





## SUPREXA OPERATING DATA BOOKLET

### SUPREXA CARBONS

for
HIGH CURRENT DENSITY TYPE LAMPS
give

- SLOW BURNING RATE
- INCREASED SAFETY FACTOR
- SIMPLIFIED OPERATING
- GREATER ECONOMY



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### Why we introduced

### SUPREXA

SUPREXA Carbons are a development of the now famous Ship Suprex range which has been used with success on modern high efficiency lamps for the past year or so. The Ship Suprex Carbon, when run at its maximum rating, produces a very high luminous output in relation to the current used. It is, in other words, highly efficient.

To obtain this high efficiency from a small diameter carbon has in the past implied a somewhat rapid burning rate.

Apart from cost, however, this high burning rate was not attended with serious difficulties provided that the carbon was burned in a lamp fitted with suitable feed ratio, and provided that the maximum rated current was not exceeded.

In lamps which were not provided with the necessary three-to-one ratio on the automatic feed the use of Ship Suprex Carbons, although otherwise feasible, was ruled out because the limited focus travel did not permit of the focus between mirror and crater being maintained.

It was therefore strongly indicated that we should design a trim which would, without appreciable sacrifice of light efficiency, provide a slower burning rate and would eliminate the difficulties mentioned. The result of our research is—SUPREXA.

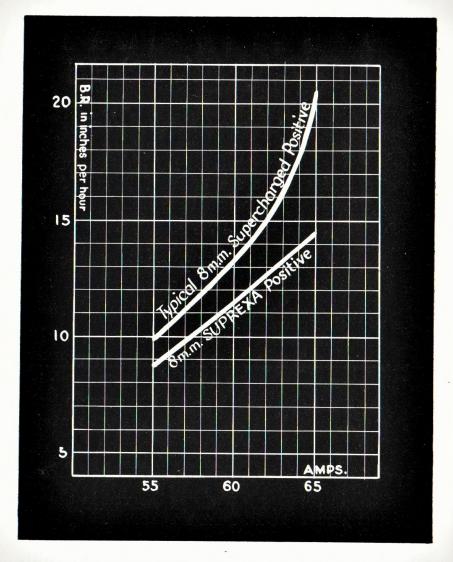
### No. 1. Burning Rate

The burning rate of the SUPREXA Carbon, size for size and current for current, is considerably slower than that of the usual supercharged carbon. Thus, considering the 8 mm. Positive, we shall see from the chart on page 4 that at 60 amperes the average high current density carbon has a burning rate of 13 inches per hour, while the burning rate of SUPREXA at that current is only slightly over 11 inches per hour.

The difference is still more noticeable if the current is raised to 65 amperes, for then the burning rate of the average carbon is increased to over 20 inches per hour, while the SUPREXA stands at just over 14 inches per hour.

Similar savings in burning rate, with consequent reduction in running costs, are observed in the case of 6 and 7 mm. SUPREXA Positives.

Relative burning rates are shown graphically on the following page for a typical 8 mm. high current density Positive as compared with an 8 mm. SUPREXA Positive.



Graph showing relative burning rates at various current values for a typical 8 mm. supercharged Positive and an 8 mm. Ship SuprexA Positive.

No. 2. Safety Factor

It is characteristic of H.I. Carbons that they only give their most efficient output when the current per square millimeter of crater area reaches a high figure.

If the overall diameter of the carbon is small, as in the case of the Suprex type, this high current density usually means a rapid burning rate.

Moreover that burning rate goes up very fast once a critical current is exceeded.

For various reasons (e.g., faulty ammeters, etc.) it is not always possible for the Projectionist to know the current he is using with great accuracy.

If he uses too little he sacrifices light, if he uses too much the burning rate becomes excessive and it is difficult to keep the arc in focus.

As will be seen from the chart opposite, the SUPREXA 8 mm. Carbon does not, even at 65 amperes, exhibit a tendency towards excessive burning rate. The burning rate curve goes up steadily and therefore, when currents in the neighbourhood of 60 amperes are used, there is no risk that the burning rate will suddenly get out of hand. In short, SUPREXA has a greater safety factor.

# SUPREXA

#### No. 3. Focus Control

The same qualities of the SUPREXA Carbon which give economy in burning and increased safety factor also assist in retaining the focal position of the crater relative to the mirror.

The SUPREXA Positive, as we have seen, burns more slowly for a given current than the average high current density Positive. The burning rate of the SUPREXA Negative is, however, as before.

