles and complete submersion. The spiral bronze armor eliminates the need for conduit, an important consideration in capacity expansion programs, as the cable can be run in troughs, up vertical risers or over and around obstructions. Its flame and heat resistant structure will also maintain vital alarm and control system circuits for longer periods under exposure to flame than other conventional types.

The cable illustrated on this page is a special construction which is typical of many "specials" designed by Rockbestos to meet severe or unusual operating conditions.

Its construction consists of:

Conduit saving bronze armor covering for protection against abrasion.

Impregnated jute serve to cushion the armor and to protect the lead sheath from mechanical damage.

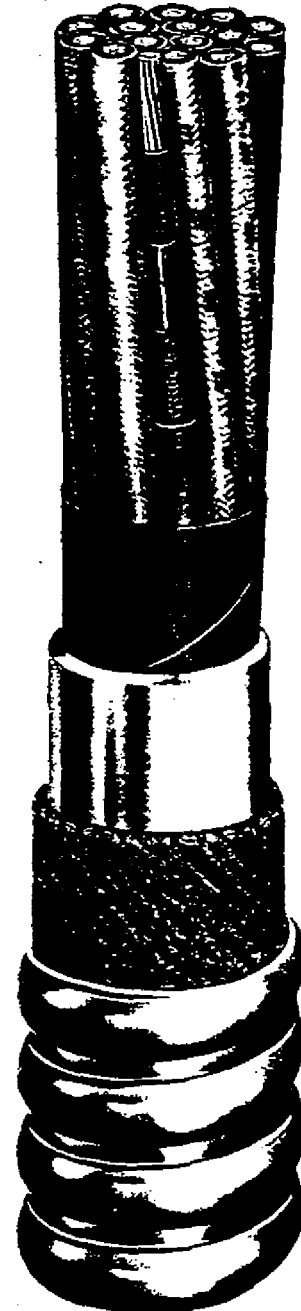
Lead sheathing for protection against immersion or excessive condensation.

Friction tape to bind the cabled conductors securely together to maintain the lay.

INDIVIDUAL CONDUCTORS

Coded individual cotton braided conductors for easy circuit identification. Felted asbestos beneath the cotton braid impregnated with heat, flame and moisture resistant compounds.

Varnished cambric for high dielectric strength and added moisture resistance. Inner wall of felted asbestos to complete the A.V.C. construction serving as a baffle between the varnished cambric and heated conductors.



ROCKBESTOS A.V.C. 600 VOLT SWITCHBOARD WIRES

NEC TYPE AVB—ROCKBESTOS A.V.C.

TABLE B—SOLID

TABLE BS—STRANDED

MAXIMUM OPERATING TEMP. 90°C (194°F)

1. SOLID OR STRANDED TINNED COPPER CONDUCTOR

2. VARNISHED CAMBRIC

3. FELTED ASBESTOS

4. FLAMEPROOF COTTON BRAID

FOR SWITCHBOARDS, RADIO AND TELEVISION TRANSMITTERS, MOTOR DRIVEN RHEOSTATS, CONTROL PANELS FOR MOTOR STARTERS, ELEVATORS, FIRE DOORS, CRANES, INDUCTION HEATING APPARATUS, OIL BURNING BOILER UNITS, ETC.

Standard finish colors; Gray and Black. Authorized stock items: Gray.

TABLE B (Solid)

600 VOLTS

TYPE AVB

Size	Bare Diam. Inches	Nominal Thickness — Mils			*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
		VC	Felted Wall	Cotton Braid				
18 AWG	.040	30	20	16	.175	20	500' C	25
16	.051	30	20	16	.185	25	500' C	31
14	.064	30	20	16	.200	30	500' C	36
12	.081	30	20	16	.220	40	500' C	46
10	.102	30	20	17	.240	55	500' C	61
8	.128	30	20	17	.270	80	500' C	86
6	.162	40	30	17	.340	125	500' R	156
5	.182	40	30	17	.360	150	500' R	187
4	.204	40	30	17	.380	175	500' R	218
3	.229	40	30	20	.415	215	500' R	268
2	.258	40	30	20	.445	260	500' R	325
1	.289	40	40	20	.495	330	500' R	412
0	.325	40	40	20	.530	405	500' R	506
00	.365	40	40	20	.570	495	500' R	618
000	.410	40	40	20	.615	610	500' R	762
0000	.460	40	40	20	.665	750	500' R	937

TABLE BS (Stranded)

600 VOLTS

TYPE AVB

Size	Stranding	Bare Diam. Inches	Nominal Thickness — Mils			*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			VC	Felted Wall	Cotton Braid				
16 AWG	7/.0192	.058	30	20	16	.190	25	500' C	31
14	7/.0242	.073	30	20	16	.205	35	500' C	41
12	7/.0305	.092	30	20	16	.225	45	500' C	51
10	7/.0385	.116	30	20	17	.250	60	500' C	66
8	7/.0486	.146	30	20	17	.280	80	500' C	86
6	7/.0612	.184	40	30	17	.360	130	500' R	162
5	7/.0688	.206	40	30	17	.380	150	500' R	187
4	7/.0772	.232	40	30	20	.415	185	500' R	231
3	7/.0867	.260	40	30	20	.440	225	500' R	281
2	7/.0974	.292	40	30	20	.475	280	500' R	350
1	19/.0664	.332	40	40	20	.535	345	500' R	431
0	19/.0745	.373	40	40	20	.575	420	500' R	525
00	19/.0837	.419	40	40	20	.620	515	500' R	643
000	19/.0940	.470	40	40	20	.670	630	500' R	787
0000	19/.1055	.528	40	40	20	.730	780	500' R	975

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils, R—Reels

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

NEC TYPE AVB—ROCKBESTOS A.V.C.

MAXIMUM OPERATING TEMP. 90°C (194°F)



1. STRANDED TINNED COPPER CONDUCTOR

2. FELTED ASBESTOS

3. VARNISHED CAMBRIC

4. FELTED ASBESTOS

5. FLAMEPROOF COTTON BRAID

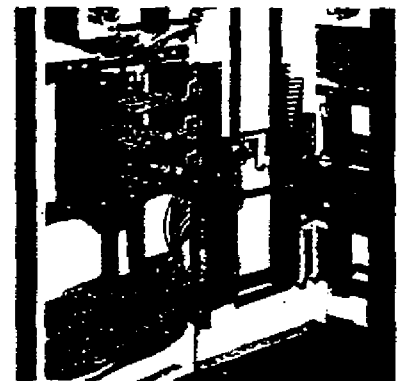
FOR HINGE AND JUMPER CONNECTIONS ON SWINGING INSTRUMENT AND SYNCHRONIZING METER PANELS, MOTOR LEADS AND APPLICATIONS SUCH AS LISTED UNDER TABLES B AND BS.

As a companion wire to Rockbestos Switchboard Wire we offer this heat, flame and moisture resisting flexible Hinge Cable. Designed primarily for hinge or jumper connections on swinging instrument and synchronizing meter panels, etc., it is also used in various applications in electrical apparatus to maintain dependable performance. It may also be used for conduit wiring where conditions are not severe enough to require an asbestos braid.

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 cotton braid finished with flameproof compound.

The diameters of Rockbestos Hinge Cable are approximately the same as those of other Rockbestos Switchboard Wires, and braid finishes are identical to assure matching appearance when used on the same board.

Rockbestos A. V. C. Hinge Cable is designated as National Electrical Code Type AVB, has a maximum operating temperature of 90°C (194°F) and is listed by the Underwriters' Laboratories. It complies with the NEMA Small Wiring for Switchboards Standard and is approved by Factory Mutual Laboratories, switchboard manufacturers and power companies.



Showing application of Rockbestos Table BH 600 Volt Hinge Cable to swinging panel.

Standard finish colors: Gray and black.

Authorized stock items: Gray.

Be sure to specify braid color desired on order.

TABLE BH

600 VOLTS

TYPE AVB

Size	Stranding Tinned	Bare Diam. Inches	Nominal Thickness — Mils				*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			1st Felted Wall	VC Insert	2nd Felted Wall	Cotton Braid				
**18 AWG	16/.010	.045	10	30	15	16	.190	25	500' C	31
**16	26/.010	.059	10	30	15	16	.205	30	500' C	36
14	41/.010	.075	10	30	15	16	.220	35	500' C	41
12	65/.010	.095	10	30	15	17	.240	45	500' C	51
10	104/.010	.120	10	30	15	17	.265	60	500' C	66
8	133/.0111	.167	10	30	15	17	.315	90	500' C	96

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils

**Not listed in National Electrical Code.

ROCKBESTOS THERMOPLASTIC and ASBESTOS 600 VOLT SWITCHBOARD WIRES AND FLEXIBLE HINGE CABLE

National Electrical Code Type TA

TABLE XB, SOLID—TABLE XBS, STRANDED
TABLE XBH, FLEXIBLE STRANDED HINGE CABLE
MAXIMUM OPERATING TEMP. 90°C (194°F)

1. SOLID OR STRANDED TINNED COPPER CONDUCTOR 2. THERMOPLASTIC INSULATION 3. FELTED ASBESTOS 4. FLAMEPROOF COTTON BRAID

FOR SWITCHBOARDS, CONTROL PANELS AND HINGE CONNECTIONS

Standard finish colors: Gray and black. Authorized stock items: Gray.

Size	Bare Diam. Inches	Minimum Thermoplastic Insulation Mils	Nominal Thickness—Mils		Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Cotton Braid				
**18 AWG	.040	20	20	16	.160	20	500' C	26
**16	.051	20	20	16	.170	25	500' C	31
14	.064	20	20	16	.185	30	500' C	36
12	.081	20	20	16	.200	40	500' C	46
10	.102	20	20	16	.225	55	500' C	61
8	.128	20	20	17	.250	75	500' C	81
6	.162	30	25	17	.315	120	500' R	130
5	.182	30	25	17	.335	145	500' R	181
4	.204	30	25	17	.360	175	500' R	218
3	.229	30	25	17	.385	210	500' R	262
2	.258	30	25	20	.420	260	500' R	325
1	.289	40	30	20	.480	330	500' R	412
0	.325	40	30	20	.515	405	500' R	506
00	.365	40	30	20	.555	495	500' R	618
000	.410	40	30	20	.600	605	500' R	756
0000	.460	40	30	20	.650	750	500' R	957

Size	Stranding	Bare Diam. Inches	Minimum Thermoplastic Insulation Mils	Nom. Thickness — Mils		Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
				Felted Wall	Cotton Braid				
**18 AWG	7/.0152	.046	20	20	16	.165	20	500' C	26
**16	7/.0192	.058	20	20	16	.180	25	500' C	31
14	7/.0242	.073	20	20	16	.195	32	500' C	38
12	7/.0305	.092	20	20	16	.215	41	500' C	47
10	7/.0385	.116	20	20	17	.240	56	500' C	63
8	7/.0486	.146	20	20	17	.270	79	500' C	85
6	7/.0612	.184	30	25	17	.340	125	500' R	156
5	7/.0688	.206	30	25	17	.365	150	500' R	187
4	7/.0772	.232	30	25	17	.395	180	500' R	225
3	7/.0867	.260	30	25	20	.425	240	500' R	300
2	7/.0974	.292	30	25	20	.455	265	500' R	331
1	19/.0664	.352	40	30	20	.525	345	500' R	431
0	19/.0745	.373	40	30	20	.565	420	500' R	525
00	19/.0837	.419	40	30	20	.610	515	500' R	643
000	19/.0940	.470	40	30	20	.660	635	500' R	793
0000	19/.1055	.528	40	30	20	.720	780	500' R	975

