

ANNEX 1

WORKSHEETS

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The worksheets in this annex are designed to enable users to perform at least the Tier 1 (and in some cases Tier 2) emission estimation for each category under IPPU Sector.

Sector	Industrial Processes and Product Use		
Category	Mineral Industry - Cement Production		
Category Code	2A1		
Sheet	1 of 2		
Individual Type of Cement Produced ¹⁾	A	B	C
	Mass of Individual Type of Cement Produced	Clinker Fraction in Cement	Mass of Clinker in the Individual Type of Cement Produced
	(tonne)	(fraction)	(tonne)
			$C = A * B$
Total			
1) Insert additional rows if more than two types of cement are produced.			

Sector	Industrial Processes and Product Use				
Category	Mineral Industry - Cement Production				
Category Code	2A1				
Sheet	2 of 2				
D	E	F	G	H	I
Imports for Consumption of Clinker	Exports of Clinker	Mass of Clinker Produced in the Country	Emission Factor for the Clinker in the Particular Cement	CO ₂ Emissions	CO ₂ Emissions
(tonne)	(tonne)	(tonne)	(tonne CO ₂ / tonne clinker)	(tonne CO ₂)	(Gg CO ₂)
		$F = C - D + E$		$H = F * G$	$I = H/10^3$

Sector	Industrial Processes and Product Use			
Category	Mineral Industry - Lime Production			
Category Code	2A2			
Sheet	1 of 1			
Type of Lime Produced ^{1), 2)}	A	B	C	D
	Mass of Lime Produced	Emission Factor for Lime Production	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ / tonne lime)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
1) Insert additional rows if more than two types of lime are produced.				
2) When country-specific information on lime production by type is not available, apply the default emission factor to national level lime production data. (See Equation 2.8 in Chapter 2 of this volume.)				

Sector	Industrial Processes and Product Use			
Category	Mineral Industry - Glass Production			
Category Code	2A3			
Sheet	1 of 1			
A	B	C	D	E
Total Glass Production	Emission Factor for Glass Production	Average Annual Cullet Ratio	CO ₂ Emissions	CO ₂ Emissions
(tonne)	(tonne CO ₂ /tonne glass)	(fraction)	(tonne CO ₂)	(Gg CO ₂)
			$D = A * B * (1 - C)$	$E = D/10^3$

Sector	Industrial Processes and Product Use			
Category	Mineral Industry - Other Process Uses of Carbonates ¹⁾			
Category Code	2A4			
Sheet	1 of 1			
Type of Use	A	B	C	D
	Mass of Carbonate Consumed	Emission Factor for Carbonate Consumption ^{3), 4)}	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne carbonate)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Ceramics				
Other Uses of Soda Ash				
Non Metallurgical Magnesia Production				
Other ²⁾				

- 1) Limestone and other carbonate materials also are consumed in a variety of other industries not covered in Chapter 2 of Volume 3. Examples include carbonates used as fluxes and slagging agents in metals smelting and refining (e.g., iron and steel production and base metals such as copper), and as inputs to the chemical industry (e.g., fertiliser). The methods outlined here for estimating emissions from the use of carbonates are applicable to these other industries as well. It is *good practice* to allocate emissions from the use of limestone, dolomite and other carbonates to the industrial source category where they are emitted (e.g., iron and steel production).
- 2) This row should contain estimates of emissions that do not fit into any of the major sources presented in Table 2.7 in Chapter 2 of Volume 3. Insert additional rows, if necessary.
- 3) For the Tier 1 method, it is consistent with *good practice* for inventory compilers to assume that 85 percent of carbonates consumed are limestone and 15 percent of carbonates consumed are dolomite. For the Tier 1 method for soda ash use (Other Uses of Soda Ash), this default fraction (0.85:0.15) should not be applied, and the default value for sodium carbonate should be used. (For default emission factors for various carbonates, see Table 2.1 in Chapter 2 of Volume 3.
- 4) It is suggested that inventory compilers ensure that data on carbonates reflect pure carbonates and not carbonate rock. If data are only available on carbonate rock, a default purity of 95% can be assumed. For clays a default carbonate content of 10% can be assumed, if no other information is available.