So the effect is that with SUPREXA we have lowered the burning ratio between Positive and Negative. Thus, in lamps fitted with three-to-one gearing on automatic feed, SUPREXA Carbons will not need additional hand adjustment even when run at over 65 amperes. Also in lamps of other types, this reduced burning ratio is low enough to be accommodated by the available focus travel during a normal reel. Whereas with the higher burning ratio associated with average supercharged carbons, difficulty was often experienced in retaining arc focus owing to the excessive burning ratio between the carbons. It will be seen that in SUPREXA this difficulty has now been completely overcome.

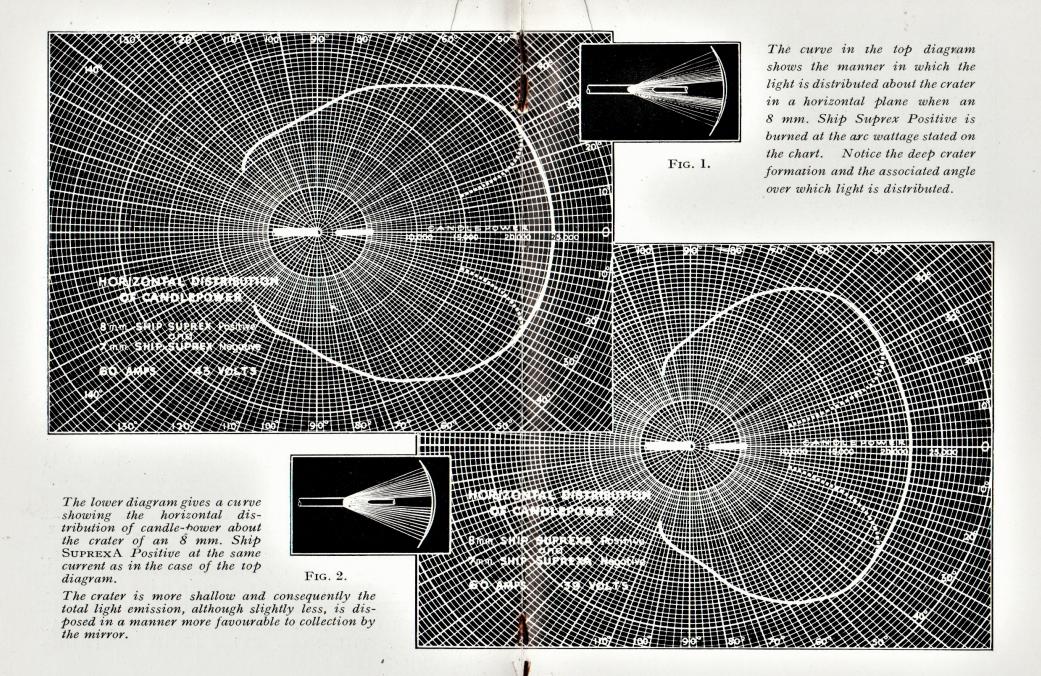
# SUPREXA

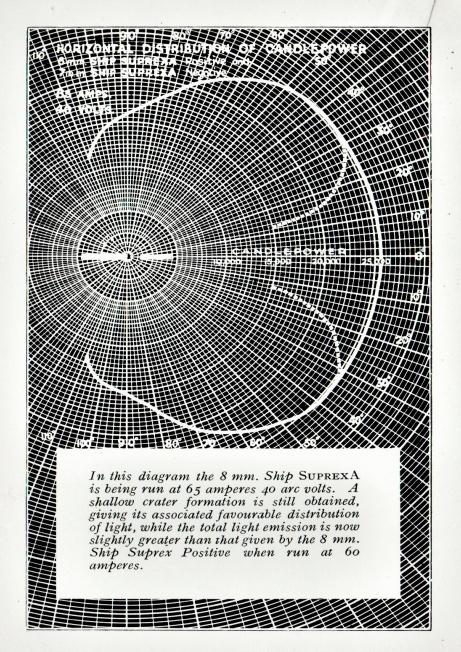
### No. 4. Candle-power Distribution

In considering the performance of a carbon we must take account not only of the total amount and intensity of the light emitted, but also of the shape of the area around the crater within which that light is concentrated.

The manner in which the light is distributed is determined very largely by the shape of the crater which is formed on the positive carbon. If the crater is deep (see Fig. 1, pp. 8 and 9) the general shape of the distribution curve will be elongated, whereas with a shallow crater the curve will tend to be broader, more circular, and therefore more in conformity with the shape of the mirror. This explains why the carbon which emits most light is *not* necessarily the one which gives the most effective light on the screen.