Size	Stranding	Bare Diam. Inches	Minimum Thermoplastic Insulation Mils	Felted Wall	Cotton Braid	Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
**18 AWG	16/.010	.045	20	20	16	.165	20	500' C	25
**16	26/.010	.059	20	20	16	.180	25	500' C	30
14	41/.010	.075	20	20	16	.195	31	500' C	37
12	65/.010	.095	20	20	16	.215	42	500' C	47
10	104/.010	.120	20	20	17	.245	57	500' C	63
8	133/.0111	.167	20	20	17	.290	84	500' C	89
6	133/.0140	.210	30	25	17	.365	130	500' R	162
5	133/.0158	.237	30	25	20	.395	160	500' R	200
4	133/.0177	.266	30	25	20	.425	190	500' R	237
3	133/.0199	.299	30	25	20	.460	230	500' R	287
2	133/.0223	.335	30	25	20	.495	280	500' R	350
1	259/.0180	.378	40	30	20	.570	360	500' R	450
0	259/.0202	.424	40	30	20	.615	435	500' R	543
00	259/.0227	.477	40	30	20	.670	535	500' R	668
000	259/.0255	.536	40	30	20	.730	660	500' R	825
0000	259/.0286	.601	40	30	20	.795	810	500' R	1012

Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. *C—Coils, R—Reels
*Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS 600 VOLT RHEOSTAT WIRE

National Electrical Code Type AIA

MAXIMUM OPERATING TEMP. 125°C (257°F)



1. SOLID PLAIN COPPER CONDUCTOR

2. FELTED ASBESTOS

3. ASBESTOS BRAID

FOR GRID JUMPER CONNECTIONS AND CONNECTIONS FROM GRIDS TO FACEPLATES, INFRA-RED DRYERS, OVENS, ELECTRIC STOVE BUS CIRCUITS, ELEMENT LEADS ON WELL TYPE ANNEALING FURNACES AND OPEN WIRING EXPOSED TO EXTREMELY HIGH TEMPERATURES, CORROSIVE FUMES, GREASE, OIL OR FIRE HAZARD.

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 safety, and it is also recommended for open wiring carrying less than 600 volts which is subject to high temperatures or rotting, corrosive fumes. For a 300 volt construction of the same type refer to page 24.

This wire is National Electrical Code Type AIA listed by the Underwriters' Laboratories as Type AIA wire and has a maximum operating temperature 125°C (257°F).

Standard finish colors: Black and white.

Authorized stock items: Black (white also in sizes nos. 6, 8, 10, 12 and 14).

TABLE A 600 VOLTS TYPE AIA

Size	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
		Felted Wall	Asbestos Braid				
**18 AWC	.040	30	40	.180	22	500' C	27
**16	.051	30	40	.195	26	500' C	32
14	.064	30	40	.205	32	500' C	37
12	.081	30	40	.225	42	500' C	47
10	.102	30	40	.245	56	500' C	61
8	.128	30	40	.270	79	500' C	84
6	.162	40	40	.325	115	500' R	143
5	.182	40	45	.355	140	500' R	175
4	.204	40	45	.375	165	500' R	206
3	.229	40	45	.400	205	500' R	256
2	.258	40	45	.430	255	500' R	318
1	.289	60	45	.500	320	500' R	400
0	.325	60	45	.535	395	500' R	493
00	.365	60	45	.575	485	500' R	606
000	.410	60	45	.620	600	500' R	750
0000	.460	60	45	.670	745	500' R	931

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils. R—Reels

**Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS 600 VOLT POWER and RHEOSTAT CABLE

National Electrical Code Type AIA
MAXIMUM OPERATING TEMP. 125°C (257°F)



1. STRANDED PLAIN COPPER CONDUCTOR

2. FELTED ASBESTOS

3. ASBESTOS BRAID

FOR GRID JUMPER CONNECTIONS AND CONNECTIONS FROM GRIDS TO FACEPLATES, INFRA-RED DRYERS, OVENS, ELECTRIC STOVE BUS CIRCUITS, ELEMENT LEADS ON WELL TYPE ANNEALING FURNACES AND OPEN WIRING EXPOSED TO EXTREMELY HIGH TEMPERATURES, CORROSIVE FUMES, GREASE, OIL OR FIRE HAZARD.

This wire is listed by Underwriters' Laboratories as Type AIA wire.

Standard finish colors: Black and white.

Authorized stock items: Black (white also in sizes nos. 12 and 14).

For 300 volt construction refer to page 24, Table RF-300. Rockbestos High Temperature Rheostat Wire.

TABLE R 600 VOLTS TYPE AIA

Size	Stranding	Bare Diam. Inches	Nominal Thickness — Mills		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Asbestos Braid				
**18 AWG	7/.0152	.046	30	40	.190	22	500' C	27
**16	7/.0192	.058	30	40	.200	28	500' C	33
14	7/.0242	.073	30	40	.215	33	500' C	39
12	7/.0305	.092	40	40	.255	47	500' C	53
10	7/.0385	.116	40	40	.280	64	500' C	69
8	7/.0486	.146	40	40	.310	90	500' C	94
6	7/.0612	.184	60	45	.395	130	500' R	162
5	7/.0688	.206	60	45	.420	155	500' R	193
4	7/.0772	.232	60	45	.445	185	500' R	231
3	7/.0867	.260	60	45	.470	225	500' R	281
2	7/.0974	.292	60	45	.505	270	500' R	337
1	19/.0664	.332	75	45	.575	345	500' R	431
0	19/.0745	.373	75	45	.615	420	500' R	525
00	19/.0837	.419	75	45	.660	520	500' R	650
000	19/.0940	.470	75	45	.710	655	500' R	795
0000	19/.1055	.528	75	45	.770	785	500' R	981
250.000 CM	37/.0822	.575	90	45	.845	920	500' R	1150
300.000	37/.0900	.630	90	45	.900	1080	500' R	1350
350.000	37/.0973	.681	90	45	.955	1245	500' R	1556
400.000	37/.1040	.728	90	45	1.000	1405	500' R	1756
450.000	37/.1103	.772	90	45	1.045	1570	500' R	1962
500.000	37/.1162	.813	90	45	1.085	1730	500' R	2162
550.000	61/.0950	.855	105	45	1.155	1890	500' R	2362
600.000	61/.0992	.893	105	45	1.195	2080	500' R	2600
650.000	61/.1032	.929	105	45	1.230	2240	500' R	2800
700.000	61/.1071	.964	105	45	1.265	2415	500' R	3018
750.000	61/.1109	.998	105	45	1.300	2560	500' R	3200
800.000	61/.1145	1.031	105	45	1.335	2730	500' R	3412
850.000	61/.1180	1.062	105	45	1.365	2890	500' R	3612
900.000	61/.1215	1.095	105	45	1.395	3050	500' R	3812
950.000	61/.1248	1.125	105	45	1.425	3215	500' R	4018
1.000.000	61/.1280	1.152	105	45	1.455	3375	500' R	4218

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils, R—Reels
**Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS 600 VOLT FLEXIBLE APPARATUS CABLE

MAXIMUM OPERATING TEMP. 125°C (257°F)

1. FLEXIBLE TINNED COPPER CONDUCTOR

2. FELTED ASBESTOS

3. ASBESTOS BRAID

FOR FLEXIBLE LEADS AND CONNECTIONS OF APPARATUS SUCH AS LISTED UNDER TABLES "A" AND "R"—OVENS, FURNACES, DRYERS, AUTOMOTIVE BUS IMMERSION HEATER LEADS, BATTERY LEADS AND ENGINE COMPARTMENT WIRING.

This cable is recommended wherever flexible leads or connections must be used in open-wired high temperature installations.

Steel mills sometimes use this cable for motor leads exposed to heat where the possibility of a moisture condition is remote. It will not deteriorate under constant high ambient temperatures and is highly resistant to corrosive fumes, flame, grease and oil, characteristics which make it ideal for jumper leads, etc. (For high dielectric strength and moisture resistance see Rockbestos A.V.C. Motor Lead and Apparatus Cable on page 13.)

Automotive bus manufacturers and operators use it for engine compartment wiring and leads for batteries, crank case

and radiator immersion heaters because of its high resistance to heat and flame. (For smaller diameter cable for these applications and diesel locomotive control circuit wiring inquire about special Type ACA engine compartment or control cables.)

This cable is National Electrical Code Type AIA and is listed by the Underwriters' Laboratories' as Type AIA wire. Maximum operating temperature is 125°C (257°F). Standard finish colors: Black and white. Authorized stock item: Black. This cable can be made up with extra flexible stranded tinned conductor if required.

For 300 volt construction refer to page 24, Table RF-300.

TABLE RF

600 VOLTS

TYPE AIA

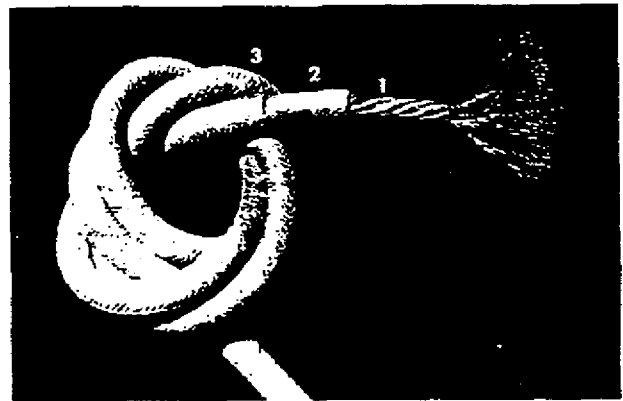
Size	Stranding	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Asbestos Braid				
**18 AWG	16/.010	.045	30	40	.185	23	500' C	27
**16	26/.010	.059	30	40	.200	27	500' C	32
14	41/.010	.075	30	40	.215	34	500' C	39
12	65/.010	.095	40	40	.255	49	500' C	54
10	104/.010	.120	40	40	.280	65	500' C	71
8	133/.0111	.167	40	40	.330	94	500' C	99
6	133/.0140	.210	60	45	.420	135	500' R	168
5	133/.0158	.237	60	45	.450	165	500' R	206
4	133/.0177	.266	60	45	.480	195	500' R	243
3	133/.0199	.299	60	45	.510	235	500' R	293
2	133/.0223	.335	60	45	.545	285	500' R	356
1	259/.0180	.378	75	45	.620	360	500' R	450
0	259/.0202	.424	75	45	.665	445	500' R	556
00	259/.0227	.477	75	45	.720	540	500' R	675
000	259/.0255	.536	75	45	.780	665	500' R	831
0000	259/.0286	.601	75	45	.845	810	500' R	1012
250.000 CM	427/.0242	.653	90	45	.925	985	500' R	1231
300.000	427/.0265	.716	90	45	.990	1120	500' R	1400
350.000	427/.0286	.772	90	45	1.045	1330	500' R	1662
400.000	427/.0306	.826	90	45	1.100	1460	500' R	1825
450.000	427/.0325	.878	90	45	1.150	1690	500' R	2112
500.000	427/.0342	.925	90	45	1.195	1805	500' R	2256

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils. R—Reels.
**Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS 300 VOLT EXTRA FLEXIBLE APPARATUS CABLE

National Electrical Code Type AA
MAXIMUM OPERATING TEMP. 150°C (302°F)

FOR MOVIE PROJECTORS, SUN-ARCS, SPOT LIGHTS, EFFECT MACHINES, HIGH TEMPERATURE LIGHTING EQUIPMENT, FURNACES, LAB OVENS, ETC.



