List of elemental and environmental reactions added or modified by Cyens Toy

Version 3.1.2

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Reactions

Element	Elemental Reactions	Environmental Reactions
GAS	See **Charts**	See **Charts**
OIL	See **Charts**	See **Charts**
WAX	See **Charts**	See **Charts**
MWAX	See **Charts**	See **Charts**
CL2	With SDUM: ● CL2→SALT ● kill(SDUM) With HCBN: ● HCBN→CLCO ● kill(CL2)	None changed
HCL	With SDHX: ● HCL→SALT ● SDHX→WTRV With ISCY and WATR: ● HCL→FRMD ● kill(ISCY)	None changed
O2	With RUST and ALCL and temp > 300°C: ● O2→FMLD ● kill(RUST) ● kill(ALCL)	None changed
WTRV	None changed	When temp > 1027°C: ● WTRV→ ○ 50%OH- ○ 25%PROT ○ 25%ELEC
URAN	None changed	When temp > 426°C and pressure > 100: ● URAN→CRBN ● In loop around CRBN: spawn50%(NEUT|PHOT)

WOOD	None changed	When temp > 177°C: ● 0.2% ○ spawn(FIRE) ○ WOOD→CRBN
COAL	None changed	When complete burning: ● spawn: ○ 10%CRBN ○ 30%CO ○ 60%FIRE
BCOL	None changed	When complete burning: ● spawn: ○ 10%CRBN ○ 30%CO ○ 60%FIRE
PRFN	See **Charts**	See **Charts**
SDUM	With CL2: ● CL2→SALT ● kill(SDUM) With OH- ● OH-→SDHX ● kill(SDUM) With WATR: ● SDUM→FIRE ● WATR→SMKE	None
N2	With PLNT: ● PLNT→VINE ● kill(N2) With H2: ● N2→NH3 ● kill(H2) With CRBN: ● N2→CYAN ● kill(CRBN) With AMID: ● N2→UREA ● kill(AMID)	When temp < -196°C: ● N2→LN2

CRBN	With N2: ● N2→CYAN ● kill(CRBN) With OH- ● OH-→CBXL ● kill(CRBN) With H2: ● CRBN→HCBN ● kill(H2) With O2: ● CRBN→CO2 ● kill(O2) With non-alkyne HCBN and temp > 10*numCarbons of HCBN: ● Add 1 to carbon chain of HCBN	When pressure >= 200 ● If 3 CRBN are present in a straight line (vertical, horizontal or diagonal), and no more carbon is present, CRBN will become GRPH in that pattern
NH3	With OH-: ● OH-→OXIM ● kill(NH3) With HNO3: ● NH3→ANFO ● kill(HNO3) With HCBN: ● NH3→AMIN ● HCBN→H2	None
OH-	With H2: ● OH-→WTRV ● kill(H2) With any state hydrocarbon: ● hydrocarbon→ALCL ● kill(OH-) With CRBN: ● OH-→CBXL ● kill(CRBN) With NH3: ● OH-→OXIM ● kill(NH3) With SDUM: ● OH-→SDHX ● kill(SDUM)	None

ALCL	With at least 3 WATR or DSTW: ● ALCL→RBAC ● kill(WATR|DSTW) With RUST and O2 and temp > 300°C: ● O2→FMLD ● kill(RUST) ● kill(ALCL)	None
CBXL	With HCBN: ● HCBN→ACTA ● kill(CBXL)	None
ACTA	With SDHX: ● ACTA→$WSTE_{sodium\_acetate}$ ● SDHX→WTRV With WATR: ● ACTA→VNGR	None
VNGR	None yet	When temp > 100°C: ● VNGR→ACTA ● spawn(WTRV)
RBAC	With VIRS: ● kill(VIRS)	None
CO	None	When temp > 726°C: ● CO→50%(CBNL|ELEC)
CBNL	With AMIN: ● AMIN→AMID ● kill(CBNL)	None
CYAN	None	None
OXIM	With O2: ● OXIM→HNO3 ● kill(O2)	None

HNO3	With NH3: ● NH3→ANFO ● kill(HNO3) With HDZN and temp > 37°C: ● HNO3→O2 ● HDZN→FIRE With SDHX: ● HNO3→SDNT ● SDHX→WTRV With UREA: ● UREA→UNTR ● kill(HNO3)	None
ANFO	None	When temp >= 27°C: ● ANFO→50%(FIRE|SMKE)
HDZN	With HNO3 and temp > 37°C: ● HNO3→O2 ● HDZN→FIRE With FIRE or PLSM: ● Unique explosion function, creates smoke trails	None
SDHX	With HCL: ● HCL→SALT ● SDHX→WTRV With HNO3: ● HNO3→SDNT ● SDHX→WTRV With PHAC: ● PHAC→$WSTE_{trisodium\_phosphate}$ ● SDHX→WTRV With ACTA: ● ACTA→$WSTE_{sodium\_acetate}$ ● SDHX→WTRV With CLCO: ● CLCO→CCL2 ● SDHX→HCBN	None
FMLD	With O2 and temp > 427°C: ● O2→FRMD ● kill(FMLD)	None
FRMD	With PHOT: ● FRMD→NCTD ● kill(PHOT)	None