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Ammonia Production			
Category Code	2B1			
Sheet	1 of 2			
A	B	C	D	E
Amount of Ammonia Produced	Fuel Requirement for Ammonia Production	Carbon Content of Fuel	Carbon Oxidation Factor of Fuel	CO ₂ Generated
(tonne)	(GJ/ tonne ammonia produced)	(kg C/GJ)	(fraction)	(kg CO ₂)
				$E = (A * B * C * D) * 44/12$

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Ammonia Production		
Category Code	2B1		
Sheet	2 of 2		
F	G	H	I
Amount of Urea Produced	CO ₂ Recovered for Urea Production	CO ₂ Emissions	CO ₂ Emissions
(kg)	(kg CO ₂)	(kg CO ₂)	(Gg CO ₂)
	$G = F * 44/60$	$H = E - G$	$I = H/10^6$

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Nitric Acid Production		
Category Code	2B2		
Sheet	1 of 1		
A	B	C	D
Amount of Nitric Acid Production	Emission Factor	N ₂ O Emissions	N ₂ O Emissions
(tonne)	(kg N ₂ O/tonne nitric acid produced)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Adipic Acid Production		
Category Code	2B3		
Sheet	1 of 1		
A	B	C	D
Amount of Adipic Acid Production	Emission Factor	N ₂ O Emissions	N ₂ O Emissions
(tonne)	(kg N ₂ O/tonne adipic acid produced)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Caprolactam, Glyoxal and Glyoxylic Acid Production			
Category Code	2B4			
Sheet	1 of 1			
Chemical	A	B	C	D
	Amount of Chemical Production	Emission Factor	N ₂ O Emissions	N ₂ O Emissions
	(tonne)	(kg N ₂ O/tonne chemical produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Caprolactam				
Glyoxal				
Glyoxylic Acid				
Total				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Carbide Production			
Category Code	2B5			
Sheet	1 of 6 CO ₂ Emissions (calculation based on raw material used)			
Type of Carbide Produced/	A	B	C	D
	Raw Material (Petroleum Coke) Consumption	Emission Factor ¹⁾	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne raw material used)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Silicon Carbide (SiC)				
Calcium Carbide (CaC ₂)				
<p>1) The emission factor needs to be adjusted to account for the carbon contained in the product. See Section 3.6.2.1 of Volume 3.</p> <p>Note: Inventory compilers should use either this sheet (1 of 6) or the next sheet (2 of 6), not both.</p>				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Carbide Production			
Category Code	2B5			
Sheet	2 of 6 CO₂ Emissions (calculation based on carbide produced)			
	A	B	C	D
Type of Carbide Produced	Carbide Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne carbide produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Silicon Carbide (SiC)				
Calcium Carbide (CaC ₂)				
Note: Inventory compilers should use either this sheet (2 of 6) or the previous sheet (1 of 6), not both.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Carbide Production			
Category Code	2B5			
Sheet	3 of 6 CO₂ Emissions from Use of CaC₂ in Acetylene Production			
	A	B	C	D
Calcium Carbide Used in Acetylene Production		Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne carbide used)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Carbide Production			
Category Code	2B5			
Sheet	4 of 6 CO₂ Emission (Total)			
	A	B	C	D
CO ₂ Emissions from Silicon Carbide (SiC) Production	CO ₂ Emissions from Calcium Carbide (CaC ₂) Production	CO ₂ Emissions from Use of CaC ₂ in Acetylene Production	Total CO ₂ Emissions	
(Gg CO ₂)	(Gg CO ₂)	(Gg CO ₂)	(Gg CO ₂)	
From D in Sheet 1 of 6 or D in Sheet 2 of 6	From D in Sheet 1 of 6 or D in Sheet 2 of 6	From D in Sheet 3 of 6	$D = A + B + C$	

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Carbide Production		
Category Code	2B5		
Sheet	5 of 6 CH₄ Emissions from Silicon Carbide (SiC) Production (calculation based on raw material used)		
A	B	C	D
Raw Material (Petroleum Coke) Consumption	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
(tonne)	(kg CH ₄ /tonne raw material used)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$
Note: Inventory compilers should use either this sheet (5 of 6) or the next sheet (6 of 6), not both.			