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

This cable was originally developed as "Motion Picture Cable" for specific use in motion picture projector lamp houses and sun-arc lamps, but its use has been extended to product and industrial applications requiring extra-flexible insulated conductors that will resist the baking effects of high temperatures.

The felted asbestos insulation and the asbestos braid are both impregnated with heat and flame resisting compound to assure the highest possible resistance to heat and maximum flexibility. The braid finish is white.

This cable is National Electrical Code Type AA, listed by the Underwriters' Laboratories as Type AA wire and has a maximum operating temperature of 150°C (302°F). Stranded Copper conductors employing No. 27 AWG or smaller strands limited to 150°C (302°F) by Underwriters' Laboratories. It will remain flexible under continuous operation at rated temperature, doesn't burn or support combustion even when exposed to an arc, and has typical Rockbestos resistance to fumes, grease or oil.

Standard finish colors: White and black.
Authorized stock items: White:

TABLE W **300 VOLTS** **TYPE AA**

Size	Stranding	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Asbestos Braid				
**18 AWG	41/34	.047	30	40	.190	18	500' C	23
**16	65/34	.061	30	40	.205	23	500' C	28
14	104/34	.077	30	40	.220	30	500' C	36
12	259/36	.102	30	40	.245	41	500' C	47
10	413/36	.130	30	40	.270	58	500' C	63
8	665/36	.165	30	40	.305	75	500' C	80
6	1050/36	.205	40	45	.375	115	500' C	121
4	1666/36	.275	40	45	.445	170	250' C	176
2	2646/36	.350	40	45	.520	255	200' C	262
1	3332/36	.400	60	45	.610	330	200' C	337
0	4214/36	.440	60	45	.650	410	200' C	417
00	5292/36	.500	60	45	.710	500	200' NR	507
000	6713/36	.570	60	45	.780	630	200' NR	637
0000	8512/36	.640	60	45	.850	780	200' NR	787

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils. NR—Non-returnable Reels.

**Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS 300 VOLT HIGH TEMPERATURE RHEOSTAT WIRE

MAXIMUM OPERATING TEMP.: 200°C (392°F) — TABLES A-300, R-300
150°C (302°F) TABLE RF-300



FOR GRID JUMPER CONNECTIONS AND CONNECTIONS FROM GRIDS TO FACEPLATES, INFRA-RED DRYERS, OVENS, ELECTRIC STOVE BUS CIRCUITS, ELEMENT LEADS ON WELL TYPE ANNEALING FURNACES AND OPEN WIRING EXPOSED TO EXTREMELY HIGH TEMPERATURES, CORROSIVE FUMES, GREASE, OIL OR FIRE HAZARD.

CONDUCTORS: TABLE A-300 (SOLID) TABLE R-300 (STRANDED) TABLE RF-300 (FLEXIBLE STRANDED)
These wires are listed by the Underwriters' Laboratories as Type AA wire.
Standard braid finishes are white and black—colors on special order.

TABLE A-300 (Solid) 300 VOLTS TYPE AA

Size	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
		Felted Wall	Asbestos Braid				
**18 AWG	.040	30	40	.180	18	500' C	22
**16	.051	30	40	.195	22	500' C	28
14	.064	30	40	.205	28	500' C	33
12	.081	30	40	.225	38	500' C	43
10	.102	30	40	.245	52	500' C	57
8	.128	30	40	.270	69	500' C	79

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils

TABLE R-300 (Stranded) 300 VOLTS TYPE AA

Size	Stranding	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Asbestos Braid				
**18 AWG	7/.0152	.046	30	40	.190	18	500' C	24
**16	7/.0192	.058	30	40	.200	23	500' C	28
14	7/.0242	.073	30	40	.215	29	500' C	33
12	7/.0305	.092	30	40	.235	44	500' C	45
10	7/.0385	.116	30	40	.260	54	500' C	60
8	7/.0486	.146	30	40	.290	72	500' C	83

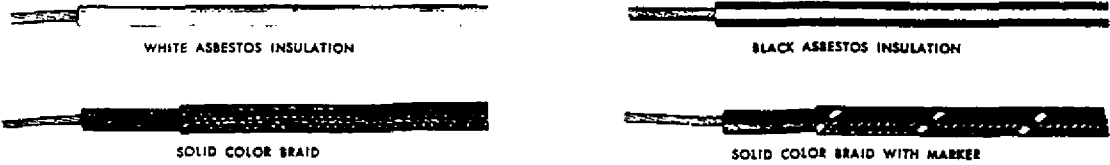
TABLE RF-300 (Flexible Stranded) 300 VOLTS (Maximum Operating Temp. 150°C) TYPE AA

Size	Stranding	Bare Diam. Inches	Nominal Thickness—Mils		*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Felted Wall	Asbestos Braid				
**18 AWG	16/.010	.045	30	40	.185	18	500' C	24
**16	26/.010	.059	30	40	.200	23	500' C	28
14	41/.010	.075	30	40	.215	30	500' C	35
12	65/.010	.095	30	40	.235	40	500' C	46
10	104/.010	.120	30	40	.260	56	500' C	61
8	135/.0111	.167	30	40	.307	75	500' C	88

*Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils
**Not listed in National Electrical Code.

ROCKBESTOS ALL-ASBESTOS
300 VOLT FIXTURE WIRES

National Electrical Code Type AF
MAXIMUM OPERATING TEMP. 150°C (302°F)



FOR LIGHTING FIXTURES, SUN LAMPS, OFFICE EQUIPMENT, RADIO APPARATUS, LEADS FOR SMALL MOTORS AND TRANSFORMERS, MINIATURE SWITCHBOARDS, ETC.

These heat resisting fixture wires are used for lighting fixtures, sun lamps, office equipment, radio apparatus, leads for small motors and transformers, miniature switchboards, etc. They are approved by the Underwriters' Laboratories for lighting fixture wiring and bear their labels. 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.

ORDERING INFORMATION

Standard Packing: Both plain and braided fixture wires are put up on metal spools and in coils, and where quantity warrants (5000 to 10,000 feet depending on size) on factory reels.

Rockbestos plain fixture wire is furnished in standard colors, black, white and red. Green, yellow, gray, orange and brown can be furnished to order.

Authorized stock items: Black and white.

Rockbestos braided fixture wire is finished in standard colors, mahogany brown and black in glazed cotton. Other colors and polarity marker threads can be furnished to order.

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.

TABLE FS (PLAIN)		300 VOLTS				TYPE AF	
Size	Stranding	Bare Diam. Inches	Min. Felted Wall Mils	Nominal Finished Diameter Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
18 AWG	16/30	.045	31	.110	10	500' S	12
16	26/30	.059	31	.125	14	500' S	17
14	41/30	.075	31	.140	20	500' S	23
12	65/30	.095	47	.190	34	500' S	37
10	104/30	.120	47	.210	48	500' C	51

TABLE FSB (BRAIDED)		300 VOLT				TYPE AF	
Size	Stranding	Bare Diam. Inches	Min. Felted Wall Mils	Nominal Finished Diameter Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
18 AWG	16/30	.045	31	.140	12	500' S	14
16	26/30	.059	31	.155	16	500' S	19
14	41/30	.075	31	.170	22	500' S	25
12	65/30	.095	47	.220	37	500' S	40
10	104/30	.120	47	.240	52	500' C	55

Finished diameters given above are average. A tolerance of plus or minus 5% is necessary due to variation in process of manufacture. †C—Coils, S—Spools

RBB 00496

RBB 00498

MAXIMUM OPERATING TEMP. 110°C (230°F)



5. ASBESTOS BRAID

*Minimum diameter 92½% of maximum diameter. †C—Coils, R—Reels

ROCKBESTOS TYPE ACA 1000 VOLT LEAD and HOOKUP WIRES

TABLE EMA
1000 VOLT LEAD WIRE
MAXIMUM OPERATING TEMP. 90°C (194°F)



STRANDED
TINNED
COPPER SYNTHETIC
TAPES FELTED
ASBESTOS GLAZED COTTON
BRAID-LACQUER
FINISH

This 1000 Volt ACA Lead Wire had its inception in application wiring with the advent of cold cathode—slim line—and mercury vapor fixtures where the initial starting voltages exceed 300 volts, thereby eliminating the use of 300 Volt AF Wire. It had a distinct advantage in its small diameter. Because of this feature, it has also found usage in some industrial instrumentation and control circuits in conduit when its use does not conflict with the requirements of the National Electrical Code.

Additional uses for this wire are for automotive bus engine compartment wiring and diesel locomotive circuit wiring. Rockbestos 1000 Volt Lead Wire is constructed with non-flowing, thin-walled, helically applied synthetic tape and felted asbestos insulation. This construction covered with a glazed cotton braid lacquer finish results in a small diameter wire with high dielectric strength. This wire strips easily and is resistant to heat, cold, flame, moisture, grease and oil.

TABLE ZM
1000 VOLT HOOKUP WIRE
MAXIMUM OPERATING TEMP. 125°C (257°F)



STRANDED
TINNED
COPPER SYNTHETIC
TAPES FELTED
ASBESTOS LACQUERED
GLASS BRAID

Here is a Hookup Wire which has developed many product and electrical maintenance applications. It is similar in construction to the 1000 Volt Lead Wire shown on this page with the exception that it is covered with a lacquered glass braid overall and is recommended for applications in which abrasion resistance requirements are less severe than for Table EMA.

This hookup wire was originally developed along government specifications for a glass braided wire suitable for use within electronic devices and instruments which would have high dielectric strength, small diameter and stability in a broad range of operating temperatures.

Like Table EMA on this page, Rockbestos 1000 Volt ACA Hookup Wire is resistant to heat, cold, flame, moisture, grease and oil. It can be terminated easily because it strips cleanly and withstands the heat of soldering.

This wire can be color coded as illustrated by the use of colored tracers inserted in the white glass braid.

