

Test Report

PHILAFIN™ Provides Superior:

- Oil Resistance
 - Low Temp Resistance
 - Heat Aging
 - Ozone Resistance
- Chemical Resistance
 - Abrasion Resistance
 - Mechanical Strength
 - Lighter Weight

● LOWER TEMPERATURE FLEXIBILITY

PHILAFIN™ rubber flexible cord jackets resist cracking to lower temperatures than either *thermoset* Neoprene or *thermoset* rubber. The following are results of bend tests:

	<u>PHILAFIN™</u> Type SEO	<u>RUBBER</u> Type S	<u>NEOPRENE</u> Type SO
Cold Bend @ -35°C	Pass	Pass	Pass
Cold Bend @ -50°C	Pass	Cracked	Cracked
Cold Bend @ -65°C	Pass	Cracked	Cracked

PHILAFIN™ cables & cords are UL rated at -50°C to +105°C.

● GREATER OZONE RESISTANCE

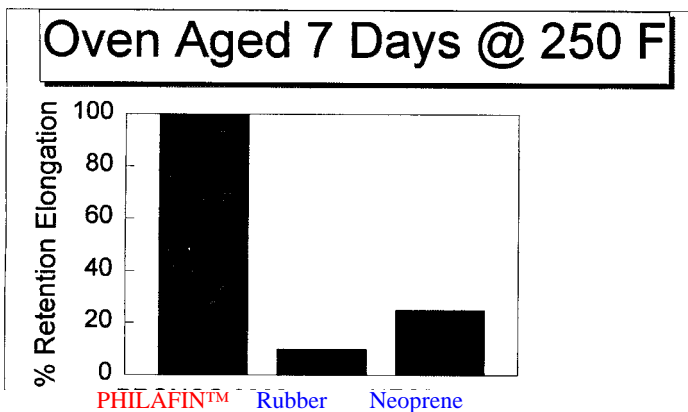
Ozone as generated around most electrical equipment can cause cracking in most conventional rubbers. PHILAFIN™ rubber has excellent resistance to cracking caused by ozone. Below are results of bent loop ozone aging tests of flexible cord jackets.

	<u>PHILAFIN™</u> Type SEO	<u>RUBBER</u> Type S	<u>NEOPRENE</u> Type SO
Hours to Cracking	1,000	24	300

NOTE: OZONE EXPOSURE - 100pphm/100°F

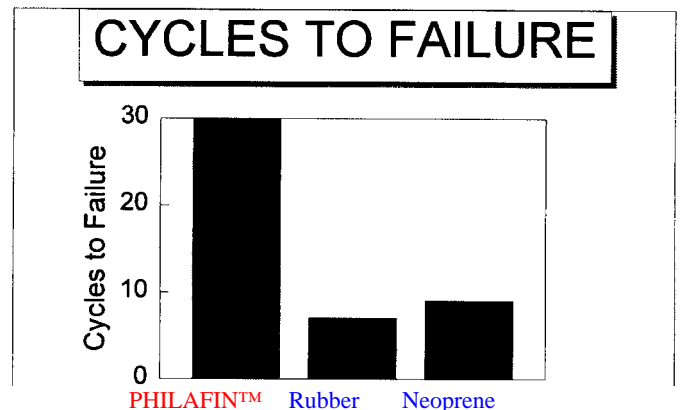
● SUPERIOR HEAT AGING

PHILAFIN™ rubber resists cracking and brittleness caused by heat far better than Neoprene or rubber. Comparative heat aging at 250°F. is shown



● TOUGHER ABRASION RESISTANCE

Shown below are comparative grinding wheel type abrasion test results on flexible cord jackets. Again, PHILAFIN™ rubber outperforms Neoprene and rubber flexible cord jackets.



PHILAFIN™ - Test Report (continued)

● SUPERIOR MECHANICAL STRENGTH

One measure of the mechanical strength of a flexible cord is resistance to failure under a crushing load. Below are results of crushing strength tests for flexible cords.

CRUSHING STRENGTH

	<u>PHILAFIN</u>	<u>RUBBER</u>	<u>NEOPRENE</u>
	Type SEO	Type S	Type SO
Pounds Force @ Failure	3,400	2,000	3,000

● LIGHTER WEIGHT

Another important consideration in "portable" power supply cordage is weight. PHILAFIN can offer a lighter, more portable cable than either rubber or Neoprene. Typical weight savings on 12/3 cords are shown as follows:

12 / 3 CORDAGE WEIGHT

	<u>PHILAFIN</u>	<u>RUBBER</u>	<u>NEOPRENE</u>
	Type SEO	Type S	Type SO
Pounds Per 1000 FT.	164	199	235
Weight Reduction	n/a	18%	33%

COMPARISON OF FLEXIBLE CORD JACKET MATERIALS

UNAGED PHYSICALS

	<u>PHILAFIN</u>	<u>RUBBER</u>	<u>NEOPRENE</u>
Tensile Strength (PSI).....	2,000	1,420	1,630
100% Modulus (PSI).....	340	690	770
Elongation (%).....	550	300	300

LOW TEMPERATURE PROPERTIES

	<u>PHILAFIN</u>	<u>RUBBER</u>	<u>NEOPRENE</u>
Brittle Point (°F).....	-100°	-52°	-38°
Cold bend @ -35°C.....	Pass	Pass	Pass
-50°C.....	Pass	Failed	Failed
-65°C.....	Pass	Failed	Failed

AGING PROPERTIES

Air Oven 7 Days @ 121°C			
% Retention of Tensile.....	123	104	188
% Retention of Elongation.....	89	17	17
Air Oven 7 Days @ 136°C			
% Retention of Tensile.....	150	0	0
% Retention of Elongation.....	116	0	0
Air Bomb 43 Hrs. @ 127°C			
% Retention of Tensile.....	117	56	93
% Retention of Elongation.....	116	18	43

OZONE RESISTANCE

Hours To Cracking (100 pphm/100°F).....	1000	24	300
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HEAT DEFORMATION (T₂/T₁)

2000 gms @ 121°C.....	.76	.93	.95
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MECHANICAL PROPERTIES

(Crushing Strength) Lbs. Force To Failure.....	3,400	2,000	3,000
Abrasion Resistance Cycles To Wear Through Jacket.....	36	18	14

CHEMICAL RESISTANCE

% Diameter Change--30 Day Immersion at Room Temperature			
Alcohol--Ethyl.....	0	-1	0
Ammonia.....	1	2	1
Gasoline--Unleaded.....	61	58	63
Kerosene.....	34	25	17
Oil--Motor 10/40.....	9	6	0
Oil--Vegetable.....	-2	6	0
Skydrol 500.....	0	-3	22
Toluene.....	26	60	56
Water.....	-1	-2	-1