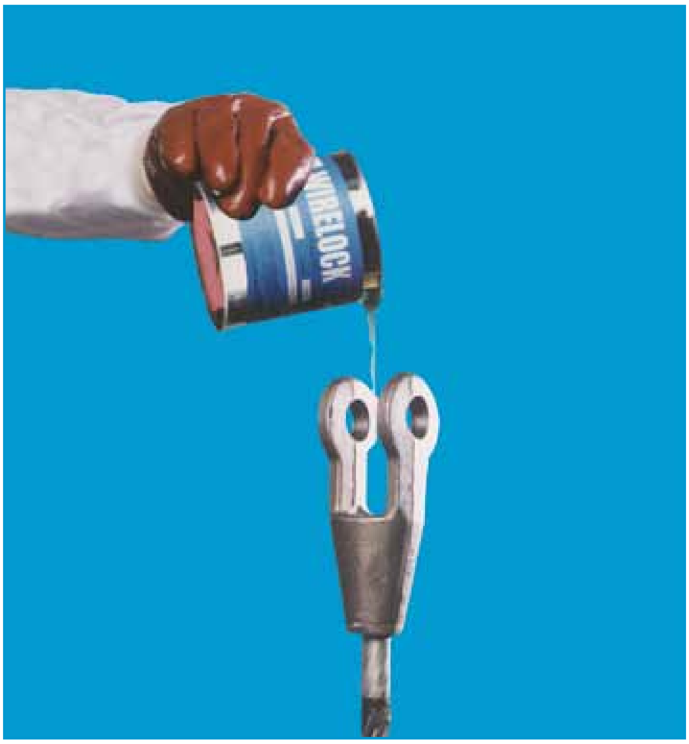
General Information



1 **WIRELOCK®** is designed to gel (Change from a liquid to a solid) in approximately 20 minutes at 18°C (65°F). To ensure the kits are not adversely affected by storage they should be kept in a dry place at a temperature of between 10°C and 24°C (50°F and 75°F) and away from any source of direct heat. **WIRELOCK®**, like all polyester resins, is temperature sensitive. An increase in temperature of 10°C (15°F) shortens the gel time by approximately 50%. A decrease in temperature of 10°C (15°F) lengthens the gel time by approximately 100%.

2. KIT SIZES

100 cc

250 cc

500 cc

1000 cc

2000 cc

3000 cc

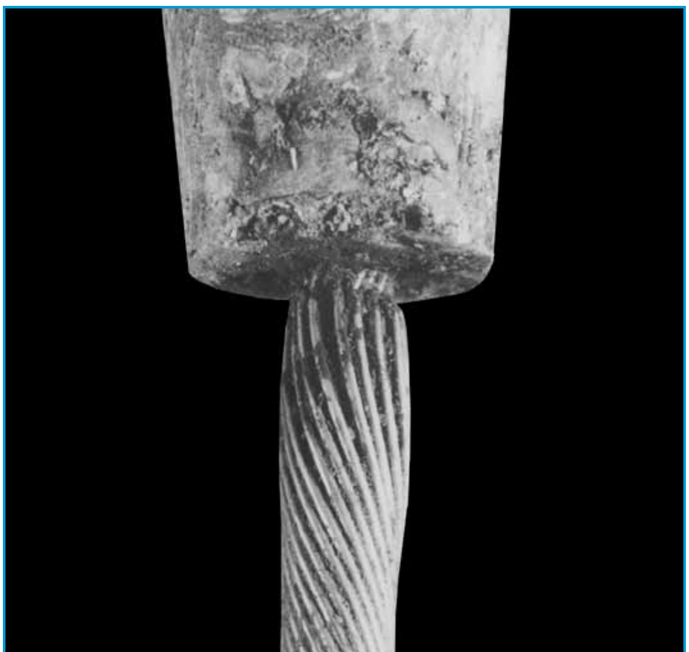
Other sizes available to order

The specific gravity of **WIRELOCK®** is 1.73 Therefore, 1000cc's will weigh 1.73 kilos or 3.81 lbs. 250 cc's will weigh