TABLE EMA (COTTON BRAID)

1000 VOLTS

TYPE ACA

Size	Stranding	Bare Diam. Inches	Nom. Thickness—Inches			*Nominal Finished Diam. Inches	Approx. Net Wgt. in lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
			Synthetic Tape	Felted Wall	Braid Thickness				
14 AWG	19/.0142	.071	.010	.020	.0125	.156	23	500' C	28
12	19/.0179	.090	.010	.020	.0125	.175	31	500' C	36

TABLE ZM (GLASS BRAID)

1000 VOLTS

TYPE ACA

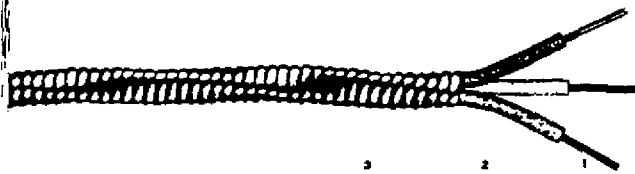
Size	Stranding	Bare Diam. Inches	Synthetic Tape	Felted Wall	Braid Thickness	*Nominal Finished Diam. Inches	Approx. Net Wgt. in lbs. per 1000'	†Standard Shipping Length Feet	Approx. Shipping Weight per 1000'
18 AWG	16/.010	.045	.0065	.0085	.0075	.090	8	**1000'	12
16	26/.010	.059	.0065	.0085	.010	.109	12	**1000'	16
14	41/.010	.075	.010	.0085	.010	.132	19	**1000'	23
12	65/.010	.095	.010	.010	.010	.155	28	**1000'	32
10	104/.010	.120	.010	.010	.010	.180	42	**1000'	48

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

**Non-Returnable reels or metal spools

ROCKBESTOS A.V.C. 600 VOLT MINING CABLE

ROCKBESTOS THERMOSTAT CONTROL WIRE



1. ENAMELED COPPER CONDUCTOR

2. POLARIZED FELTED ASBESTOS

3. COATED STEEL ARMOR

FOR LOW VOLTAGE SIGNAL, INTERCOMMUNICATIONS AND ALARM SYSTEMS, FUEL BURNER CONTROLS, GAS BURNER SAFETY PILOTS, OVENS, HEATERS, FURNACES, INDUSTRIAL DRYERS, AIR CONDITIONERS, APPARATUS, ETC.

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 recommended. 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 12½ mil.

TABLE TCC 25 mil.

TABLE TCS 31 mil.

Size A.W.G.	Number of Conductors	Nominal Wall Thickness Finished Diameters* (Inches)			Approximate 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		
					Net	Ship.	Net	Ship.	Net	Ship.	
16	2	.175	.225	.265	35	41	43	49	47	53	500
16	3	.185	.240	.285	46	52	56	62	62	68	500
16	4	.210	.270	.315	58	64	69	75	79	85	500
16	5	.235	.305	.355	69	75	84	90	97	106	500
18	2	.155	.205	.245	26	30	34	40	37	43	500
18	3	.165	.215	.260	34	39	43	49	49	55	500
18	4	.180	.240	.290	43	49	53	59	61	67	500
18	5	.205	.275	.325	50	56	64	70	75	81	500

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

ROCKBESTOS INDUSTRIAL HEATING CABLES

TABLE LH

MAXIMUM LEAD SHEATH TEMP. 350°F.

SPECIAL
ALLOY WIRE

FELTED
ASBESTOS

LEAD SHEATH

FOR THE CONTROLLED DISTRIBUTION OF MILD HEAT TO PREVENT FREEZING OF WATER, WASTE PIPES, EAVES TROUGHS, DOWN SPOUTS AND VALVES—TO INSURE FLOW OF VISCOUS FLUIDS, OILS, PAINT, CHOCOLATE, ETC.

This Rockbestos heating cable was originally developed to force the growth of early spring plants in hothouses. After its introduction to florists, market gardeners and amateur horticulturists, it found its way into industry as a useful heat source for the distribution of even mild heat. It performed to better advantage and more economically than spot or strip heaters.

Pliable, easily bent and formed, it can be threaded through apertures or made to conform to irregular shaped objects. It is best used wrapped around pipes and covered with a good standard pipe insulation for greatest economy. We can only touch on a few typical applications to which our customers have put this heating cable, but they will give you a good idea of the varied uses to which it has been put.

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, eaves troughs 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. The recommended wattage limit is 7 watts per foot. At 110 volts a 60 ft. length is rated at 400 watts, 6.66 watts per ft. Across 220 volts use a 120 ft. length for the same current value and double the total wattage. Caution: Do not use Table LH where maximum voltage exceeds 120 volts to ground. Table LHV is suitable for 440 volt service in 240 foot lengths and is U.L. approved by report for pipe heating applications.

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

TABLE LHV

MAXIMUM LEAD SHEATH TEMP. 165°F.

U.L. Approved by report for pipe heating applications

SPECIAL
ALLOY WIRE

FELTED
ASBESTOS

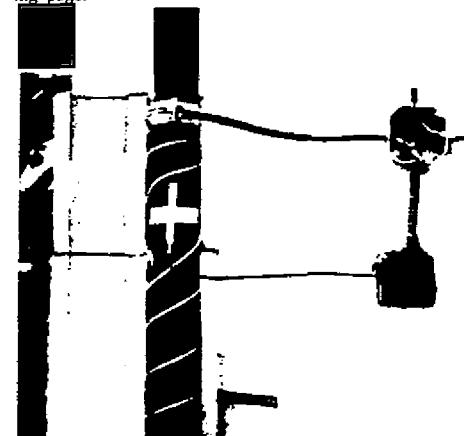
VARNISHED
CAMBRIC

LEAD SHEATH

make up heating cable characteristics to your specification. Furnish complete details concerning temperature desired, heat dissipation, etc. with inquiry.

In applications where this cable is used close to physical contact with personnel, the lead sheath should be grounded.

Other industrial heating cables are shown on the following page.



Typical installation of industrial heating cable to pipes using insulation and thermostat for precise temperature control.

TABLE LH and LHV

Table	Approx. A.W.G. Size	Conductor	Bare Diam. Inches	Approx. Resistance Ohms per Ft.	Nom. Thickness Insulation Mils	Lead Sheath Inches	*Nominal Finished Diam. Inches	Approx. Net Wgt. in Lbs. per 1000'	Standard Shipping Length Feet	Shipping Weight in Lbs. per 1000'
LH	19	Nickel Chrome Iron	.034	.5052	40—Asbestos	3/64	.215	143	60, 120 and 240 ft. lengths and in bulk on Reels	178 on Reels
LHV	19	Nickel Chrome Iron	.034	.5052	31—Asbestos 21—Varnished Cambric	3/64	.240	160		200 on Reels

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

ROCKBESTOS SPECIAL INDUSTRIAL HEATING CABLE

TABLE LHT

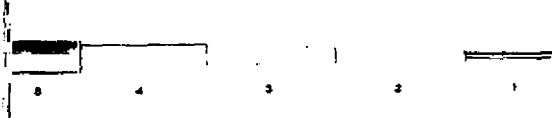
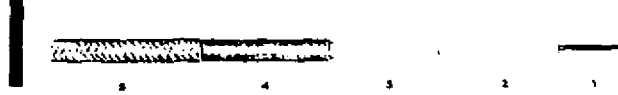


TABLE LHG



THESE ROCKBESTOS HEATING CABLES ARE TYPICAL OF THE SPECIAL CONSTRUCTIONS DEVELOPED TO MEET THE SPECIFIC REQUIREMENTS OF OUR CUSTOMERS. THEY ARE SHOWN ONLY TO ILLUSTRATE VARIED CONSTRUCTIONS SUCCESSFULLY DEVELOPED FOR INDUSTRIAL AND PRODUCT USES WHERE THE APPLICATION OF A CONTROLLED HEAT SOURCE WAS NECESSARY.

CONSTRUCTION

1. Special Alloy Wire
2. Felted Asbestos
3. Teflon Tapes
4. Felted Asbestos
5. Lead Sheath

Here is a special lead sheathed heating cable designed to solve a problem in the manufacture of refrigeration units. The problem was to speed the time required in the deicing cycle without appreciable temperature rise in the cold chamber. The answer here was to design a heating cable suitable for higher voltage operation than our Table LH industrial heating cable shown on page 29. This heating cable construction has successfully solved this problem. It is suitable for 440 volt service and has a maximum sheath temperature of 350°F.

CONSTRUCTION

1. Special Alloy Wires
2. Felted Asbestos
3. Teflon Tapes
4. Felted Asbestos—Silicone Treated
5. Glass Braid—Silicone Treated

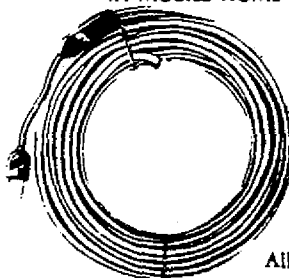
Along with the trend toward outdoor power plants came the need for protecting high temperature steam and gage lines from freezing during shutdown periods. Rockbestos Field Engineers called in to study this problem designed this special construction to be applied between the layers of pipe insulation. This provided an ideal solution as the silicone treated insulation and silicone treated glass braid construction withstood the high temperatures developed during the normal operation of steam lines and when steam lines were not operating provided a heat source of sufficient temperature to keep the condensate from freezing. This heating cable is rated at 440 volts and has maximum operating temperature of 500°F.

Rockbestos Heating Cable Designs can be developed to solve your electrical heating problems—furnish complete data covering temperature desired, heat dissipation, etc. with your inquiry.

ROCKBESTOS HEATING CABLE KITS and THERMOSTATS

ROCKBESTOS HEATING CABLE KITS

for Roof De-icing—Pipe Heating and
Soil Heating Applications
**FOR THE HOME—ON THE FARM—
IN MOBILE HOME PARKS**



Available in 3 Handy Sizes:

- 60 ft. kit (30 ft. loop)—460 watts
- 40 ft. kit (20 ft. loop)—260 watts
- 20 ft. kit (10 ft. loop)—130 watts

Complete instructions with each kit.

All operate on 110-120 volts AC or DC

THESE LEAD SHEATHED HEATING CABLES WITH FLEXIBLE NON-HEATING CONNECTOR PERMIT:

- Repeated "plug-ins" without damage to the cable
- Unlimited uses thru weatherproof construction
- Better heat conductivity than non-metal sheaths
- Easy application to irregular shaped objects
- A COMPLETE UNIT ready to plug into any standard 110-120 volt AC or DC outlet

ROOF DE-ICING: This cable serves as a source of mild heat to prevent the formation of ice dams which cause destructive leaks on building or house roofs, including gabled roofs. The current is turned on only when rain or snow is expected and the temperature drops below freezing. The kits come in 20, 40 and 60 ft. lengths (the latter complete with 8 shingle clamps), depending upon the overhang of the eaves. With average house construction one 60 ft. kit will protect 20 running feet of roof.

PIPE HEATING: Electric heating cable can easily be applied to water pipes, whether buried in the ground or exposed, to give positive protection against the damage caused by freeze-ups or broken pipes. For maximum coverage of pipe length, the cable should be applied parallel; but where greater protection is needed in low temperatures, the spiral method can be used. When applied this way, the cable will increase the heat applied because of the greater concentration of heat.