There is also another point in this connection to be considered. When the crater is deep there are several points upon which the mirror can be focused between the bottom and the mouth of the crater, none of which gives best screen illumination. The SUPREXA Carbon has a shallow crater (see Fig. 2, pp. 8 and 9), therefore (I) THE LIGHT DISTRIBUTION IS MORE FAVOURABLE FROM THE POINT OF VIEW OF THE MIRROR, and, (2) THE MIRROR CAN BE FOCUSED ON THE SHALLOW CRATER SO AS TO GIVE THE MOST EVEN LIGHT DISTRIBUTION ON THE SCREEN.





# SUPREXA

No. 4 (contd.). Candle-power Distribution

By comparing the two light distribution charts on pages 8 and 9, and also by comparing the graph on page 12 which shows the TOTAL amounts of light emitted by the two types of carbon respectively, it will be seen that if a Ship Suprex and a SUPREXA 8 mm. Positive each be burned at 60 amperes the total light emitted is not so great in the case of the SUPREXA as it is in the case of the Ship Suprex.

However, for reasons already explained, the light given on the screen by the SUPREXA is nearly as brilliant as that given by the Suprex, and it is better distributed.

If, however, utmost light output is essential, then the 8 mm. SUPREXA can be run at 65 amperes. The total light is then equal to that from a Ship Suprex trim run at 60 amperes, the distribution is still favourable (see chart on opposite page), the burning rate does not greatly exceed that of the Ship Suprex at 60 amperes, a reasonable safety margin is still maintained, and the burning rate is still well within the range of an automatic feed lamp having a variable feed ratio.

## 150 140 130 120 110 100 90 80 60

This graph shows the relative total light emissions as given by a typical 8 mm. Supercharged Positive and an 8 mm. Ship SuprexA Positive at various current values. The SuprexA carbon, although giving less total light, distributes it in a manner which is more favourable from the point of view of the mirror.

From the foregoing pages we see that the SUPREXA Carbon possesses the following advantages:—

If a Ship Suprex and a SUPREXA trim are both run at the same current (e.g., 60 amperes for an 8 mm. trim) then

- 1. The SUPREXA effects economy by showing a burning rate approximately 2 inches per hour less than the Suprex.
- 2. The SUPREXA has a safety margin, since burning rate is not violently increased if the current exceeds 60 amperes.
- 3. The SUPREXA is easier to keep in focus, since the burning ratio of Positive to Negative is lower.
- 4. The SUPREXA has a more favourable distribution curve, resulting in a high screen illumination level.

At 65 amperes the burning rate of the supercharged carbon has been excessive. The SUPREXA, however, gives a burning rate which is only slightly faster than that for the Ship Suprex at 60 amperes, while the light is if anything superior.



SuprexA carbons, whether Positive or Negative, are packed 100 pieces to a carton, bearing labels as in the above illustration.

### SPECIFICATION OF SUPREXA CARBONS

Specification SUPREXA Positives have shells of hard pure carbon copper-coated and chemically impregnated cores of star shape. They are made in diameters of 6, 7, or 8 millimeters, all diameters being in 12-inch lengths.

SUPREXA Negatives are cored and copper-coated by a special process. They are made in diameters 5, 6 and 7 millimeters, all diameters being in 9-inch lengths.

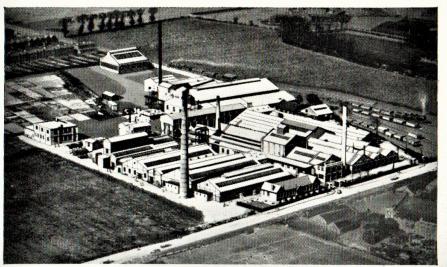
Packing
All SUPREXA Carbons, whether Positive or Negative, are packed 100 pieces to a carton (see illustration on opposite page).

### Rating

Pos. Diam.	Neg. Diam.	Current.	Arc Volts.
6	5	35/40	33-37
7	6	45/55	33-40
8	7	55/65	35-41

For other than variable feed ratio lamps a smaller negative can be used.

Consult your Ship Carbon Service Engineer, who will be pleased to advise you.



Aerial view of Ship Carbon Factory, Chadwell Heath, Essex.

