**Table 3** Typical values of the kinetic parameters in ASM3-ON

| Symbols | Definitions | Typical values | | Units |
| --- | --- | --- | --- | --- |
| 10℃ | 20℃ |
|  | Hydrolysis rate constant | 2 | 3 |  |
|  | Hydrolysis saturation constant | 1 | 1 |  |
|  | Storage rate constant of *SS* | 2.5 | 5 |  |
|  | Storage rate constant of UAP | 1.53 | 1.53 |  |
|  | Storage rate constant of BAP | 0.085 | 0.085 |  |
|  | Hypoxia attenuation factor | 0.6 | 0.6 |  |
|  | Saturation constant of *SO* | 0.2 | 0.2 |  |
|  | Saturation constant of *SNO* | 0.5 | 0.5 |  |
|  | Saturation constant of *SS* | 2 | 2 |  |
|  | Saturation constant of UAP | 100 | 100 |  |
|  | Saturation constant of BAP | 85 | 85 |  |
|  | Saturation constant of *XSTO* | 1 | 1 |  |
|  | Maximum specific growth rate of *XH* | 1 | 2 |  |
|  | Saturation constant of | 0.01 | 0.01 |  |
|  | Alkalinity constant | 0.1 | 0.1 |  |
|  | Aerobic endogenous respiration rate of *XH* | 0.1 | 0.2 |  |
|  | Anoxic endogenous respiration rate of *XH* | 0.05 | 0.1 |  |
|  | Aerobic respiration rate of *XSTO* | 0.1 | 0.2 |  |
|  | Anoxic respiration rate of *XSTO* | 0.05 | 0.1 |  |
|  | Maximum specific growth rate of *XA* | 0.35 | 1.0 |  |
|  | Ammonia nitrogen saturation constant of *XA* | 1 | 1 |  |
|  | Oxygen saturation constant of *XA* | 0.5 | 0.5 |  |
|  | Nitrate saturation constant of *XA* | 0.5 | 0.5 |  |
|  | Alkalinity saturation constant of *XA* | 0.5 | 0.5 |  |
|  | Aerobic endogenous respiration rate of *XA* | 0.05 | 0.15 |  |
|  | Anoxic endogenous respiration rate of *XA* | 0.02 | 0.05 |  |
|  | Ammoniation constant of dissolved organic nitrogen | 0.08 | 0.04 |  |

**Table 4** Typical values of the stoichiometric parameters in ASM3-ON

| Symbols | Definitions | Typical values | Units |
| --- | --- | --- | --- |
|  | Fraction of *SI* hydrolysis | 0 | g/g |
| *YSTO,O* | Yield coefficient of *SS* aerobic storage | 0.85 | g/g |
| *YSTO,NO* | Yield coefficient of *SS* anoxic storage | 0.80 | g/g |
| *YH,O* | Yield coefficient of *XH* growth on *SS* | 0.63 | g/g |
| *YH,NO* | Yield coefficient of *XH* anoxic growth | 0.54 | g/g |
| *YA* | Yield coefficient of *XA* | 0.24 | g/g |
|  | N content of *SI* | 0.01 | g/g |
|  | N content of *SS* | 0.03 | g/g |
|  | N content of *XI* | 0.02 | g/g |
| *iN,UAP* | N content of UAP | 0.03 | g/g |
| *iN,BAP* | N content of BAP | 0.02 | g/g |
|  | N content of *XS* | 0.04 | g/g |
| *iN,BM* | N content of *XH* and *XA* | 0.07 | g/g |
|  | TSS/COD in *XI* | 0.75 | gTSS/g |
|  | TSS/COD in *XS* | 0.75 | gTSS/g |
| *iTS,BM* | TSS/COD in *XH* and *XA* | 0.90 | gTSS/g |
| iTSS*,TO* | TSS/COD in *XSTO* | 0.60 | gTSS/g |
|  | Yield coefficient of UAP during *XH* aerobic growth | 0.12 | g/g |
|  | Yield coefficient of UAP during *XH* anoxic growth | 0.12 | g/g |
|  | Yield coefficient of BAP during *XH* aerobic endogenous metabolism | 0.09 | g/g |
|  | Yield coefficient of BAP during *XH* anoxic endogenous metabolism | 0.09 | g/g |
|  | Yield coefficient of UAP during *XA* aerobic growth | 0.1 | g/g |
|  | Yield coefficient of BAP during *XA* aerobic endogenous metabolism | 0.09 | g/g |
|  | Yield coefficient of BAP during *XA* anoxic endogenous metabolism | 0.09 | g/g |