SOIL HEATING—HOT BEDS and COLD FRAMES: The heating kit serves as a dependable heat source in hotbeds, cold frames and propagating benches to stimulate faster growth for plants and cuttings. Cuttings will root and plants will grow 20 to 30 times faster this clean scientific way. Once the cable is installed, it may be left in place indefinitely. To insure proper seed germination a thermostat is necessary to accurately control the heat. For this purpose we recommend using Rockbestos Weatherproof Thermostat LT-56 adjustable for temperatures of 30°-100°F.

ROCKBESTOS WEATHERPROOF THERMOSTAT

LT-56—with Pilot Light Indicator

Automatically Controls
Temperatures in Electric
Heating Cable Kits
for Maximum Economy
in Power Consumption

- Quickly installed
- Automatic protection
- Multiple control



PIPE HEATING APPLICATIONS: The thermostat should be mounted directly on the pipe itself, selecting the coldest spot along its length. Five feet of cord leading from the thermostat is provided for connection to a 110-115 volt AC power source. Secure the thermostat to the surface of the pipe with a suitable wire or cord, passing it through the small "ears" on either side of the thermostat. Simply plug the thermostat cord into your power source and plug the heating cable into the back of the thermostat plug. When pipe covering is used, extend pipe covering to cover thermostat, leaving only dial exposed for setting. Set the thermostat for the temperature at which heating is to start (approximately 37°F. for pipe heating) and thermostat is ready to operate.

HOT BEDS, COLD FRAMES or PROPAGATING BENCH APPLICATIONS: The thermostat may be mounted within the frame itself when air temperature control is all that is required. When used to control soil temperatures, the thermostat itself may be buried, allowing the dial and setting knob to be exposed for final dial setting. The weather-proof construction provides protection against moisture encountered in wetting the soil at required intervals.

SPECIFICATIONS

Rating	15 amps on 115 volts AC
Temperature Range	30°F to 100°F maximum
Cord Length	5 feet from outlet to thermostat
Thermostat Construction	Weather proof moulded plastic enclosure
Pilot Light	Built into thermostat plug—light glows when heating cable is calling for heat.

CAUTION: Do not install with cable touching itself in any application

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

Many companies have requested suggestions for a standard specification to aid them in the ordering of *Rockbestos* wires and cables. The following specification has been formulated for that purpose and covers *Rockbestos* A. V. C. and All-Asbestos constructions described in this catalog.

NOTE: This specification is in accordance with the requirements of the National Electrical Code and the National Electrical Manufacturers Association Standards for Asbestos and Asbestos-Varnished Cambric Insulated Wires and Cables with which all *Rockbestos* wires and cables of standard construction comply.

I GENERAL

- (a) *Purpose:* The purpose of this specification is to insure the furnishing of wire and cable of the proper quality, manufactured in accordance with accepted practice.
- (b) *Scope:* This specification covers the construction and test requirements for asbestos-varnished cambric and all-asbestos insulated wires and cables.
- (c) *Materials and Workmanship:* All materials and workmanship employed in manufacturing wires and cables to this specification shall be of high quality so as to provide a finished product best suited for the purpose intended.
- (d) *Applications*

A.V.C. Insulations.

These wires and cables are suitable for operation at the specified voltages in either open or conduit installations in locations where they must operate under both heat and casual moisture conditions. If wire or cable is to be installed where it may operate under excessive condensation conditions or be submerged, lead sheathed type should be specified.

All-Asbestos Insulations.

These wires and cables are suitable for operation at the specified voltages as exposed wiring in high temperature locations where little or no moisture is encountered.

II CONDUCTORS

- (a) *Solid:* Solid conductors shall be either plain, tinned or lead alloy coated copper in accordance with current ASA or ASTM specifications.
- (b) *Stranded:* Stranded conductors shall be bunched, concentric or rope lay as required. The make-up of stranded conductors shall conform to current ASTM specifications. The individual strands shall be as specified for solid conductors in II(a).
- (c) Conductors other than copper shall be specified to meet individual requirements.

III INSULATION

(a) *Asbestos*

1. *Material:* The asbestos insulation shall consist of selected 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 wire or cable. The asbestos insulation shall be applied to form a smooth, felted wall of uniform thickness as specified in the tables. 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.
2. *Impregnation:* The asbestos insulation shall be dried and saturated with a flame and heat resisting compound or a flame, heat and moisture resisting compound as specified. The compound shall consist of suitable high grade ingredients and shall retain its initial qualities during the normal life

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

of the wire or cable. The compound shall develop no injurious chemical action within itself or with any component parts of the wire or cable.

(b) *Varnished Cambric*

1. *Material:* The varnished cambric insulation, when used, shall consist of a high grade varnished cloth substantially free from blisters or other imperfections.
2. *Application:* The varnished cambric shall be applied with lubricating compound between layers and to the wall thickness specified.

IV SEPARATORS

Unless otherwise specified, suitable separators may be used over the conductor or between component layers of insulation.

V BRAIDS

(a) *Asbestos*

1. *Material:* The asbestos yarn shall be of selected quality, long-fibre, chrysotile asbestos containing not less than 80% by weight of asbestos. The total iron content shall not exceed 6% by weight of the asbestos.
2. *Application:* Asbestos braids shall be applied to conform to current NEMA standards.
3. *Finish:* Asbestos braid shall be finished with a suitable flame and heat resisting compound or saturated and finished with a flame, heat and moisture resisting compound as specified.

(b) *Cotton Marker Braids for Multi-Conductor Control Cable*

Marker braids shall comply with the current requirements of ASA specification for Cotton Braid for Insulated Wire and Cable for General Purposes—Code Braids (commonly known as NEMA Class A braid).

(c) *Finished Cotton Braid for Outer Covering*

1. Finished braid shall comply with the current requirements of ASA specification for Cotton Braid for Insulated Wire and Cable for General Purposes—Standard Braids (commonly known as NEMA Class B braid).
2. This cotton braid shall be finished with a flame and heat resisting compound or saturated and finished with a flame, heat and moisture resisting compound as specified.

VI METALLIC COVERINGS

Coverings such as lead sheath, spiral, basket weave and interlocking armor, when required, shall comply with current NEMA specifications for metallic coverings.

VII CABLING

- (a) For cables consisting of more than one conductor (except flat twin cables) the individually insulated conductors shall be concentrically cabled together. The lay of the conductors in each layer shall not exceed 16 times the pitch diameter of that particular layer. The direction of lay of the conductors in each successive layer shall be reversed.
- (b) Where circuit identification is required it shall be accomplished by coloring the insulation or by the use of marker braids.
- (c) When required, fillers shall be used and shall be of jute or asbestos, dry or impregnated with a moisture resisting compound.
- (d) In cables with coded conductors or when required for manufacturing reasons, a tape shall be applied over the cabled conductors.

VIII TESTS

A. *Physical*

1. *Dimensions:* Inspection for dimensional requirements shall consist of four determinations, two to

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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 $\frac{3}{4}$ inch diameter and smaller shall be made with a ratchet micrometer having $\frac{1}{4}$ inch diameter faces. For cable larger than $\frac{3}{4}$ inch diameter the measurement shall be made with a circumference tape. Each determination, when made with a micrometer, shall be the average of two measurements made at right angles to each other.

2. *Resistance to Flame:* All wires and cables made to this specification shall have fire resisting properties so that the test specimens will meet all of the requirements of the Underwriters' Laboratories standard vertical flame test.

B. Electrical

1. Initial Dielectric Strength

- (a) *Single Conductor:* Initial dielectric strength tests shall be made on 5-foot lengths of finished wire or cable with the center 3-foot section wrapped with metal foil. Voltages as indicated in the tables shall be applied for 5 minutes on wire or cable rated 600 volts or over, and for 1 minute on wire or cable rated 300 volts.
- (b) *Multi-Conductor:* Initial dielectric strength tests shall be made on full reel lengths of finished cable by applying $2\frac{1}{2}$ times rated voltage between each conductor and all others for 5 minutes. Also an initial dielectric strength test shall be made on 5-foot lengths of finished cable, with the center 3-foot section wrapped with metal foil. Voltages as indicated in the tables shall be applied between each conductor and all others and metal foil, and between all conductors and metal foil, for 5 minutes on cable rated 600 volts and over, and for 1 minute on cable rated 300 volts.
- (c) *Metallic Covered Cable:* Initial dielectric strength tests shall be made on full reel lengths of metallic covered cable by applying $2\frac{1}{2}$ times rated voltage between conductor and covering on single conductor cable, and between each conductor and other conductors and the metallic covering on multi-conductor cable for a period of 5 minutes.

2. Dielectric Strength After Flame

- (a) A sample of wire or cable 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. Test voltages applied for 1 minute shall be 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 rated voltage.
 - (3) 300 volt rated wires and cables, 1000 volts.

3. Dielectric Strength While Immersed

A 5-foot sample of finished wire or cable having flame, heat and moisture resisting finish shall have the center 3-foot section immersed for 1 hour in tap water at room temperature, and while still immersed shall withstand a dielectric test of 2 times rated voltage applied between conductor and water for 1 minute.

IX. SAMPLING

- (a) Each of the required tests shall be made on one sample of each size and type of wire or cable from each lot of 10,000 feet or fraction thereof.
- (b) If a sample fails to meet a prescribed test requirement, two additional samples shall be taken from the same length. If the two additional samples meet the test requirement then the lot shall be accepted. If either of these samples fail the length may be rejected.
- (c) If any length is rejected for failure to meet a requirement, then a sample shall be taken from each length of the balance of the lot and subjected to the particular test requirement to determine acceptance or rejection of that length.

SWITCHBOARD WIRES and FULL REEL TESTS

SPECIAL TESTS FOR SWITCHBOARD WIRES

(IPCEA Standard S-28-357)

(NEMA Standard WC-1-55)

Type	Page	Description	Rated Voltage	Initial Dielectric Tests			Standard Flame Resistance Test NEMA AVC 6-78B	Dielectric Failure Test NEMA AVC 6-80D1	Leakage Resistance Test NEMA AVC 6-80D2	Bend—Dielectric Test NEMA AVC 6-80D3	
				Period of Test Voltage Application Minutes	Test potentials (KV) to be applied to sizes						
					18-8 AWG	6-2 AWG	1-4/0 AWG				
AVB	17	Switch-board Wire	600	5	3.0	4.0	4.0	X	Shall withstand not less than 15,000 volts conductor to metal foil on an unbent sample. Voltage raised at uniform rate of from 500 to 1000 volts per second.	Sample with ends sealed and foil bands 2" apart exposed 16 hours at temperature not less than 25°C in closed chamber containing open vessel of water. Removed and 200 volts D.C. immediately applied between bands. Leakage resistance shall be not less than 1 megohm per inch length per inch of circumference.	Two 90° bends on a 15" sample in the same plane 2" apart around mandrel having same diameter as sample. No rupture of covering and shall not break down at less than 5000 volts conductor to metal foil, filings or shot. Voltage raised at uniform rate of from 500 to 1000 volts per second. Test required only of sizes 8 AWG and smaller.
AVB	18	Hinge Cable	600	5	3.0	—	—	X			
TA	19	Switch-board Wire	600	5	3.0	4.0	5.0	X			
TA	19	Hinge Cable	600	5	3.0	4.0	5.0	X			

TESTS TO BE MADE ON EACH FULL REEL LENGTH

(IPCEA Standard S-28-357)

(NEMA Standard WC-1-55)

Type	Page	Description	Conductors		Lead Sheath	Rated Voltage	Full Reel Dielectric Test NEMA AVC 6-80A2 and A4 *Test Voltage (KV)
			Single	Multi-Conductor			
AVL	14	Lighting Wire	X	—	X	600	1.5
AVA	10-11	Control Cable	—	X	—	600	1.5
AVL	15	Power Cable	X	—	X	600	1.5

*On Type AVL Single Conductor Cables voltage shall be applied for 5 minutes between conductor and lead sheath.