$$\frac{1.73 \times 250}{1000} = \mathbf{0.43\ kilos\ or\ 0.95\ lbs.}$$

3. **WIRELOCK®** Wire Rope Assemblies are 100% efficient when used with steel wire rope, galvanised wire ropes and stainless steel wire ropes. We do not advise the use of stainless steel wire rope in a salt water marine environment without regular inspection. In the presence of an electrolyte, i.e. sea water, electrolytic degradation of the stainless steel wire rope can occur. This phenomenon, known as crevice corrosion will impair the integrity of the rope in the region near to the neck of the socket. Crevice corrosion also occurs when white metal is used for socketing (Zinc should not be used to socket stainless steel rope). However the onset of crevice corrosion in resin sockets appears to be faster than when white metal is used. Other rope types do not exhibit this behaviour. See illustration.

4. **WIRELOCK®** is approximately 20% the weight of zinc.



typical example of the swelling of stainless steel rope due to crevice corrosion

5. The strength of **WIRELOCK®**, in its cured state, is not adversely affected by cold temperatures.

6. **WIRELOCK®** must be mixed and poured (see 6.3) within the temperature range of -3°C to 35°C (27°F - 95°F). The kits are not adversely affected by storage at temperatures below -3°C (27°F). It is recommended the **WIRELOCK®** kit be stored in a cool place.

7. The operating temperature of **WIRELOCK®** is +115°C to -54°C (+240°F to - 65°F).

8. When cured, **WIRELOCK®** has a hardness of approximately 40 to 50 Barcol. When the resin has set fully (opaque green or mustard colour) only a slight scratch mark will be seen when a sharp object, such as a screwdriver blade, is scraped over the surface of the resin. On a small socket, it is quite normal to have a very thin tacky layer on the surface of the resin. The scratch test can be carried out through this layer.

9. Cracks which may appear on the top of the cured cone are surface crazing only, and are a result of heat stresses and shrinkage upon a thin layer of unfilled resin covering the tops of the wires. The crazing does not affect the strength of the termination within the socket.

10. Shrinkage of the **WIRELOCK®** cone may leave a gap between the cone and the socket wall. This is normal, particularly with large sockets and high ambient temperatures. This in no way affects the efficiency of the assembly. Upon loading, the cone will be seated perfectly in the socket. The shrinkage of **WIRELOCK®** is between 1.5 - 2.0%. In high volume **WIRELOCK®**, the shrinkage is about 0.5%.

11. Excessive numbers of horizontal rings in the socket may increase the load required to "seat" and wedge the cone within the socket. They should be avoided whenever possible and a proof load applied (not exceeding 60% of MBL) if they must be used. Alternatively they should be filled in with clay, prior to placing the socket on the rope.

12. **WIRELOCK®** poured sockets should not be used in environments of strong caustic or acid solutions. **WIRELOCK®** is not affected by oils, or grease or salt water.

13. **WIRELOCK®** is, by design, a compressive resin. Therefore, when removed from the socket a **WIRELOCK®** cone, if hit by a hammer, may shatter. In a socket, even under extreme loads or shockloads, the **WIRELOCK®** cone remains solid and 100% efficient.

14. The shelf life of **WIRELOCK®** is eighteen (18) months (check label before use) from the date of manufacture.

Approvals

- ✓ Lloyds Register of Shipping
- ✓ Det Norske Veritas
- ✓ American Bureau of Shipping
- ✓ United States Coast Guard

NATO Numbers

100cc	8030-21-902-1823
250cc	8030-21-902-1824
500cc	8030-21-902-1825
1,000cc	8030-21-902-1826

Manufactured by:

MILLFIELD ENTERPRISES (MANUFACTURING) LIMITED

Shelley Road, Newburn Industrial Estate,

Newburn, Newcastle upon Tyne,

NE15 9RT, United Kingdom.