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Carbide Production		
Category Code	2B5		
Sheet	6 of 6 CH₄ Emissions from Silicon Carbide (SiC) Production (calculation based on carbide produced)		
A	B	C	D
Carbide Produced	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
(tonne)	(kg CH ₄ /tonne carbide produced)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$
Note: Inventory compilers should use either this sheet (6 of 6) or the previous sheet (5 of 6), not both.			

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Titanium Dioxide Production			
Category Code	2B6			
Sheet	1 of 1			
Type of production	A	B	C	D
	Amount of Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Titanium Slag				
Synthetic Rutile				
Rutile TiO ₂				
Total				

Sector	Industrial Processes and Product Use		
Category	Chemical Industry - Soda Ash Production		
Category Code	2B7		
Sheet	1 of 2 Natural Soda Ash (calculation based on trona used)		
A	B	C	D
Amount of Trona Utilised	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
(tonne)	(tonne CO ₂ /tonne trona utilized)	(tonne CO ₂)	(Gg CO ₂)
		$C = A * B$	$D = C/10^3$
Note: Inventory compilers should use either this sheet (1 of 2) or the next sheet (2 of 2), not both.			

Sector	Industrial Processes and Product Use		
Category	Chemical Industry -Soda Ash Production		
Category Code	2B7		
Sheet	2 of 2 Natural Soda Ash (calculation based on production)		
A	B	C	D
Amount of Natural Soda Ash Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
(tonne)	(tonne CO ₂ /tonne natural soda ash produced)	(tonne CO ₂)	(Gg CO ₂)
		$C = A * B$	$D = C/10^3$
Note: Inventory compilers should use either this sheet (2 of 2) or the previous sheet (1 of 2), not both.			

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	1 of 12 CO ₂ Emissions from Methanol Production			
Type of Process/Type of Feedstock ^{1, 2)}	A	B	C	D
	Amount of Methanol Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne methanol produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Type of Process = [] (please specify)			
Feedstock = [
(Please specify)				
Type of Process = [] (please specify)			
Feedstock = [
(Please specify)				
Total				
1) For details of process types and feedstock types, see Table 3.12 in Chapter 3 of Volume 3. For the default process type and the default feedstock, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector		Industrial Processes and Product Use	
Category		Chemical Industry - Petrochemical and Carbon Black Production	
Category Code		2B8	
Sheet		2 of 12 CH₄ Emissions from Methanol Production	
A	B	C	D
Amount of Methanol Produced	Emission Factor	CH ₄ Emission	CH ₄ Emission
(tonne)	(kg CH ₄ /tonne methanol produced)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$

Sector		Industrial Processes and Product Use			
Category		Chemical Industry - Petrochemical and Carbon Black Production			
Category Code		2B8			
Sheet		3 of 12 CO₂ Emissions from Ethylene Production			
Type of Feedstock ^{1), 2)} (please specify)	A	B	C	D	E
	Amount of Ethylene Produced	Emission Factor	Geographic Adjustment Factor ³⁾	CO ₂ Emissions	CO ₂ Emissions
	(tonne)	(tonne CO ₂ /tonne ethylene produced)	(%)	(tonne CO ₂)	(Gg CO ₂)
				$D = A * B * C/100$	$E = D/10^3$
Total					
<p>1) For details of feedstock types, see Table 3.14 in Chapter 3 of Volume 3. For the default feedstock, see Table 3.11 in Chapter 3 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p> <p>3) For geographic adjustment factors, see Table 3.15 in Volume 3.</p>					