On Type AVL Multi-Conductor Cables voltage shall be applied for 5 minutes between conductors and between the outer layer of conductors and lead sheath.

On Type AVA Multi-Conductor Cables voltage shall be applied for 5 minutes between conductors.

TESTS ON SAMPLES OF FINISHED CABLE

(IPCEA STANDARD S-28-357)

(NEMA Standard WC-1-55)

Type	Pages	Description	Rated Voltage	Initial Dielectric Tests—(Kilovolts)* NEMA AVC 6-80A						Standard Flame Resistance Test NEMA AVC 6-78B	1 Minute Dielectric Tests (kv)	
				Test Period Minutes	All Sizes	18-16 AWG	14-4/0 AWG	250-1000 MCM	Above 1000 MCM		**After Flame NEMA AVC 6-80B	***After Immersion NEMA AVC 6-80C
AVA	12	Lighting Wire	600	5	—	3.0	3.0	—	—	X	0.9	1.2
"	9	1/C Power Cable	600	5	—	3.0	3.0	4.0	5.0	X	0.9	1.2
"	9	" " "	5000	5	—	—	12.5	12.5	—	X	7.5	10.0
"	13	Motor Lead & Apparatus Cable	600	5	—	3.0	3.0	4.0	—	X	0.9	1.2
"	11	Control Cable	600	5	3.0	—	—	—	—	X	0.9	1.2
AVL	14	Lighting Wire	600	Not Required—See Test on Full Reel Lengths						X	0.9	1.2
"	15	1/C Power Cable	600									
"	15	" " "	5000									
AA	25	Apparatus Cable	300	1	1.0	—	—	—	—	X	1.0	—
AIA	22	Rheostat Wire	600	5	1.5	—	—	—	—	X	0.9	1.2
"	23	Power & Rheostat Cable	600	5	1.5	—	—	—	—	X	0.9	1.2
"	24	Apparatus Cable	600	5	1.5	—	—	—	—	X	0.9	1.2
AF	27	Fixture Wires	300	Tests as required by Underwriters' Laboratories Standard for Flexible Cord and Fixture Wire								

*On single conductor cables voltage shall be applied between conductor and metal foil wrap.
 On multi-conductor cables voltage shall be applied between conductors and between the outer layer of conductors and metal foil.
 **Voltage shall be applied between conductor and metal foil, iron filings or fine shot as required.
 ***Voltage shall be applied between conductor and water.

WICKARD WIRE & CABLE CO.

ALLOWABLE CURRENT-CARRYING CAPACITIES OF INSULATED COPPER CONDUCTORS IN AMPERES

(Based on Room Temperature of 30°C. 86°F)

NATIONAL ELECTRICAL CODE—TABLE 310-12

Not more than three conductors in Raceway or Cable or Direct Burial

Size AWG MCM	Rubber Type R Type RW Type RU Type RUW (14-2) Type RH-RW See note 9 Type THW Type TW	Rubber Type RH Type RUH (14-2) Type RH-RW See note 9 Type THW Type TW	Paper Thermo- plastic Asbestos Type TA SA Type V Type AVB Type MI Cable Type THW Type RH	Asbestos Var-Cam Type AVA Type AVL	Impreg- nated Asbestos Type AI (14-8) Type AIA	Asbestos Type A (14-8) Type AA
14	15	15	25	30	30	30
12	20	20	30	35	40	40
10	30	30	40	45	50	55
8	40	45	50	60	65	70
6	55	65	70	80	85	95
4	70	85	90	105	115	120
3	80	100	105	120	130	145
2	95	115	120	135	145	165
1	110	130	140	160	170	190
0	125	150	155	190	200	225
00	145	175	185	215	230	250
000	165	200	210	245	265	285
0000	195	230	235	275	310	340
250	215	255	270	315	335	...
300	240	285	300	345	380	...
350	260	310	325	390	420	...
400	280	335	360	420	450	...
500	320	380	405	470	500	...
600	355	420	455	525	545	...
700	385	460	490	560	600	...
750	400	475	500	580	620	...
800	410	490	515	600	640	...
900	435	520	555	...	...	...
1,000	455	545	585	680	730	...
1,250	495	590	645	...	...	...
1,500	520	625	700	785	...	...
1,750	545	650	735	...	...	...
2,000	560	665	775	840	...	...

CORRECTION FACTOR FOR ROOM TEMPERATURES OVER 30°C. 86°F.

C	F	.82	.88	.90	.94	.95	...
40 104		.82	.88	.90	.94	.95	...
45 113		.71	.82	.85	.90	.92	...
50 122		.58	.75	.80	.87	.89	...
55 131		.41	.67	.74	.83	.86	...
60 140		...	.58	.67	.79	.83	.91
70 158		...	.35	.52	.71	.76	.87
75 167		...	...	.43	.66	.72	.86
80 176		...	...	.30	.61	.69	.84
90 194		...	...	...	.50	.61	.80
100 212		...	...	...	...	.51	.77
120 248		...	...	...	...	...	.69
140 284		...	...	...	...	...	.59

NATIONAL ELECTRICAL CODE—TABLE 310-13

Single conductor in free Air

Size AWG MCM	Rubber Type R Type RW Type RU Type RUW (14-2) Type RH-RW See note 9 Type THW Type TW	Rubber Type RH Type RUH (14-2) Type RH-RW See note 9 Type THW Type THW	Thermo- plastic Asbestos Type TA SA Type V Type AVB Type MI Cable Type RH	Asbestos Var-Cam Type AVA Type AVL	Impreg- nated Asbestos Type AI (14-8) Type AIA	Asbestos Type A (14-8) Type AA	Slow- Burning Type SB
14	20	20	30	40	40	45	30
12	25	25	40	50	50	55	40
10	40	40	55	65	70	75	55
8	55	65	70	85	90	100	70
6	80	95	100	120	125	135	100
4	105	125	135	160	170	180	130
3	120	145	155	180	195	210	150
2	140	170	180	210	225	240	175
1	165	195	210	245	265	280	205
0	195	230	245	285	305	325	235
00	225	265	285	330	355	370	275
000	260	310	330	385	410	430	320
0000	300	360	385	445	475	510	370
250	340	405	425	495	530	...	410
300	375	445	480	555	590	...	460
350	420	505	530	610	655	...	510
400	455	545	575	665	710	...	555
500	515	620	660	765	815	...	630
600	575	690	740	855	910	...	710
700	630	755	815	940	1005	...	780
750	655	785	845	980	1045	...	810
800	680	815	880	1020	1085	...	845
900	730	870	940	...	...	...	905
1000	780	935	1000	1165	1240	...	965
1250	890	1065	1130	...	...	...	...
1500	980	1175	1260	1450	...	...	1215
1750	1070	1280	1370	...	...	...	...
2000	1155	1385	1470	1715	...	...	1405

CORRECTION FACTOR FOR ROOM TEMPERATURES OVER 30°C. 86°F.

C	F	.82	.88	.90	.94	.95	...
40 104		.82	.88	.90	.94	.95	...
45 113		.71	.82	.85	.90	.92	...
50 122		.58	.75	.80	.87	.89	...
55 131		.41	.67	.74	.83	.86	...
60 140		...	.58	.67	.79	.83	.91
70 158		...	.35	.52	.71	.76	.87
75 167		...	...	.43	.66	.72	.86
80 176		...	...	.30	.61	.69	.84
90 194		...	...	...	.50	.61	.80
100 212		...	...	...	...	.51	.77
120 248		...	...	...	...	...	.69
140 284		...	...	...	...	...	.59

*The current-carrying capacities for Type RHH conductors for sizes AWG 14, 12 and 10 shall be the same as designated for Type RH conductors in this Table.

NATIONAL ELECTRICAL CODE (NOTES TO TABLES 310-12 and 310-13)

- Explanation of Tables. For explanation of Type Letters, and for recognized size of conductors for the various conductor insulations, see Sections 310-2 and 310-3. For installation requirements, see Section 310-1 through 310-7, and the various Articles of this Code. For flexible cords see Tables 400-9 and 400-11.
- Application of Tables. For open wiring on insulators and for concealed knob-and-tube work, the allowable current-carrying capacities of Tables 310-12 and 310-13 shall be used. For all other recognized wiring methods, the allowable current-carrying capacities of Tables 310-12 and 310-14 shall be used, unless otherwise provided in this Code.
- Aluminum Conductors. For aluminum conductors, the allowable current-carrying capacities shall be in accordance with Tables 310-14 and 310-15.
- Bare Conductors. Where bare conductors are used with insulated conductors, their allowable current-carrying capacity shall be limited to that permitted for the insulated conductors of the same size.
- Type MI Cable. The temperature limitation on which the current-carrying capacities of Type MI cable are based, is determined by the insulating materials used in the end seal. Termination fittings incorporating unimpregnated organic insulating materials are limited to 85°C. operation.
- Ultimate Insulation Temperature. In no case shall conductors be associated together in such a way with respect to the kind of circuit, the wiring method employed, or the number of conductors, that the limiting temperature of the conductors will be exceeded.
- Use of Conductors With Higher Operating Temperatures. Where the room temperature is within 10 degrees C of the maximum allowable operating temperature of the insulation, it is desirable to use an insulation with a higher maximum allowable operating temperature; although insulation can be used in a room temperature approaching its maximum allowable operating temperature limit if the current is reduced in accordance with the Correction Factors for different room temperatures.
- More Than Three Conductors in a Raceway or Cable. Tables 310-12 and 310-14 give the allowable current-carrying capacities for not more than three conductors in a raceway or cable. Where the number of conductors in a

raceway or cable exceeds three, the allowable current-carrying capacity of each conductor shall be reduced as shown in the following Table:

Number of Conductors	Per Cent of Values in Tables 310-12 and 310-14
4 to 6	80
7 to 24	70
25 to 42	60
43 and above	50

Exception—When conductors of different systems, as provided in Section 300-3, are installed in a common raceway the derating factors shown above apply to the number of Power and Lighting (Articles 210, 215, 220 and 230) conductors only.

9. Where Type RH-RW rubber insulated wire is used in wet locations the allowable current-carrying capacities shall be that of Column 2 in Tables 310-12 through 310-15. Where used in dry locations the allowable current-carrying capacities shall be that of Column 3 in Tables 310-12 through 310-15.