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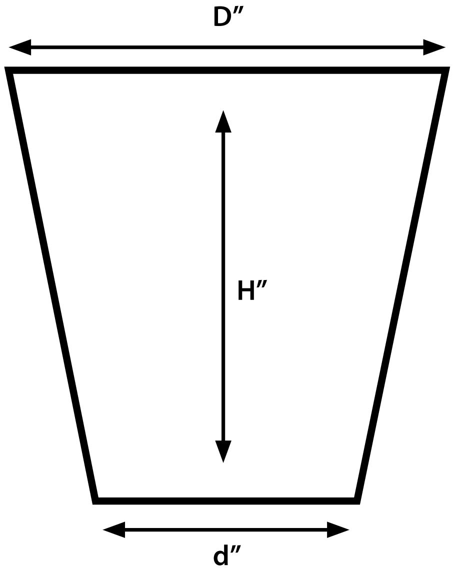
Email: info@wirelock.com

Web: www.wirelock.com

WIRELOCK®

Formula to estimate cc's required to pour standard spelter sockets



$$\left(\frac{D + d}{4}\right)^2 \times H \times 3.142 = cc$$

(D, d & H are in cm)

GUIDE TO AMOUNT OF WIREOCK® REQUIRED

6.5mm (¼”)	9cc
8mm (5/16”)	17cc
9.5mm (⅜”)	17cc
11mm (7/16”)	35cc
12.5mm (½”)	35cc
14mm (9/16”)	52cc
16mm (⅝”)	52cc
19mm (¾”)	86cc
22mm (⅞”)	125cc
25mm (1”)	160cc
28.5mm (1⅛”)	210cc
32mm (1¼”)	350cc
35mm (1⅜”)	350cc
38mm (1½”)	420cc
41mm (1⅝”)	495cc
44.5mm (1¾”)	700cc
47.5mm (1⅞”)	700cc
51mm (2”)	1265cc
54mm (2⅛”)	1265cc
57mm (2¼”)	1410cc
60mm (2⅜”)	1410cc
63.5mm (2½”)	1830cc
66.5mm (2⅝”)	1830cc
70mm (2¾”)	2250cc
76mm (3”)	3160cc
82.5mm (3¼”)	3795cc
89mm (3½”)	4920cc
95mm (3¾”)	5980cc
101.5mm (4”)	7730cc

NOTE - APPROXIMATE MEASUREMENTS (U.S.A.)

250cc Kit	1 Cup
500cc Kit	1 Pint
1000cc Kit	1 Quart

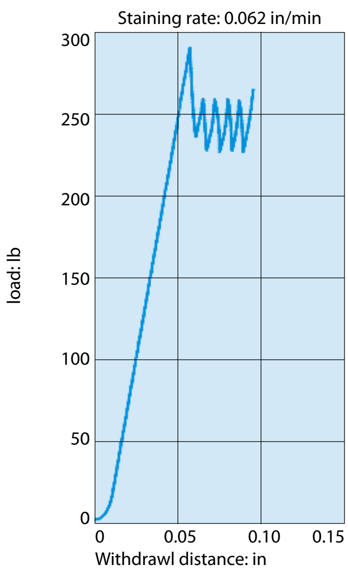
Properties of Wirelock®

Physical	
Viscosity	3 - 4 Poise
Heat Distortion Point	100ºC to 115ºC (212ºF to 240ºF)
Flexural Strength	1500 lb/sq. in.
Flexural Modulus	5.8 x 10^5 lb. sq. in.
Tensile Strength	16.15 N/mm² 1.09 T/in²
Flashpoint	31ºC (89ºF)
Electrical	
Dielectric Strength	230 volts/mm
Arc Resistance	191 S
Volume Resistivity Greater than	14.5 $\log_{10}$ ohms/cm
Surface Resistance	14.0 $\log_{10}$ ohms/cm
Insulation Resistance	8.2 x 10^{12} $\log_{10}$ ohms/cm

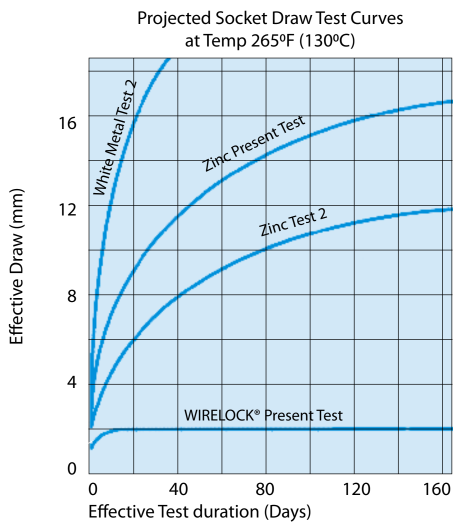
Flashpoint

Please note that this is not the auto ignition (spontaneous combustion) temperature, but the temperature above which the material will give off a significant amount of vapour.