## Lamps in which SUPREXA are recommended:

KALEE

**MAGNARC** 

**ROSS** 

**ASHCRAFT** 

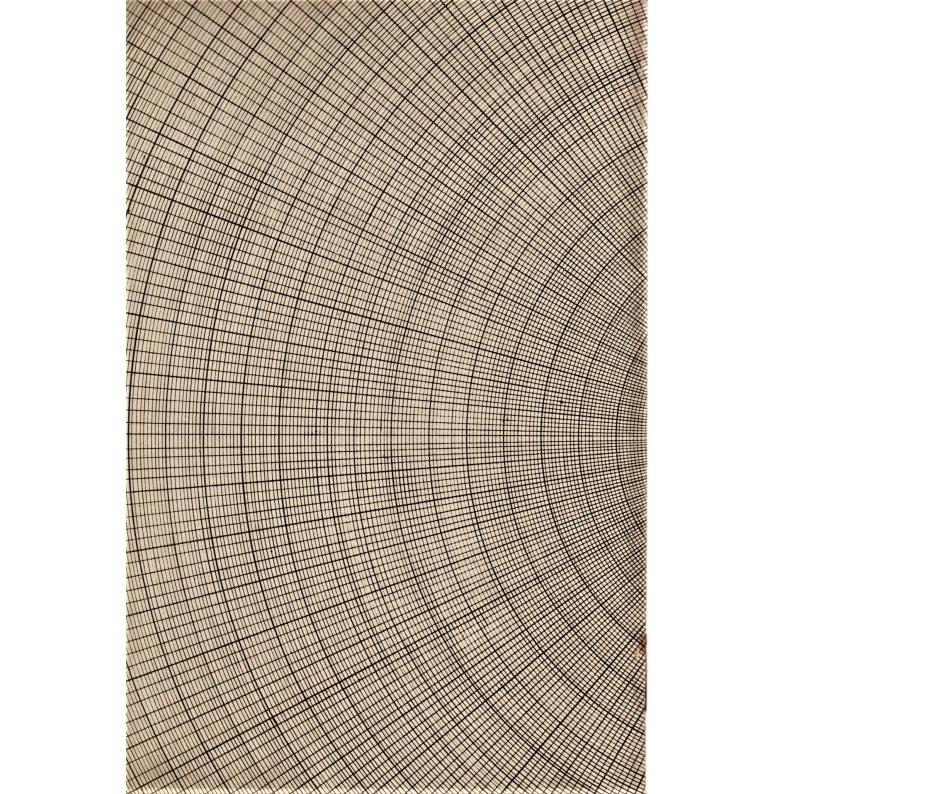
**STRONG** 

**GAUMONT** 

#### **BRENKERT**

and others about to be introduced.





### SHIP SUPREXA

## SPECIAL STUDIO CARBONS FOR COLOUR PHOTOGRAPHY

#### PRICE PER 100 PIECES

POSITIVE (Uncoppered)

Length ins.	Price
20	324/-
22	378/-
20	240/-
22	280/-
20	175/-
22	205/-
20	113/-
	20 22 20 22 20 22 20 22

#### NEGATIVE

(Copper covered for use with above)

Diameter	Length ins.	Price
11 m/m	8	73/6
10 m/m	8	67/-
9 m/m	8	60/-
8 m/m	8	52/6
7 m/m	8	48/-

SPECIAL CONTROLLED SPECTRAL EMISSION C.C. CARBONS 8 m/m x 12 in. ... 111/-

**APRIL**, 1937

## SHIP SUPREXA STUDIO CARBONS

### PRICE LIST

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Subject to cancellation without notice

### SHIP SUPREXA

#### STUDIO COPPER COVERED HIGH INTENSITY CARBONS

#### POSITIVES

Diameter m/m	Length 8 ins.	Length 10 ins.	Length 12 ins.
10	67/-	84/-	100/-
11	77/-	96/-	115/-
12	97/-	121/-	145/-
13	100/-	125/-	150/-
14	107/-	134/-	160/-
15	110/-	138/-	165/-
			4051
16	123/-	154/-	185/-
18	153/-	192/-	230/-
20	180/-	225/-	270/-
22	210/-	263/-	315/-
24	250/-	313/-	375/-
25			400/-
25	267/-	334/-	400/-
34	450/-	563/-	675/-

PRICES per 100 PIECES

Diameter m/m	Length 8 ins.	Length 10 ins.	Length 12 ins.
		A Maria Maria Maria	
7	40/-	50/-	60/-
8	40/-	50/-	60/-
9	50/-	63/-	75/-
10	55/-	69/-	83/-
11	62/-	78/-	93/-
12	69/-	87/-	104/-
		•	
13	81/-	102/-	122/-
14	94/-	118/-	141/-
15	102/-	128/-	153/-
16	111/-	139/-	167/-
17	122/-	153/-	183/-
18	131/-	164/-	197/-

**NEGATIVES**