

## EFFECTIVE AVAILABLE CHLORINE FROM CREDENCE AGAINST COMMON PATHOGENS

Applying standardised, globally recognised methods used in independent commercial and university laboratories. NB UK MAFF = DEFRA.

NB 1000 ppm = 1 tablet/5 litres; 500 ppm = 1 tablet/10 litres; 350 ppm = 1 tablet/15 litres; 50 ppm = 1 tablet/100 litres; 25 ppm = 1 tablet/200 litres; 5 ppm = 1 tablet/1000 litres

### BACTERIA

| Organism                                                             | Surface Test | Suspension Test | Organic Challenge    | Effective Av CI | Test Standard        | Disease/Effect          | Ref |
|----------------------------------------------------------------------|--------------|-----------------|----------------------|-----------------|----------------------|-------------------------|-----|
| <i>Actinobacillus pleuropneumonia</i>                                | 4            | X               | X                    | 325 ppm         | BESU (MIC)           | Actinobacillosis        | 29  |
| <i>Aerobacter (Enterobacter) aerogenes</i>                           | 4            | X               | X                    | 200 ppm         | AOAC                 | Cystitis etc            | 30  |
| <i>Aeromonas hydrophila</i>                                          | X            | 4               | 0.03% Bovine Albumin | 100 ppm         | EN 1276:1997         | Enteritis etc           | 31  |
| <i>Bacillus anthracis</i> *                                          | X            | 4               | 5% yeast             | 900 ppm         | UK MAFF              | Anthrax                 | 32  |
| <i>Bacillus intestinalis</i>                                         | 4            | X               | X                    | 200 ppm         | GOST 739-68, 1119-73 | Enteritis etc           | 33  |
| <i>Bordetella bronchiseptica</i>                                     | X            | 4               | X                    | 200 ppm         | BS 3286; 1960        | Rhinitis, distemper etc | 34  |
| <i>Bordetella bronchiseptica</i>                                     | X            | 4               | 2.5% yeast           | 200 ppm         | BS 3286; 1960        | Rhinitis, distemper etc | 34  |
| <i>Brachyspira (Serpulina/Treponema) hyodysenteriae</i> (10 strains) | X            | 4               | X                    | <10 ppm         | Edinburgh University | Swine Dysentery         | 35  |
| <i>Bruceella</i> sp *                                                | X            | 4               | 5% yeast             | 900 ppm         | UK MAFF              | Brucellosis             | 32  |
| <i>Campylobacter jejuni</i>                                          | X            | 4               | 0.03% Bovine Albumin | 100 ppm         | EN 1276: 1997 (mod)  | Enteritis               | 36  |
| <i>Enterobacter cloacae</i>                                          | X            | 4               | 0.03% Bovine Albumin | 100 ppm         | EN 1276: 1997 (mod)  | Entero infections       | 36  |
| <i>Enterococcus faecium</i> (CNCM5855)                               | X            | 4               | X                    | 100 ppm         | AFNOR NFT 72.151     | Enteritis etc           | 37  |
| <i>Enterococcus faecium</i> (CIP5855)                                | X            | 4               | Milk                 | 160 ppm         | AFNOR NFT 72.170     | Enteritis etc           | 38  |

