Na 22.990; K 39.098; I 126.91 (x 3 = 380.73

NaI 149.9, 84.66% Iodine (2.4% NaI = 24 mg/ml -> 20.3 mg I)

KI 166.0 76.45% Iodine (10% KI = 100 mg/ml -> 76.5 mg I/ml)

T4 molar mass is 776.87 grams/mol (contains four iodine molecules) = 507.64 gm = 65.34% I

 (100 mcg T4 has 65.34 mcg of elemental iodine, = 16.34 released to make T3)

T3 molar mass is 672.96 grams/mol (contains 3 iodine molecules) = 380.73 gm = 56.58% I

Water weighs 1 gm/ml so 1 gm = 1 ml

**1 ppm =** 1 mcg/gm; with water, 1 ml = 1 gm; therefore 1 mcg/gm = 1 mcg/ml **= 1 mg/L**

Calculating ppm from %:

 1% = .01 gm/gm of carrier = 10 mg/ml = 10,000 mcg/ml = 10,000 ppm

 0.1%= .001gm/gm of carrier = 1 mg/ml = 1,000 mcg/ml = 1,000 ppm

 @ 20 drops /ml > .05 mcg/drop therefore 150 mg/drop = 3000 ppm

Disinfectant for beer is 12.5 ppm = 12.5 mg/L = 12.5 mcg/ml

 Using 2% Lugols (50.6 mg/ml), need 12.5/50.6 = 0.247 ml, @20 drops/ml = 4.94 drops in 1 Liter; @15 drops/ml = 3.71 drops

 Using 2% tincture (40.3 mg/ml), need 12.5/40.3 = 0.310 ml, @20 drops/ml = 6.2 drops in 1 Liter, @15 drops/ml = 4.65 drops

Disinfect water = 5-8 drops of 2% tincture/liter = 10-16 mg/ liter = 0.010 - 0.016 mg/ml =

150 mcg/drop = 3 mg/ml = 45 mg/15 ml = 45/50.6 ml 2% Lugols/15 ml = 0.889 ml 2% Lugols @ 20 drops/ml = 17.79;

 @ 15 drops/ml = 13.3 drops

1 mg/gm = 1000 ppm = 1 mg/ml = 1 gm/L

1 gallon = 3.785 liters; 300 ml = 0.3 L 3.785/0.3 = 12.617

1 gallon = 8 oz/cup \* 16 cups = 128 oz = 3785 ml > 29.570 ml/oz

1 qt = .9463 L 1 cup = 236.6 ml

Also needed: C, B1, B2, B3 (niacin), C, Selenium, Zn, Copper, Iron (ferritin)-> take 1 hour before taking iodine

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Etoh** | **IodiNe** | **+ IodiDe** | **TOTAL Elemental Iodine** | **ppm** | **Per Drop at 15 drops/ml** | **Per Drop (at 20 drops per ml)** | **Dilute 1 drop to x drops water for 150 mcg/drop** | **Dilute x drops to 60 ml Water to make 150 mcg/drop**  |
| Tincture of Iodine | 50% | 2% = 20 mg/ml | 2.4% NaI = 24 mg/ml \* 0.847 = 20.32 mg/ml I | **40.32 mg/ml** | 40k |  | 2.02 mg |  |  |
| Strong Tincture | 50% | 7% = 70 mg/ml | 5% KI = 50 mg/ml \* 0.764 = 38.2 mg/ml I  | 108.2 mg/ml | 108k |  | 5.41 mg |  |  |
| Lugols 2% |  | 2% = 20 mg/ml | 4% = 40 mg of KI\* .765 = **30.6 mg/ml I** | **50.6 mg/ml** | 51k | 3.37 mg | **2.53 mg** | 16.87 | 7.11 |
| Lugols 5% |  | 5% = 50 mg/ml | 10% = 100 mg KI\* 0.765 = **76.5 mg/ml I** | **126.5 mg/ml** | 127k | 8.43 mg | 6.33 mg |  |  |
| Lugols 15% |  | 15% = 150 mg/ml | 30% = 300 mg KI\* 0.765 = **229.5 mg/ml I** | **379.5 mg/ml** | 381k | 25.29 mg | 19.0 mg |  |  |
| Povidine  |  |  |  | **100 - 110 mg/ml (10-11%)** |  |  |  |  |  |

