



International Products

C O R P O R A T I O N

201 Connecticut Drive | Burlington, NJ 08016 | USA
609-386-8770 | Fax: 609-386-8438 | www.ipcol.com

Concentration Control Methods

The following test procedures may be used to determine the concentration of cleaning solution in a tank or rinse water. Based on the results, additional cleaning solution or water can be added as necessary.

I. Refractive Index

For use with: Micro-90[®], Micro[®] Green Clean, LF2100[®], Micro[®] A07, Surface-Cleanse/930[®], Zymit[®] Low-Foam, Zymit[®] Pro

II. Conductivity

For use with: Micro-90[®], Micro[®] Green Clean, LF2100[®], Micro[®] A07, Zymit[®] Low-Foam, Zymit[®] Pro

III. Total Alkalinity

For use with: Micro-90[®], Micro[®] Green Clean, LF2100[®]

IV. Total Acidity

For use with: Micro[®] A07

For Sales and Service in Europe

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Concentration Control Methods

I. Refractive Index (RI)

For use with: Micro-90®, Micro® Green Clean, LF2100®, Micro® A07, Surface-Cleanse/930®, Zymit® Low-Foam, Zymit® Pro

Equipment

ATAGO Refractometer (0 – 10 Brix)

Procedure

1. Zero the refractometer with water.
2. Place several drops of cleaning solution on the prism.
3. Close the cover on the prism.
4. Point the refractometer towards a well lit area. Focus the refractometer.
5. Record the RI reading. Use this figure for the calculations below.

Calculations

Concentration of cleaner (% V / V)	
Micro-90	$\% M90 = \frac{\text{refractive index} + 0.018}{0.3611}$
Micro Green Clean	$\% MGC = \frac{\text{refractive index} + 0.0167}{0.2842}$
LF2100	$\% LF2100 = \frac{\text{refractive index} + 0.0753}{0.4416}$
Micro A07	$\% MA07 = \frac{\text{refractive index} + 0.0153}{0.2885}$
Surface-Cleanse/930	$\% SC/930 = \frac{\text{refractive index} + 0.0147}{0.3912}$
Zymit Low-Foam	$\% ZLF = \frac{\text{refractive index} + 0.0267}{0.2919}$
Zymit Pro	$\% ZPro = \frac{\text{refractive index} - 0.0167}{0.3103}$

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Concentration Control Methods

II. Conductivity

For use with: Micro-90®, Micro Green Clean®, LF2100®, Micro® A07, Zymit® Low-Foam, Zymit® Pro

Equipment/Reagents

- Oakton Acorn Con 6 Conductivity Meter
- Oakton 1413 uS @25°C Conductivity Standard Solution
- Oakton 12.88 mS @25°C Conductivity Standard Solution

Procedure

1. Ensure the ATC factor is set to the default value of 2.1.
2. Calibrate the conductivity meter using both standard solutions.
3. Rinse conductivity probe in distilled water.
4. Immerse conductivity probe in cleaning solution to be tested.
5. Record conductivity value in micro Siemens (uS). Use this figure for the calculations below.

Calculations

% Concentration of cleaner (V / V)	
Micro-90	$\% M90 = (\mu S - 369) / 1255.5$
Micro Green Clean	$\% MGC = (\mu S - 176.1) / 848.9$
LF2100	$\% LF2100 = (\mu S - 536.3) / 1308.6$
Micro A07	$\% MA07 = (\mu S - 347.8) / 691.7$
Zymit Low-Foam	$\% ZLF = (\mu S - 18.3) / 70.2$
Zymit Pro	$\% ZPRO = (\mu S - 109.3) / 378.0$

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Concentration Control Methods

III. Total Alkalinity

For use with: Micro-90[®], Micro[®] Green Clean, LF2100[®]

Equipment/Reagents

- Burette, 50.0 milliliter or equivalent
- 0.1 Normal HCl
- pH meter or Bromophenol Blue indicator
- 250 milliliter beaker or equivalent
- Stir plate and stir bar or stirring rod
- 100 milliliter graduated cylinder

Procedure

1. Fill burette to 0.00 milliliter level with 0.1 Normal HCl.
2. Using graduated cylinder, measure 100 ml of cleaning solution
3. Pour the solution into the beaker.
4. Dilute the solution with water to the 150 milliliter mark on the beaker.
5. Begin stirring the solution.
6. Insert pH electrode into solution*.
7. While stirring, slowly titrate into the solution 0.1 Normal HCl.
8. Stop titrating at a pH of 3.6*.
9. Record the amount (ml) of 0.1 Normal HCl. Use this figure for the calculations below.

Calculations

* Several drops of Bromophenol Blue indicator may be substituted for the pH meter. In this case, titrate to a yellow endpoint.

% Concentration of cleaner (V / V)	
Micro-90	$\% M90 = \frac{(\text{ml } 0.1N \text{ HCl}) - 0.1367}{9.2223}$
Micro Green Clean	$\% MGC = \frac{(\text{ml } 0.1N \text{ HCl}) - 0.0627}{3.6005}$
LF2100	$\% LF2100 = \frac{(\text{ml } 0.1N \text{ HCl}) - 0.2187}{9.5987}$

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Concentration Control Methods

IV. Total Acidity

For use with: Micro[®] A07

Equipment/Reagents

- Burette, 50.0 milliliter or equivalent
- 0.1 Normal NaOH
- pH meter or phenolphthalein indicator soln
- 250 milliliter beaker or equivalent
- Stir plate and stir bar or stirring rod
- 100 milliliter graduated cylinder

Procedure

1. Fill burette to 0.00 milliliter level with 0.1 Normal NaOH.
2. Using graduated cylinder, measure 100 ml of cleaning solution
3. Pour the solution into the beaker.
4. Dilute the solution with water to the 150 milliliter mark on the beaker.
5. Begin stirring the solution.
6. Insert pH electrode into solution*.
7. While stirring, slowly titrate 0.1 Normal NaOH into the solution.
8. Stop titrating at a pH of 8.2*.
9. Record the amount (ml) of 0.1 Normal NaOH. Use this figure for the calculations below.

Calculations

* Several drops of Phenolphthalein indicator may be substituted for the pH meter. In this case, titrate to a faint pink color.

% Concentration of cleaner (V / V)	
Micro A07	% MA07 = $\frac{\text{ml 0.1N NaOH added} - 0.3293}{18.4720}$

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