Graph A



Graph B



The individual wires of the rope are retained by a combination of bonding and frictional forces. The frictional forces are the result of:

- Shrinkage during the curing of the resin.
- Coefficient of friction between the resin and the individual wires.

Additional forces develop due to the wedge action within the socket as the rope is loaded.

As **WIRELOCK**® cures, it shrinks by between 1.5% and 2.5%, (High Volume **WIRELOCK**® by less than 0.5%) and with the introduction of a hard inert filler of specific grain size, a high coefficient of friction is obtained.

WIRELOCK® has excellent penetrating qualities and can flow through the densest wire rope broom, which would impede the flow of zinc.

The **WIRELOCK**® system is designed to have a minimal amount of creep, which ceases once the wedging and frictional forces develop for any given load.

WIRELOCK® excels in its ability to resist the action of fatigue - fatigue in a wire rope assembly is normally prevalent in the rope close to the neck of the socket. **WIRELOCK**® will minimize such problems.

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11-Mar-99

Millfield Enterprises
16 Shelley Road
Newcastle upon Tyne 15

Job No 99R007

Test Compressive Strength and Stiffness of Resin

Sample 31436/R1792/T40

The specimens were prepared, cured and sent to us by the client.

Date of test 02/03/99
Ambient conditions during the test 20ºC 60%RH
Testing machine Avery 250kN Compression Testing Machine

Sample	Weight	Height (after grind)	Width	Depth	Density	Compressive Load	Compressive Strength
	g	mm	mm	mm	Mg/m³	kN	MPa
31436/R1792/T40-1	101.3	37.5	39.1	39.6	1.74	180.6	116.7
31436/R1792/T40-3	102.2	37.5	39.1	39.6	1.76	187.8	121.3
31436/R1792/T40-5	102.7	37.5	39.1	39.6	1.77	189.6	122.5
31436/R1792/T40-2	104.0	37.5	39.6	39.6	1.77	203.5	129.8
31436/R1792/T40-4	103.2	37.5	39.6	39.6	1.75	196.7	125.4
31436/R1792/T40-6	103.0	37.5	39.6	39.6	1.75	191.0	121.8
average					1.76		124.1

Sample	Min Stress	Max Stress	Mean Strain	Modulus of Elasticity
	MPa	MPa		N/mm²
31436/R1792/T40-1	0.0	58.3	0.243%	1.20E+04
31436/R1792/T40-3	0.0	60.6	0.263%	1.17E+04
31436/R1792/T40-5	0.0	61.2	0.234%	1.27E+04
average				1.21E+04

Reviewed
[illegible] DW
31.3.99

RECEIVED
15 MAR 1999

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21st September 1995

Millfield Enterprises Ltd.
16 Shelley Road
Newcastle upon Tyne
NE15 9RT

Compression Test of Resin Cubes

40mm nominal cubes were supplied. The specimens were cooled by immersing them in a mixture of dry ice and acetone. The temperature was monitored using a similar control specimen containing a thermistor. A specimen was placed between two platens cooled to -18°C in a refrigerator. The control specimen was also placed between two similarly cooled platens. The specimens were loaded until failure at a rate of 72kN/min.

Specimen	Height	Length	Width	Weight	Bulk Density	Cooling Temperature	Temperature of failure	Max Load	Failure Stress
	mm	mm	mm	g	Mg/m^3	°C	°C	kN	N/mm^2
1	39.7	39.6	40.0	110.9	1.76	-44	-30	203	128
2	39.3	39.3	39.7	108.7	1.77	-55	-30	215	138
3	39.6	39.5	39.7	107.2	1.73	-60	-30	207	132
4	39.6	39.6	39.6	108.1	1.74	-1	-28	204.5	130
5	39.8	39.6	39.7	109.1	1.74	-73	-36	200	127
6	39.7	39.9	39.7	109.2	1.74	74	-38	207	131

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