AMIN	With CBNL: ● AMIN→AMID ● kill(CBNL) With CCL2: ● CCL2→ISCY ● kill(AMIN)	None
AMID	With $HCBN_{methane}$: ● HCBN→ACET ● kill(AMID) With N2: ● N2→UREA ● kill(AMID)	None
ACET	With GEL: ● GEL→SOAP ● kill(ACET)	None
UREA	With HNO3: ● UREA→UNTR ● kill(HNO3)	None
UNTR	None	When temp >= 163: ● UNTR→NITR
CLCO	With SDHX: ● CLCO→CCL2 ● SDHX→HCBN	None
CCL2	With AMIN: ● CCL2→ISCY ● kill(AMIN)	None
ISCY	With HCL and WATR: ● HCL→FRMD ● kill(ISCY)	None

NCTD	Type *thymine* with *adenine*: ● 1NCTD→$NCTD_{TA}$ ● kill(1xNCTD) Type *uracil* with *adenine*: ● 1NCTD→$NCTD_{AU}$ ● kill(1xNCTD) Type *cytosine* with *guanine*: ● 1NCTD→$NCTD_{GC}$ ● kill(1xNCTD) Type *AU* or *GC* with $SUGR_{ribose}$ and PO4 ● SUGR→RNA ● kill(PO4) ● kill(NCTD) Type *TA* or *GC* with $SUGR_{deoxyribose}$ and PO4 ● SUGR→DNA ● kill(PO4) ● kill(NCTD)	When temp > 150°C: ● $NCTD_{TA}$ decays ↓ ○ $NCTD_{thymine}$ ○ $NCTD_{adenine}$ ● $NCTD_{AU}$ decays ↓ ○ $NCTD_{adenine}$ ○ $NCTD_{uracil}$ ● $NCTD_{GC\ decays\ \downarrow}$ ○ $NCTD_{guanine}$ ○ $NCTD_{cytosine}$
RNA	None yet	None yet
DNA	None yet	None yet
PHOS	Type *white* with O2: ● PHOS→FIRE Type *red* with 3 O2: ● PHOS→PO4 ● kill(3xO2)	Type *white* when not encapsulated: ● Slowly burns away
PO4	With 3 H2: ● PO4→PHAC ● kill(3xH2) With $SUGR_{ribose}$ and $NCTD_{AU\ or\ GC}$: ● SUGR→RNA ● kill(PO4) ● kill(NCTD) With $SUGR_{deoxyribose}$ and $NCTD_{TA\ or\ GC}$: ● SUGR→DNA ● kill(PO4) ● kill(NCTD)	None

SUGR	Type *ribose* with PO4 and $NCTD_{AU\ or\ GC}$: ● SUGR→RNA ● kill(PO4) ● kill(NCTD) Type *deoxyribose* with PO4 and $NCTD_{TA\ or\ GC}$: ● SUGR→DNA ● kill(PO4) ● kill(NCTD)	None
PHAC	With SDHX: ● PHAC→$WSTE_{trisodium\_phosphate}$ ● SDHX→WTRV	None
WSTE	None	None
SDNT	With PLNT: ● kill(SDNT) ● PLNT→VINE	When temp>=600°C: ● SDNT→SMKE
YEST	With $SUGR_{glucose}$ and O2: ● SUGR→WTRV ● spawn(CO2) With $SUGR_{glucose}$ without O2: ● SUGR→$ALCL_{ethanol}$ ● spawn(CO2)	None changed

Charts

Organic Molecules Scheme:
life=#carbons
tmp=#hydrogens, clamped to fit carbon#
tmp2=if alkene/alkyne: double/triple bond location
ctype=if alcohol: location of hydroxyl

Math for autoignition temperatures of hydrocarbon gas

$t = -100ln(C) + 600$

Math for boiling point of hydrocarbons: (Liquid/Powder→Gas)

(C=1) $t = -180$
(C=2) $t = -100$
(C=3) $t = -50$
(C>3) $t = 4\sqrt{500(C-4)}$

Math for combining CRBN to HCBN (pressure has no effect)

$t > 10(C)$

Math for melting point of hydrocarbons (Solid→Liquid/Powder)

(C<5) $t = -200$
(5<=C<12) $t = 16.5x - 200$
(C>=12) $t = 14.3\sqrt{(x-12)}$

States of Hydrocarbons

Number of Carbons	Low (1-7)	Medium (8-19)	High (20-60)
Solid	WAX	WAX	PRFN
Liquid/Powder	MWAX	DESL	OIL
Gas	HCBN	HCBN	HCBN

Pressure subtracted from temp in each calculation for pressure affected state changes