10. Overcurrent Protection. Where the standard ratings and settings of overcurrent devices do not correspond with the ratings and settings allowed for conductors, the next higher standard rating and setting may be used.

11. Neutral Conductor. A neutral conductor which carries only the unbalanced current from other conductors, as in the case of normally balanced circuits of three or more conductors, shall not be counted in determining current-carrying capacities as provided for in Note 8. In a 3-wire circuit consisting of two phase wires and the neutral of a 4-wire, 3-phase system, a common conductor carries approximately the same current as the other conductors and is not therefore considered as a neutral conductor.

12. Voltage Drop. The allowable current-carrying capacities in Tables 310-12 through 310-15 are based on temperature alone and do not take voltage drop into consideration.

13. Deterioration of Insulation. It should be noted that even the best grades of rubber insulation will deteriorate in time, so eventually will need to be replaced.

CONDUIT SIZE TABLES

Percent Occupancy Allowed by NEC.
(For Rewiring see page 39)

TABLE C 600 VOLT A.V.C. LIGHTING WIRE

Cable Size	Cable Diam. Inches	Number of Cables in Conduit								
		1	2	3	4	5	6	7	8	9
Minimum Size of Conduit										
18	.220	1/2	1/2	1/2	3/4	3/4	1	1	1	1
16	.235	1/2	1/2	3/4	3/4	1	1	1	1 1/4	1 1/4
14	.245	1/2	3/4	3/4	3/4	1	1	1	1 1/4	1 1/4
12	.265	1/2	3/4	3/4	1	1	1	1 1/4	1 1/4	1 1/4
10	.285	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/4
8	.310	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
6	.385	1/2	1	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2
5	.405	1/2	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
4	.425	1/2	1 1/4	1 1/4	1 1/4	1 1/2	2	2	2	2
3	.450	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2	2 1/2
2	.480	3/4	1 1/4	1 1/4	1 1/2	2	2	2	2 1/2	2 1/2
1	.540	3/4	1 1/4	1 1/2	2	2	2 1/2	2 1/2	2 1/2	3
1/0	.575	3/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	3	3
2/0	.615	1	1 1/2	2	2	2 1/2	2 1/2	3	3	3
3/0	.660	1	2	2	2 1/2	2 1/2	3	3	3	3 1/2
4/0	.710	1	2	2	2 1/2	3	3	3	3 1/2	3 1/2

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

Cable Size	Cable Diam. Inches	Number of Cables in Conduit								
		1	2	3	4	5	6	7	8	9
Minimum Size of Conduit										
18	.235	1/2	1/2	3/4	3/4	1	1	1	1 1/4	1 1/4
16	.250	1/2	3/4	3/4	3/4	1	1	1	1 1/4	1 1/4
14	.265	1/2	3/4	3/4	3/4	1	1	1 1/4	1 1/4	1 1/4
12	.285	1/2	3/4	3/4	3/4	1	1	1 1/4	1 1/4	1 1/4
10	.310	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2
8	.350	1/2	1	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2
6	.405	1/2	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
5	.430	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2	2
4	.455	3/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2	2 1/2
3	.480	3/4	1 1/4	1 1/4	1 1/2	2	2	2	2 1/2	2 1/2
2	.515	3/4	1 1/4	1 1/4	2	2	2 1/2	2 1/2	2 1/2	2 1/2
1	.585	3/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	3	3
1/0	.625	1	1 1/2	2	2	2 1/2	2 1/2	3	3	3
2/0	.670	1	2	2	2 1/2	2 1/2	3	3	3	3 1/2
3/0	.720	1	2	2	2 1/2	3	3	3	3 1/2	3 1/2
4/0	.780	1 1/4	2	2	2 1/2	3	3	3 1/2	3 1/2	4
250	.875	1 1/4	2 1/2	2 1/2	3	3 1/2	3 1/2	4	4	4 1/2
300	.930	1 1/4	2 1/2	2 1/2	3	3 1/2	4	4	4 1/2	4 1/2
350	.985	1 1/4	3	3	3 1/2	3 1/2	4	4 1/2	4 1/2	5
400	1.030	1 1/2	3	3	3 1/2	4	4	4 1/2	5	5
450	1.075	1 1/2	3	3	3 1/2	4	4 1/2	4 1/2	5	6
500	1.115	1 1/2	3	3	3 1/2	4	4 1/2	5	5	6
550	1.165	1 1/2	3	3 1/2	4	4 1/2	5	5	6	6
600	1.205	2	3	3 1/2	4	4 1/2	5	5	6	6
650	1.240	2	3 1/2	3 1/2	4	4 1/2	5	6	6	6
700	1.275	2	3 1/2	3 1/2	4 1/2	4 1/2	5	6	6	6
750	1.310	2	3 1/2	3 1/2	4 1/2	5	6	6	6	6
800	1.345	2	3 1/2	3 1/2	4 1/2	5	6	6	6	6
850	1.375	2	3 1/2	4	4 1/2	5	6	6	6	6
900	1.405	2	4	4	4 1/2	5	6	6	6	6
950	1.435	2	4	4	5	6	6	6	6	6
1000	1.465	2	4	4	5	6	6	6	6	6
1250	1.610	2 1/2	4 1/2	4 1/2	6	6	6	6	6	6
1500	1.765	2 1/2	4 1/2	5	6	6	6	6	6	6
1750	1.880	3	5	5	6	6	6	6	6	6
2000	1.985	3	5	6	6	6	6	6	6	6

CONDUIT SIZE TABLES

TABLE EL

**LEAD SHEATHED
A.V.C. POWER CABLE**

Cable Size	Cable Diam. Inches	No. Cables in Conduit			
		1	2	3	4
		Minimum Size of Conduit			
18	.270	1/2	3/4	3/4	1
16	.285	1/2	3/4	3/4	1
14	.300	1/2	3/4	3/4	1
12	.320	1/2	1	1	1
10	.340	1/2	1	1	1 1/4
8	.370	1/2	1	1	1 1/4
6	.420	1/2	1 1/4	1 1/4	1 1/4
5	.440	1/2	1 1/4	1 1/4	1 1/2
4	.470	3/4	1 1/4	1 1/4	1 1/2
3	.495	3/4	1 1/4	1 1/4	1 1/2
2	.560	3/4	1 1/2	1 1/2	2
1	.620	1	1 1/2	2	2
1/0	.660	1	2	2	2 1/2
2/0	.705	1	2	2	2 1/2
3/0	.760	1	2	2 1/2	2 1/2
4/0	.815	1 1/4	2 1/2	2 1/2	3
250	.945	1 1/4	2 1/2	3	3
300	1.000	1 1/4	3	3	3 1/2
350	1.050	1 1/2	3	3	3 1/2
400	1.095	1 1/2	3	3	4
450	1.140	1 1/2	3	3 1/2	4
500	1.180	1 1/2	3	3 1/2	4
550	1.265	2	3 1/2	3 1/2	4 1/2
600	1.300	2	3 1/2	4	4 1/2
650	1.340	2	3 1/2	4	4 1/2
700	1.375	2	3 1/2	4	4 1/2
750	1.405	2	4	4	5
800	1.440	2	4	4	5
850	1.470	2	4	4	5
900	1.500	2	4	4 1/2	5
950	1.530	2	4	4 1/2	5
1000	1.560	2 1/2	4 1/2	4 1/2	6
1250	1.770	2 1/2	5	5	6
1500	1.890	3	5	6	—
1750	2.005	3	6	6	—
2000	2.110	3	6	6	—

TABLE CL

**LEAD SHEATHED
A.V.C. LIGHTING WIRE**

Cable Size	Cable Diam. Inches	No. Cables in Conduit			
		1	2	3	4
		Minimum Size of Conduit			
18	.245	1/2	3/4	3/4	3/4
16	.255	1/2	3/4	3/4	1
14	.270	1/2	3/4	3/4	1
12	.285	1/2	3/4	3/4	1
10	.310	1/2	3/4	1	1
8	.335	1/2	1	1	1 1/4
6	.400	1/2	1	1 1/4	1 1/4
5	.420	1/2	1 1/4	1 1/4	1 1/4
4	.440	1/2	1 1/4	1 1/4	1 1/2
3	.465	3/4	1 1/4	1 1/4	1 1/2
2	.495	3/4	1 1/4	1 1/4	1 1/2
1	.575	3/4	1 1/2	1 1/2	2
1/0	.610	1	1 1/2	2	2
2/0	.650	1	2	2	2 1/2
3/0	.695	1	2	2	2 1/2
4/0	.745	1	2	2	2 1/2

COMBINATIONS OF CONDUCTORS

TABLE NO. 3 NEC Per Cent Area of Conduit or Tubing

	Number of Conductors				
	1	2	3	4	Over 4
Conductors (not lead covered).....	53	31	43	40	40
Lead-Covered conductors	55	30	40	38	35
For rewiring existing raceways for increased load where it is impracticable to increase the size of the raceway due to structural conditions					
	60	40	50	50	50

MAXIMUM CABLE DIAMETERS FOR PERMISSIBLE CONDUIT FILL

Conduit Size Inches	NOT LEAD COVERED				LEAD COVERED				REWIRING			
	No. Cables per Conduit				No. Cables per Conduit				No. Cables per Conduit			
	1	2	3	4	1	2	3	4	1	2	3	4
1/2	.450	.243	.234	.195	.458	.239	.225	.190	.479	.276	.252	.218
3/4	.598	.323	.311	.260	.609	.318	.300	.253	.636	.367	.335	.290
1	.762	.412	.396	.331	.776	.405	.382	.322	.811	.468	.427	.370
1 1/4	1.000	.545	.523	.437	1.025	.535	.505	.426	1.070	.618	.564	.489
1 1/2	1.170	.634	.610	.510	1.195	.624	.588	.496	1.248	.721	.658	.570
2	1.505	.814	.783	.654	1.535	.801	.755	.637	1.602	.925	.844	.731
2 1/2	1.795	.972	.935	.781	1.832	.956	.902	.761	1.913	1.105	1.008	.873
3	2.232	1.206	1.161	.969	2.275	1.187	1.120	.945	2.375	1.371	1.251	1.084
3 1/2	2.585	1.398	1.345	1.123	2.635	1.375	1.295	1.094	2.750	1.588	1.450	1.255
4	2.930	1.585	1.524	1.273	2.985	1.559	1.470	1.240	3.118	1.800	1.643	1.423
4 1/2	3.281	1.776	1.706	1.425	3.345	1.745	1.646	1.389	3.490	2.015	1.840	1.593
5	3.675	1.987	1.910	1.596	3.745	1.955	1.845	1.555	3.910	2.257	2.060	1.784
6	4.415	2.390	2.296	1.920	4.500	2.350	2.215	1.870	4.700	2.715	2.480	2.145

CURRENT RATING CORRECTION FACTORS FOR VARIOUS GROUPINGS OF CABLES OR CONDUITS

(I. P. C. E. A. PUBLICATION No. P-29-226)

These tables list correction factors for the specific groupings of conduits and cables and are applied to current ratings determined by the NEC Tables on page 37.