| <i>Enterococcus faecium</i><br>(CIP5855)                         |  | 4               | X                  | X                    | 100 ppm            |  | AFNOR NFT 72.190   | Enteritis etc                    | 39  |
|------------------------------------------------------------------|--|-----------------|--------------------|----------------------|--------------------|--|--------------------|----------------------------------|-----|
| <i>Enterococcus hirae</i><br>(CIP5855)                           |  | X               | 4                  | X                    | 50 ppm             |  | AFNOR NFT 72.301   | Enteritis etc                    | 40  |
| Organism                                                         |  | Surface<br>Test | Suspension<br>Test | Organic Challenge    | Effective<br>Av CI |  | Test Standard      | Disease/Effect                   | Ref |
| <i>Erysipelotrix rhusopathiae</i>                                |  | X               | 4                  | X                    | 200 ppm            |  | BS 3286:1960       | Erispelas                        | 34  |
| <i>Erysipelotrix rhusopathiae</i>                                |  | X               | 4                  | 2.5% yeast           | 200 ppm            |  | BS 3286:1960       | Erispelas                        | 34  |
| <i>Escherichia coli</i><br>(CIP 54 127)                          |  |                 | 4                  | X                    | 50 ppm             |  | AFNOR NFT 72.301   | Enteritis, scour etc             | 40  |
| <i>Escherichia coli</i>                                          |  | X               | 4                  | Milk                 | 160 ppm            |  | AFNOR NFT 72.170   | Enteritis, scour etc             | 38  |
| <i>Escherichia coli</i><br>(CIP 54 127)                          |  | 4               | X                  | X                    | 100 ppm            |  | AFNOR NFT 72.190   | Enteritis, scour etc             | 41  |
| <i>Klebsiella pneumoniae</i>                                     |  | X               | 4                  | X                    | 15 ppm             |  | Sao Paulo Univ     | Pneumonia                        | 42  |
| <i>Klebsiella pneumoniae</i><br>(ATCC 4352)                      |  | X               | 4                  | 20% human serum      | 140 ppm            |  | Bologna Univ       | Pneumonia                        | 43  |
| <i>Leptospira interrogans</i><br><i>ser. Icterohaemorrhagiae</i> |  | X               | 4                  | X                    | 325 ppm            |  | BESU<br>(MIC)      | Leptospirosis                    | 44  |
| <i>Listeria monocytogenes</i>                                    |  | X               | 4                  | 0.03% Bovine Albumin | 100 ppm            |  | EN 1276:1997 (mod) | Listeriosis                      | 36  |
| <i>Mycoplasma sp*</i>                                            |  | X               | 4                  | 5% yeast             | 900 ppm            |  | UK MAFF            | Mycoplasmosis                    | 32  |
| <i>Pasturella multocida</i>                                      |  | X               | 4                  | X                    | 200 ppm            |  | BS 3286:1960       | Septicaemia, fowl cholera<br>etc | 34  |
| <i>Pasturella multocida</i>                                      |  | X               | 4                  | 2.5% yeast           | 200 ppm            |  | BS 3286:1960       | Septicaemia, fowl cholera<br>etc | 34  |
| <i>Plesiomonas shigelloides</i>                                  |  | X               | 4                  | 0.03% Bovine Albumin | 100 ppm            |  | EN 1276:1997       | Septicaemia                      | 31  |
| <i>Proteus vulgaris</i>                                          |  | X               | 4                  | X                    | 15 ppm             |  | Sao Paulo Univ     | Enteritis etc                    | 42  |
| <i>Proteus vulgaris</i><br>ATCC 881                              |  | X               | 4                  | 20% human serum      | 140 ppm            |  | Bologna Univ       | Enteritis etc                    | 43  |
| <i>Pseudomonas aeruginosa</i> (CIP A22)                          |  | X               | 4                  | X                    | 50 ppm             |  | AFNOR NFT 72.301   | Septicaemia etc                  | 40  |

| <i>Pseudomonas aeruginosa</i>                 | X            | 4               | Milk              | 160 ppm         | AFNOR NFT 72.170 | Septicaemia etc        | 38  |
|-----------------------------------------------|--------------|-----------------|-------------------|-----------------|------------------|------------------------|-----|
| <i>Pseudomonas aeruginosa</i> (CIP A22)       | 4            | X               | X                 | 100 ppm         | AFNOR NFT 72.190 | Septicaemia etc        | 41  |
| Organism                                      | Surface Test | Suspension Test | Organic Challenge | Effective Av CI | Test Standard    | Disease/Effect         | Ref |
| <i>Pseudomonas malleri</i> *                  | X            | 4               | 5% yeast          | 900 ppm         | UK MAFF          | Glanders               | 32  |
| <i>Salmonella choleraesuis</i> (NCTC 10653)   | ^            | 4               | 5% yeast          | 900 ppm         | UK MAFF          | Salmonellosis etc      | 32  |
| <i>Salmonella faecalis</i> (ATCC 10541)       | X            | 4               | X                 | 140 ppm         | Bologna Univ     | Salmonellosis etc      | 43  |
| <i>Salmonella faecalis</i> (ATCC 10541)       |              | 4               | 20% human serum   | 140 ppm         | Bologna Univ     | Salmonellosis etc      | 43  |
| <i>Shigella</i> sp                            | X            | 4               | X                 | 15 ppm          | Sao Paulo Univ   | Shigellosis etc        | 41  |
| <i>Staphylococcus aureus</i> (CIP 53 154)     | X            | 4               | X                 | 50 ppm          | AFNOR NFT 72.301 | Wound infections etc   | 40  |
| <i>Staphylococcus aureus</i>                  | X            | 4               | Milk              | 160 ppm         | AFNOR NFT 72.170 | Wound infections etc   | 38  |
| <i>Staphylococcus aureus</i> (CIP 53 154)     | 4            | X               | X                 | 100 ppm         | AFNOR NFT 72.190 | Wound infections etc   | 41  |
| <i>Streptococcus dysgalactiae</i> (NCTC 4335) | X            | 4               | X                 | 150 ppm         | MIC Test         | Fever, septicaemia etc | 45  |

