BONDERITE BONDERITE L-FM TI-KOTE L ACHESON CONVERSION COATING (KNOWN AS TI-KOTE L)

Issued 6/6/2013

1. Introduction:

BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) is a liquid which easily dissolves in cold water. The solution chemically deposits a tight, adherent conversion coating on titanium at approximately 100 - 1,000 mg/sq.ft dependent on alloy and surface finish.

BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) coating performs the following:

- Mechanically separates the base metal from the metalworking surfaces; thus, reducing the metal pick-up or galling at the die.
- Reduces the friction between the metal surface and the drawing die.
- Allows the surface to absorb greater amounts of dry soap drawing lubricant.

2. Operating Summary:

The operating advantages of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) are many.

- 1. BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) is a liquid that completely dissolves in cold water.
- 2. Simplified disposal issues.
- 3. Easily monitored and controlled using one simple titration.
- 4. Lowered energy costs from operating the bath at room temperature.
- 5. Self-regulated conversion coating. When the maximum coating weight (1000 mg/sq.ft. is achieved, the BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) reaction stops.
- 6. Minimal acid misting resulting from controlled chemical gassing (hydrogen formation).
- 7. Practically odorless.

Chemical:	Bath Preparation per 100 Gallons:
BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) BONDERITE M-AD 40 (known as PRIMER 40):	156-256 pounds (25 - 41 oz/gallon) 31-50 pounds to adjust to 5.0 bath
	Bath Preparation per 100 Liters:
BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) BONDERITE M-AD 40 (known as PRIMER 40):	18.7 - 30.7 Kg 4-6 Kg to adjust pH to 5.0
Operation and Control:	
Concentration:	20-30 % by wt.
Time:	4-8 minutes average
Temperature:	60-90°F (16-32°C)





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pH:

4.0-6.0

3. The Process:

The process normally consists of the following steps:

- A. Surface cleaning
- B. BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) Coating
- C. Additional Molybdenum Disulfide Coatings and or Cold Forming Lubricants
- D. Cold Forming

4. Materials:

BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) BONDERITE M-AD 40 (known as PRIMER 40) Testing Reagents and Apparatus

5. Equipment:

The process tank, housing, pumps, and piping for use with the BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) solution may be constructed of CPVC, 316-L stainless steel, or lined metal tanks using PVC, CPVC or polypropylene. All process circulating pump seals, valve seats, door seals, and other elastomers which come in contact with the working process solution should be PTFE or EPDM elastomers.

In addition, Henkel 's Engineering Department can provide either custom designed or standard control equipment to regulate this process. The equipment includes, level control, chemical monitoring and addition controls, thermostats, pumps, and other appropriate equipment. Please consult with your Henkel representative if this service is required.

6. Surface Preparation:

To ensure maximum coating weights, the metal surface should be free of all plant soils, furnace oxides, residual lubricants, and coatings from subsequent drawing operations. The surface may also be ground or polished.

To remove plant soils, we suggest the use of a Henkel Cleaner. Your area Henkel Sales Representative can discuss the application of an alkaline cleaner in greater detail.

7. Coating with BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L):

Makeup:

Fill the tank about three-quarters full with water and add sufficient BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) to give the required concentration. Agitate and then add sufficient water to bring the solution up to the working level.

8. Testing and Control:

Never pipet by mouth. Use a pipet filler.



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BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) Concentration:

Pipet a 10 ml sample of a well mixed BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) bath into a 250-ml beaker. Add 100-ml of deionized / distilled water and stir to ensure complete mixing. Add 5 to 10 drops of Indicator 3 and titrate, with vigorous stirring, with Titrating Solution 89 until the color changes to pink.

BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L)(ounces/gallon) = ml of Titrating Solution 89 X 10.9

BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L)(% by wt) = mI of Titrating Solution 89 X 8.2

The bath should be replenished frequently so that the concentration is kept within ± 1 oz/gallon of the value found to give the best results. An addition of 31 pounds of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) per 100 gallons of solution will increase the concentration approximately 5.0 oz/gallon (3.8% by wt). Frequent small additions of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) produces more uniform results than occasional large additions. It is also very important to add BONDERITE M-AD 40 (known as PRIMER 40) every time you add BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) in order to keep the pH and chemistry in correct proportions.

A bath built up with 156 pounds BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) and 31 pounds BONDERITE M-AD 40 (known as PRIMER 40) per 100 gallons has a reading of 33 oz/gal or 24.6% by wt.

For best results, the bath should be replenished frequently so that the concentration is kept above 25 oz/gal and within 5 oz/gal of the value found to be most satisfactory for the particular operation involved.

An addition of 8.25 pounds of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) and 1.64 pounds of BONDERITE M-AD 40 (known as PRIMER 40) per 100 gallons is required to increase the concentration 1% by wt.

<u>рН</u>:

Use a standardized pH meter to monitor the pH of the BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) bath. Standardize the pH meter using pH 4, 7, and 10 buffer solutions. Standardize the meter at least once a day. Our representative will determine the optimum pH value for each operating line. Once established, the pH should be maintained within +/- 0.1 pH units. BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) should be used to decrease the pH while BONDERITE M-AD 40 (known as PRIMER 40) should be used to raise the pH value.

9. After Treatment:

Drying:

After batch application of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L), the parts should be allowed to drain, and then dried. In some applications, air drying may be sufficient. Failure to dry the articles completely will reduce draw ability.

10. Waste Disposal Information:

Applicable regulations covering disposal and discharge of chemical should be consulted and followed.

Disposal information for the chemical, in the form as supplied, is given on the Material Safety Data Sheet.





11. Precautionary Information:

When handling the chemical, in the form supplied, the precautionary, first aid and handling recommendations on the Material Safety Data Sheet for the product should be read, understood, and followed.

TI-KOTE solutions can cause irritation of the eyes. Do not get in eyes. Use chemical goggles or face shield. In case of contact, follow the recommendations on the Material Safety Data Sheet for BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L).



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Testing Reagents and Apparatus (Order only those items which are not already on hand)

Code	Quantity	Item
592463	2*	Beaker, 250-ml
592477	1	Buret Assembly, 25-ml Automatic
592485	2*	Graduated Cylinder, 100-ml
592398	250 ml	Indicator 3(Phenolphthalein)
592475	1	Indicator Dropping Bottle
592492	2*	Pipet, 10-ml Volumetric
595337	2*	Stirring Rod
594334	1	Thermometer, Floating
592445 1	.0 L	Titrating Solution 89 (1.0 N NaOH)
**	1 ea	pH Meter
592447	1.0 L	Buffer Solution 4
592426	500 ml	Buffer Solution 7
595660	500 ml	Buffer Solution 10
597627	1	Refractometer 0-10

* Includes one more than actually required, to allow for possible breakage.

** Can be purchased from a local chemical supply house such as VWR or Fisher Scientific.

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(KNOWN AS TI-KOTE L)

Company	Technical Process Bulletin No.
	BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L)
Tank	Tank No
Working	Volume gallons.
Make-up	gallons per inch.
(Section 7)	pounds of BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L).
Operation (Section 7) Temperature:	Time: minutes seconds.
Testing and Control (Section 8)	Concentration: Test every 10 ml BONDERITE L-FM TI-KOTE L ACHESON (known as TI-KOTE L) bath sample, 100 ml deionized water or distilled water, 5 to 10 drops of Indicator 3, Titrating Solution 89 until the color changes from clear to pink. Range: Add
Chemical	Pounds per Gallon
BONDERITE L- BONDERITE M	-FM TI-KOTE L ACHESON (known as TI-KOTE L) ~ 9.0 I-AD 40 (known as PRIMER 40) ~ 10.0

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