Simply multiply the current rating by the correction factors for the specific groupings of conduits or cables.

For Cables in Conduit—Values of K

Number of Conduits Horizontally	1	2	3	4	5	6
Vertically						
1	1.00	0.94	0.91	0.88	0.87	0.86
2	0.92	0.87	0.84	0.81	0.80	0.79
3	0.85	0.81	0.78	0.76	0.75	0.74
4	0.82	0.78	0.74	0.73	0.72	0.72
5	0.80	0.76	0.72	0.71	0.70	0.70
6	0.79	0.75	0.71	0.70	0.69	0.68

For Cables in Air—Values of K

Number of Cables Horizontally	1	2	3	4	5	6
Vertically						
1	1.00	0.93	0.87	0.84	0.83	0.82
2	0.89	0.83	0.79	0.76	0.75	0.74
3	0.80	0.76	0.72	0.70	0.69	0.68
4	0.77	0.72	0.68	0.67	0.66	0.65
5	0.75	0.70	0.66	0.65	0.64	0.63
6	0.74	0.69	0.64	0.63	0.62	0.61

Note—These correction factors apply only when the spacing between cable or conduit surfaces is not greater than cable or conduit diameter, or less than one-quarter of cable or conduit diameter.

Minimum Bending Radii for Rockbestos Wires and Cables

This catalog shows many "standard" and "special" Rockbestos wires and cables and because both construction and diameter determine the Bending Radius, information on any specific wire or cable will be furnished on request.

TERMINAL and JOINT INSULATION FOR A.V.C. CABLE

In general, no special precautions are necessary in the insulating and waterproofing of terminals or joints in A.V.C. cable runs. This is because of the additional thermal capacity of thermal ends and joints, plus the fact that in general such terminal ends or joints are in cooler ambient locations than the main run of the cable.

In this type of location it is common practice to use rubber tape and friction tape as a means of insulation. For large sizes of A.V.C. cable where a splice is necessary, it is advisable to build up the joint with layers of varnished cambric tapes prior to the application of the rubber and friction tapes.

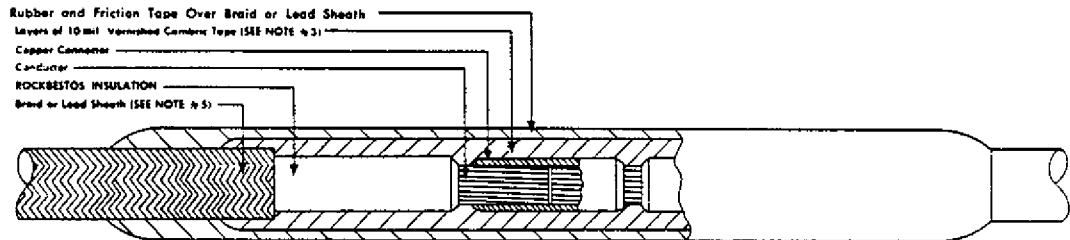
In wet locations where lead covered A.V.C. cable is used, the same practice is used except that the friction tape is

treated with a glyptal varnish or Irvington oil stop.

The illustration below shows a recommendation for such a cable splice.

In all high voltage, i.e. over 600 volts, all terminal ends and joints should be insulated with varnished cambric tape before applying the rubber or friction tapes. The friction tape should be treated with either glyptal varnish or Irvington oil stop.

Where it is necessary either to terminate or make a joint in a high ambient temperature zone, we recommend that the joint or terminal end be insulated with layers of varnished cambric tapes wrapped with asbestos listing. Listing can be coated with wax or covered overall with friction tape.



SUGGESTED METHOD OF SPLICING AVA OR AVL CABLE

1. Prepare cable ends and joint with standard soldered or mechanical connector.
2. Paint connection and adjacent insulation with compound such as glyptal varnish or Irvington Oil Stop.
3. Apply layers of varnished cambric tape with glyptal varnish or Irvington Oil Stop between layers to fill up space even with braid or lead sheath.
4. Apply two layers of rubber tape, and then two more layers of friction tape with glyptal varnish or Irvington Oil Stop between all layers and over surface. Extend rubber and friction tape over at least two inches of the cable sheath or braid which previously had been painted.
5. In case of lead sheathed cable where joint will be in wet location, a lead sheath and wiped joint may be used.

BARE COPPER WIRE DATA

ALL DATA TO ASTM B-258
RESISTANCE (BUREAU OF STANDARDS)

Size AWG	Diam. Inches	Circular Mils	LBS/1000'	FT/LB	OHMS/1000' 20°C (68°F)	Size AWG
4/0	.460	211,600	640.5	1.561	.04901	4/0
3/0	.410	167,800	507.9	1.968	.06180	3/0
2/0	.365	133,100	402.8	2.482	.07793	2/0
1/0	.325	105,600	319.5	3.130	.09827	1/0
1	.289	83,690	253.3	3.947	.1239	1
2	.258	66,360	200.9	4.977	.1563	2
3	.229	52,620	159.3	6.276	.1970	3
4	.204	41,740	126.4	7.914	.2485	4
5	.182	33,090	100.2	9.980	.3133	5
6	.162	26,240	79.46	12.58	.3951	6
7	.144	20,820	63.02	15.87	.4982	7
8	.128	15,510	49.98	20.01	.6282	8
9	.114	13,090	39.63	25.23	.7921	9
10	.102	10,380	31.43	31.82	.9989	10
11	.091	8,230	24.92	40.12	1.260	11
12	.081	6,530	19.77	50.59	1.588	12
13	.072	5,180	15.68	63.80	2.003	13
14	.064	4,110	12.43	80.44	2.525	14
15	.057	3,260	9.858	101.4	3.184	15
16	.051	2,580	7.818	127.9	4.016	16
17	.045	2,050	6.200	161.3	5.064	17
18	.040	1,620	4.917	203.4	6.385	18
19	.036	1,290	3.899	256.5	8.051	19
20	.032	1,020	3.092	323.4	10.15	20
21	.028	812	2.452	407.8	12.80	21
22	.025	640	1.945	514.2	16.14	22
23	.0226	511	1.542	648.4	20.36	23
24	.020	404	1.223	817.7	25.67	24
25	.0179	320	.9699	1031.	32.37	25
26	.0159	253	.7692	1300.	40.81	26
27	.0142	202	.6100	1639.	51.47	27
28	.0126	159	.4837	2067	64.90	28
29	.0113	128	.3836	2607.	81.83	29
30	.010	100	.3042	3287.	103.2	30
31	.0089	79.2	.2413	4145.	130.1	31
32	.0080	64.0	.1913	5227.	164.1	32
33	.0071	50.4	.1517	6591.	206.9	33
34	.0063	39.7	.1203	8310.	260.9	34
35	.0056	31.4	.09542	10480.	329.0	35
36	.0050	25.0	.07568	13210.	414.8	36
37	.0044	20.2	.06001	16660.	523.1	37
38	.0040	16.0	.04759	21010.	659.6	38
39	.0036	12.2	.03774	26500.	831.8	39
40	.0031	9.61	.02993	33410.	1049.	40

REICHLEB'S WIRE & CABLE CO.

RETURNABLE REEL DATA

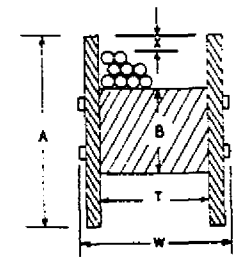
REEL DIMENSIONS — INCHES

Flange (A)	42	48	48	60	66	66	72	72
Traverse (T)	12	15	24	32	32	36	36	36
Drum (B)	24	24	24	32	32	40	40	48
Max. Width (W)	18 3/4	21 3/4	30 1/2	40 1/2	40 1/2	45	45	45
Vol. Cu. Ft.	19.1	29.0	40.6	84.4	102	114	135	135
Approx. Lbs.	130	184	250	500	550	650	790	820
Weight	— All Wood		185	275	500	550	650	790
	— Wood-Steel Drum							820

Cable Diam., Inches

Recommended Maximum Capacity — Feet Per Reel

.300	8080							
.320	7190							
.340	6300							
.360	5670	10714						
.380	4990	9938						
.400	4530	8883						
.420	4100	8129						
.440	3710	7447						
.460	3460	6682						
.480	3170	6133						
.500	2890	5670	9070					
.550	2410	4691	7500					
.600	1980	3910	6260					
.650	1680	3360	5380					
.700	1430	2840	4540	9630				
.750	1300	2490	3980	8490				
.800	1120	2170	3470	7250	9810	9590		8980
.850	976	1910	3060	6440	8300	7800		7950
.900	891	1760	2810	5730	7460	6940		7220
.950	777	1560	2490	5090	6700	6130	8370	6420
1.00	716	1380	2210	4730	6000	5680	7540	5740
1.05	629	1280	2050	4224	5360	5100	6790	5270
1.10	582	1140	1820	3770	5190	4560	6310	4730
1.15	543	1060	1700	3540	4630	4250	5710	4380
1.20	477	946	1510	3180	4110	3810	5170	3950
1.25	445	888	1420	2990	3990	3550	4850	3670
1.30	418	841	1350	2690	3530	3200	4400	3440
1.35	394	747	1190	2540	3440	3020	4150	3120
1.40	345	706	1130	2400	3020	2840	3770	2920
1.45	326	672	1070	2160	2950	2570	3580	2750
1.50	308	594	949	2050	2570	2420	3400	2490
1.55	292	565	905	1950	2510	2300	3070	2360
1.60	278	541	864	1760	2460	2190	2930	2230
1.65	262	516	825	1670	2120	1970	2650	2120
1.70	231	456	728	1600	2080	1880	2540	1920
1.75				1530	2040	1800	2430	1830



X = Clearance between top layer of cable and flange edge.

MAXIMUM CAPACITY FOR SOLID CONDUCTOR OR LEADED CABLE

NOTES:

1. Clearance (X) meets IPCEA Standards on .300" diameter and over.
2. Use max. dia. of cable to determine reel size.
3. All capacities shown in this table meet a recommended drum diameter (B) equal to 14 times the cable diameter. For all leaded and solid conductor AVA cables, the recommended drum diameters (B) are 18 times the cable diameter—see above solid line.
4. All reels with leaded cables (30" flange and larger) to be wood lagged. Lagging adds the following to reel weight:

Size Reel	Wgt. of Lagging Lbs.	Size Reel	Wgt. of Lagging Lbs.
42x12	80	60x32	210
48x15	90	66x32	240
48x24	101	66x36	270
		72x36	300

Cable Diam., Inches

1.80	1370	1740	1710	2360	1740
1.85	1320	1710	1550	2110	1660
1.90	1270	1680	1480	2030	1590
2.00	1090	1390	1360	1870	1380
2.10	1010	1350	1260	1630	1260
2.20	938	1100	1090	1520	1170
2.30			1010	1420	1080
2.40			941	1230	941
2.50			880	1160	874
2.60			762	1090	818
2.70			714	1030	764
2.80			671	894	718
2.90					625
3.00					588