#### MYCOBACTERIA

| Organism                                   | Surface Test | Suspension Test | Organic Challenge | Effective Av CI | Test Standard    | Disease/Effect           | Ref |
|--------------------------------------------|--------------|-----------------|-------------------|-----------------|------------------|--------------------------|-----|
| <i>Mycobacterium smegmatis</i> (CNCM 7326) | X            | 4               | X                 | 100 ppm         | AFNOR NFT 72.151 | Mycobacterial infections | 37  |
| <i>Mycobacterium smegmatis</i> (CNCM 7326) | X            | 4               | Milk              | 160 ppm         | AFNOR NFT 72.170 | Mycobacterial infections | 38  |

## FUNGI

| Organism                                                       | Surface Test | Suspension Test | Organic Challenge | Effective Av CI | Test Standard    | Disease/Effect            |
|----------------------------------------------------------------|--------------|-----------------|-------------------|-----------------|------------------|---------------------------|
| <i>Aspergillus versicolor</i><br><i>var niger</i> (IP 1187 79) | X            | 4               | X                 | 50 ppm          | AFNOR NFT 72.301 | Aspergillosis (47)        |
| <i>Candida albicans</i> (CIP 1180 79)                          | X            | 4               | X                 | 50 ppm          | AFNOR NFT 72.201 | Candidiasis, scour (48)   |
| <i>Scopulariopsis brevicaulis</i> (IP 210 53)                  | X            | 4               | X                 | 100 ppm         | AFNOR NFT 72.301 | Ulcers, onchomycosis (47) |

## SPORES

| Organism                             | Surface Test | Suspension Test | Organic Challenge    | Effective Av CI | Test Standard | Disease/Effect                         | Ref |
|--------------------------------------|--------------|-----------------|----------------------|-----------------|---------------|----------------------------------------|-----|
| <i>Bacillus arothermophilus</i>      | X            | 4               | X                    | 140 ppm         | Bologna Univ  | Food poisoning                         | 43  |
| <i>Bacillus arothermophilus</i>      |              | 4               | 20% serum            | 140 ppm         | Bologna Univ  | Food poisoning                         | 43  |
| <i>Bacillus cereus</i>               | X            | 4               | 0.03% Bovine Albumin | 50 ppm          | EN 1276: 1997 | Food poisoning                         | 31  |
| <i>Bacillus globigii</i>             | X            | 4               | X                    | 140 ppm         | Bologna Univ  | Food poisoning                         | 43  |
| <i>Bacillus globigii</i>             | X            | 4               | X                    | 140 ppm         | Bologna Univ  | Food poisoning                         | 43  |
| <i>Clostridium perfringenes</i>      | X            | 4               | 0.03% Bovine Albumin | 100 ppm         | EN 1276:1997  | Food poisoning, Necrosis, sudden death | 31  |
| <i>Clostridium perfringenes</i> USDA | X            | 4               | X                    | 140 ppm         | Bologna Univ  | Food poisoning, Necrosis, sudden death | 43  |
| <i>Clostridium perfringenes</i> USDA | X            | 4               | 20% serum            | 140 ppm         | Bologna Univ  | Food poisoning, Necrosis, sudden death | 43  |
| <i>Clostridium perfringenes</i> USDA | 4            | X               | X                    | 140 ppm         | Bologna univ  | Food poisoning, Necrosis, sudden death | 43  |
| <i>Clostridium tetani</i>            | X            | 4               | X                    | 140 ppm         | Bologna Univ  | Tetanus                                | 43  |
| <i>Clostridium tetani</i>            | X            | 4               | 0% serum             | 140 ppm         | Bologna Univ  | Tetanus                                | 43  |

