

ANNEX VI

Reference values for calculation factors (Article 31(1)(a))

2. Emission factors related to process emissions

Table 2:

STOICHIOMETRIC EMISSION FACTOR FOR PROCESS EMISSIONS FROM CARBONATE DECOMPOSITION (METHOD A)

Carbonate	Emission factor [t CO ₂ /t Carbonate]
CaCO ₃	0,44
MgCO ₃	0,522
Na ₂ CO ₃	0,415
BaCO ₃	0,223
Li ₂ CO ₃	0,596
K ₂ CO ₃	0,318
SrCO ₃	0,298
NaHCO ₃	0,524
FeCO ₃	0,38
General	Emission factor = $\frac{[M(\text{CO}_2)]}{\{Y * [M(x)] + Z * [M(\text{CO}_3^{2-})]\}}$ X = metal M(x) = molecular weight of X in [g/mol] M(CO ₂) = molecular weight of CO ₂ in [g/mol] M(CO ₃ ²⁻) = molecular weight of CO ₃ ²⁻ in [g/mol] Y = stoichiometric number of X Z = stoichiometric number of CO ₃ ²⁻

Table 3:

STOICHIOMETRIC EMISSION FACTOR FOR PROCESS EMISSIONS FROM CARBONATE DECOMPOSITION BASED ON ALKALI EARTH OXIDES (METHOD B)

Oxide	Emission factor [t CO ₂ /t Oxide]
CaO	0,785
MgO	1,092
BaO	0,287
general: X _Y O _Z	Emission factor = $\frac{[M(\text{CO}_2)]}{\{Y * [M(x)] + Z * [M(\text{O})]\}}$

Status: This is the original version (as it was originally adopted).

X	= alkali earth or alkali metal
M(x)	= molecular weight of X in [g/mol]
M(CO ₂)	= molecular weight of CO ₂ [g/mol]
M(O)	= molecular weight of O [g/mol]
Y	= stoichiometric number of X = 1 (for alkali earth metals) = 2 (for alkali metals)
Z	= stoichiometric number of O = 1

Table 4:

**STOICHIOMETRIC EMISSION FACTORS FOR PROCESS EMISSIONS
FROM OTHER PROCESS MATERIALS (PRODUCTION OF IRON
AND STEEL, AND PROCESSING OF FERROUS METALS)⁰**

Input or output material	Carbon content(t C/t)	Emission factor(t CO₂/t)
Direct reduced iron (DRI)	0,0191	0,07
EAF carbon electrodes	0,8188	3,0
EAF charge carbon	0,8297	3,04
Hot briquetted iron	0,0191	0,07
Oxygen steel furnace gas	0,3493	1,28
Petroleum coke	0,8706	3,19
Purchased pig iron	0,0409	0,15
Scrap iron	0,0409	0,15
Steel	0,0109	0,04

^a IPCC 2006 Guidelines for National Greenhouse Gas Inventories.

Table 5:

**STOICHIOMETRIC EMISSION FACTORS FOR PROCESS EMISSIONS
FROM OTHER PROCESS MATERIALS (BULK ORGANIC CHEMICALS)⁰**

Substance	Carbon content(t C/t)	Emission factor(t CO₂/t)
Acetonitril	0,5852	2,144
Acrylonitrile	0,6664	2,442
Butadiene	0,888	3,254
Carbon black	0,97	3,554
Ethylene	0,856	3,136
Ethylene dichloride	0,245	0,898
Ethylene glycol	0,387	1,418
Ethylene oxide	0,545	1,997

^a IPCC 2006 Guidelines for National Greenhouse Gas Inventories.

Status: This is the original version (as it was originally adopted).

Hydrogen cyanide	0,4444	1,628
Methanol	0,375	1,374
Methane	0,749	2,744
Propane	0,817	2,993
Propylene	0,8563	3,137
Vinyl chloride monomer	0,384	1,407

a IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
