

STATIC CONDUCTIVE V-BELTS

Requirements for V-Belt Drives in Potentially Explosive Environments

Under certain conditions of temperature and humidity, a V-belt drive may generate a significant potential of static electricity. Belts intended for operation in a potentially dangerous atmosphere can be constructed with a relatively low electrical resistance characteristic. It has become common practice to specify and refer to such belts as “static conductive”, “static dissipating”, or “anti-static”.

A standard method for determining the static conductivity of a V-belt was developed by the Rubber Manufacturers Association (RMA IP3-3 bulletin) and is described below. This method involves the passage of an electrical current of specified voltage through a section of a belt and then measuring the belt’s resistance to conduct this current.

Test Method

The test apparatus should be an electronic-type ohmmeter with a nominal open circuit voltage of 500 volts, and having a range from 0 to 10 megaohms with an accuracy of $\pm 5\%$. The electrodes consist of two 0.625 inch diameter flat metal brass contacts. Tests are conducted at room temperature of $70 \pm 10^\circ \text{F}$ and a relative humidity of $60 \pm 10\%$. The belt and contact surfaces must be wiped with a clean, dry cloth.

The test procedure consists of the following:

1. Moisten the electrodes and apply to only the driving surfaces of the belt. The electrodes are positioned on 8.5 inch centers, or 180° on any belt having a length of 20 inches or less.
2. Apply a force of 12.5 lbs. per contact.
3. Measure the resistance between the electrodes using the ohmmeter described above.

A resistance reading greater than 6 megaohms will constitute failure of this test. Testing has demonstrated that the dissipation provided by belts having a resistance of 6 megaohms or less (when new and measured as above) is sufficient to prevent measurable static voltage. This provides only for the static charge generated by the belts and sheaves. Belts on such drives must be kept reasonably free from any encrusted accumulation of nonconducting extraneous material. In addition, all elements of the drive must be interconnected and grounded to earth.

Carlisle Brand	Belt Type	Static Dissipating
Super Blue Ribbon	AP, BP, CP, DP	√
Gold-Ribbon Cog-Belt	AX, BX, CX, DX	√
Super II	A, B, C	√
Super Power-Wedge	3V, 5V, 8V	√
Power-Wedge Cog V-Belt	3VX, 5VX	√
Super Vee-Band	RB, RC, RD	√
Gold-Ribbon Cog-Band	RBX, RCX, RDX	√
Wedge-Band	R3V, R5V, R8V	√
Double-Angle	AA, BB, CC	Special Order
Vee-Rib	J, L, M	Special Order
Durapower II	3L, 4L, 5L	Special Order
Thoro-Link	O, A, B, C	No