## VIRUSES

| Organism                                          | Surface Test | Suspension Test | Organic Challenge    | Effective Av CI | Test Standard    | Disease/Effect            | Ref |
|---------------------------------------------------|--------------|-----------------|----------------------|-----------------|------------------|---------------------------|-----|
| ADENOVIRUS                                        |              |                 |                      |                 |                  |                           |     |
| Adenovirus                                        | X            | 4               | X                    | 131 ppm         | AFNOR NFT 72.180 | Adenovirus infections etc | 49  |
| Infectious canine hepatitis                       | X            | 4               | X                    | 100 ppm         | AFNOR NFT 72.180 | Hepatitis                 | 50  |
| APHTHOVIURS (PICORNAVIRUS)                        |              |                 |                      |                 |                  |                           |     |
| Foot and mouth disease                            | X            | 4               | 5% ox serum          | 1000 ppm        | UK MAFF          | Foot and mouth disease    | 32  |
| BACTERIOPHAGE                                     |              |                 |                      |                 |                  |                           |     |
| T2 & E coli B                                     | X            | 4               | X                    | 120 ppm         | AFNOR NFT 72.181 |                           | 51  |
| MS2 & E coli HFrh                                 | X            | 4               | X                    | 40 ppm          | AFNOR NFT 72.181 |                           | 51  |
| Organism                                          | Surface Test | Suspension Test | Organic Challenge    | Effective Av CI | Test Standard    | Disease/Effect            | Ref |
| X174 & E coli ATCC13706                           | X            | 4               | X                    | 50 ppm          | AFNOR NFT 72.181 |                           | 51  |
| Lactic no 66 & streptococcus lactis diacetylactis | X            | 4               | X                    | 200 ppm         | AFNOR NFT 72.181 |                           | 51  |
| BUNYAVIRUS                                        |              |                 |                      |                 |                  |                           |     |
| Gumboro disease IBDV DV86                         | X            | 4               | 0.03% Bovine Albumin | 500 ppm         | UK MAFF          | Infectious Bursal Disease | 52  |
| CORONAVIRUS                                       |              |                 |                      |                 |                  |                           |     |
| Trans Gastroenteritis (Pigs)                      | X            | 4               | 0.03% Bovine Albumin | 333 ppm         | UK MAFF          | TGE                       | 52  |
| ENTEROVIRUS (PICORNAVIRUS)                        |              |                 |                      |                 |                  |                           |     |

|                            |   |   |                      |          |                  |                     |    |
|----------------------------|---|---|----------------------|----------|------------------|---------------------|----|
| Swine Vesicular disease    | X | 4 | X                    | 500 ppm  | UK MAFF          | SVD                 | 32 |
| Talfan                     | X | 4 | X                    | 100 ppm  | AFNOR NFT 72.180 | Talfan Disease      | 50 |
| HERPESVIRUS                |   |   |                      |          |                  |                     |    |
| Aujeszkey's disease (pigs) | X | 4 | 0.03% Bovine Albumin | 333 ppm  | UK MAFF          | Aujeszkey's disease | 52 |
| Marek's disease (poultry)  | X | 4 | 0.03% Bovine Albumin | 1000 ppm | UK MAFF          | Marek's disease     | 52 |
| IRIDOVIRUS                 |   |   |                      |          |                  |                     |    |
| Africanswine fever         | X | 4 | 0.03% Bovine Albumin | 333 ppm  | UK MAFF          | Swine Fever         | 52 |
| ORTHOMYXOVIRUS             |   |   |                      |          |                  |                     |    |
| Avian influenza            | X | 4 | 0.03% Bovine Albumin | 333 ppm  | UK MAFF          | Fowl plague         | 52 |

| Organism                        | Surface Test | Suspension Test | Organic Challenge    | Effective Av CI | Test Standard | Disease/Effect     | Ref |
|---------------------------------|--------------|-----------------|----------------------|-----------------|---------------|--------------------|-----|
| PARAMYXOVIRUS                   |              |                 |                      |                 |               |                    |     |
| Newcastle disease (Herts 33/56) | X            | 4               | 5% yeast             | 700 ppm         | UK MAFF       | Newcastle disease  | 32  |
| PARVOVIRUS                      |              |                 |                      |                 |               |                    |     |
| Porcine parvovirus              | X            | 4               | 0.03% Bovine Albumin | 333 ppm         | UK MAFF       | Parvovirus disease | 52  |
| PESTIVIRUS(TOGAVIRUS)           |              |                 |                      |                 |               |                    |     |
| Hog cholera                     | X            | 4               | 0.03% Bovine Albumin | 333 ppm         | UK MAFF       | Hog Chlorera, CSF  | 52  |
| POXVIRUS                        |              |                 |                      |                 |               |                    |     |
| Avipox (fowl pox)               | X            | 4               | 0.03% Bovine Albumin | 333 ppm         | UK MAFF       | Fowl pox           | 52  |
| REOVIRUS                        |              |                 |                      |                 |               |                    |     |

|                            |   |   |                        |         |         |               |    |
|----------------------------|---|---|------------------------|---------|---------|---------------|----|
| Runting/stunting (poultry) | X | 4 | 0.03% Bovine Albumin I | 333 ppm | UK MAFF | Tenosynovitis | 52 |
| RHABDOVIRUS                |   |   |                        |         |         |               |    |
| Rabies (Canine RV CBS)     | X | 4 | 0.03% Bovine Albumin I | 333 ppm | UK MAFF | Rabies        | 52 |

NB. Cone/ Available Chlorine indicates the concentration to destroy each specific pathogen.