**TABLE ALL BASED ON 2% Lugols (at 20 VERTICAL drops per ml, 2.53 mg/drop)**

**A = Antiseptic (beer) = 12.5 ppm = 0.00125%**

**K = Kill 100 ppm = 0.01% = 1 ml in 30 ml =**

 **other references say 8 ppm = 1 drop per 375 drops (18.75 ml), or 53.33 drops (2.67 ml) /L**

**P = Povidine ; T = Tincture; L = Lugols**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | mcg/drop | RDA | % | ppm = mcg/ ml  | in 15 ml water | in 1 gal(3785 ml) | In 1 liter | 1 oz (30 ml) 2% Lugols  in | Drops in 1 cup (240ml) for 12.5 ppm (12.5 mg/L) | 1 drop CI1 IN X TOTAL= 0.01% (CIK) |
|  |  |  |  |  | ml | drops | ml | oz | ml | drops | **ml TOTAL** |  | ml | drops |
| CIA | 0.625 | 1/240 | 0.00125 | 12.5 |  |  |  |  |  |  |  |  |  |  |
| CIK | 5 | 1/30 | 0.01 | 100 |  |  |  |  |  | 0 |  |  |  | 0 |
| CIS | 15  | 1/10 | 0.03 | 300 |  |  |  |  |  | 3 |  | 1 |  | 3 |
| CI1 | 75 | 1/2 | 0.150 | 1500 |  |  |  |  |  | 15 |  | 1 |  |  |
| T2 | 2020 | 13.47 | 4.04% | 40.3k |  |  |  |  | 20.2 | 404 | 404 |  | 20.2 | 404 |
| L2 | 2530 | 16.87 | 5.06% | 50.6k |  |  | 7.48 |  | 25.3 | 506 | 506 |  | 25.3 | 506 |
| L5 | 6330 | 42.2 | 12.66% | 127k |  |  |  |  | 63.3 | 1266 |  |  | 63.3 | 1266 |
| L15 | 18990 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

New Volume = (Old Volume x Old Concentration )/New Concentration

Each bottle will have 10 ml ~ 200 drops (100 days at 2 drops/day)

# Cheik-I-Dine I: 8/13/2018 New formulation

 FOR 75 mcg/drop = 1500 mcg/ml; Add 1 oz = 30 ml) 2% Lugols to 952 ml water to total 1,012 ml > 101 bottles @ 10 ml/bottle

 or 15 ml to 476 ml to total 506 ml > 50 bottles

Lugols 2%

2 gm Iodine (50 gm = $9.02)

4 gm KI (100 gm = $15.00)

100 ml

can make 25 x 100 ml for $24.00

can make 83.25 x 30 ml for $24.00

= $0.29 for 30 ml (

CI = 75 mcg/drop = 1.5 mg/ml = 30 mg/10 ml

 = 30/50.6 ml 2% Lugol per 10 ml bottle

 = 90/50.6 ml 2% Lugol per 30 ml = 1.78 ml/ 30 ml = $0.0178/bottle

Lugols 5%

5 gm Iodine

10 gm KI

100 ml

can make 10 x 100 ml for $24.00

can make 16 x 60 ml for $24.00

= $1.50 per bottle

Lugols 15%

15 gm Iodine

30 gm KI

100 ml

can make 3 x

Tincture 2%

2 gm Iodine (50 gm = $9; 0.18/gm) = $0.36

2.4 gm NaI (100 gm = $32, 0.32.gm) = $0.76

50 ml Etoh (1000 ml = $25; $.025/ml) $1.25

50 ml water

$2.37 for 100 ml = $0.71 per 30 ml