Sector		Industrial Processes and Product Use		
Category		Chemical Industry - Petrochemical and Carbon Black Production		
Category Code		2B8		
Sheet		4 of 12 CH₄ Emissions from Ethylene Production		
Type of Feedstock ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ethylene Produced	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne)	(kg CH ₄ /tonne ethylene produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
<p>1) For details of feedstock types, see Table 3.14 in Chapter 3 of Volume 3. For the default feedstock, see Table 3.11 in Chapter 3 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p>				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	5 of 12 CO ₂ Emissions from Ethylene Dichloride/Vinyl Chloride Monomer Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ethylene Dichloride (EDC) or Vinyl Chloride Monomer (VCM) Produced ³⁾	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne EDC produced) or (tonne VCM produced)	(tonne CO ₂ /tonne EDC produced) or (tonne CO ₂ /tonne VCM produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
<p>1) For details of process types, see Table 3.17 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p> <p>3) Inventory compilers should use either EDC production or VCM production (not both) as activity data.</p>				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	6 of 12 CH ₄ Emissions from Ethylene Dichloride / Vinyl Chloride Monomer Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ethylene Dichloride (EDC) or Vinyl Chloride Monomer (VCM) Produced ³⁾	Emission Factor	CH ₄ Emission	CH ₄ Emission
	(tonne EDC produced) or (tonne VCM produced)	(kg CH ₄ /tonne EDC produced) or (kg CH ₄ /tonne VCM produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
<p>1) For details of process types, see Tables 3.11 and 3.19 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p> <p>3) Inventory compilers should use either EDC production or VCM production (not both) as activity data.</p>				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	7 of 12 CO₂ Emissions from Ethylene Oxide Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ethylene Oxide Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne ethylene oxide produced)	(tonne CO ₂ /tonne ethylene oxide produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of process types, see Table 3.20 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	8 of 12 CH₄ Emissions from Ethylene Oxide Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ethylene Oxide Produced	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne ethylene oxide produced)	(kg CH ₄ /tonne ethylene oxide produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
1) For details of process types, see Table 3.21 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	9 of 12 CO₂ Emissions from Acrylonitrile Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Acrylonitrile Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne acrylonitrile produced)	(tonne CO ₂ /tonne acrylonitrile produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of process types, see Table 3.22 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	10 of 12 CH₄ Emissions from Acrylonitrile Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Acrylonitrile Produced	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne acrylonitrile produced)	(kg CH ₄ /tonne acrylonitrile produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
1) For details of process types, see Table 3.22 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	11 of 12 CO ₂ Emissions from Carbon Black Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Carbon Black Produced	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne carbon black produced)	(tonne CO ₂ /tonne carbon black produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of process types, see Table 3.23 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Petrochemical and Carbon Black Production			
Category Code	2B8			
Sheet	12 of 12 CH ₄ Emissions from Carbon Black Production			
Type of Process ^{1), 2)} (please specify)	A	B	C	D
	Amount of Carbon Black Produced	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne carbon black produced)	(kg CH ₄ /tonne carbon black produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
1) For details of process types, see Table 3.24 in Chapter 3 of Volume 3. For the default process type, see Table 3.11 in Chapter 3 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Fluorochemical Production			
Category Code	2B9			
Sheet	1 of 3 HFC-23 Emissions from HCFC-22 Production			
A Amount of HCFC-22 Produced (kg)	B Emission Factor (kg HFC-23/kg HCFC-22 produced)	C HFC-23 Emissions (kg)	D HFC-23 Emissions (Gg)	
		$C = A * B$	$D = C/10^6$	

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Fluorochemical Production			
Category Code	2B9			
Sheet	2 of 3 By-product Emissions from Production of Other Fluorinated Compounds			
	A	B	C	D
Fluorinated Compound Emitted as By-product and Principal Fluorinated Compound Produced (Please specify such as "xxx from yyy production") ¹⁾	Amount of Principal Fluorinated Compound Produced	Byproduct Emission Factor ²⁾	Emissions	Emissions
	(kg)	(kg by-product gas emitted/kg F-compound produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
<p>1) Insert additional rows if necessary.</p> <p>2) For sources that are not <i>key categories</i>, fugitive and by-product emissions are considered the same and those emissions are calculated using the next sheet (3 of 3).</p>				

Sector	Industrial Processes and Product Use			
Category	Chemical Industry - Fluorochemical Production			
Category Code	2B9			
Sheet	3 of 3 Fugitive Emissions from Production of Other Fluorinated Compounds			
	A	B	C	D
Fluorinated Compound Produced (Please specify) ¹⁾	Amount of Fluorinated Compound Produced	Fugitive Emission Factor ²⁾	Emissions	Emissions
	(kg)	(kg fugitive gas emitted/kg F-compound produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
<p>1) Insert additional rows if necessary.</p> <p>2) For sources that are not <i>key categories</i>, fugitive and by-product emissions are considered the same. For Tier 1, in the absence of abatement measures, a default emission factor of 0.5 percent of production, not counting losses in transport and transfer of materials, is suggested for HFCs and PFCs,</p>				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Iron and Steel Production			
Category Code	2C1			
Sheet	1 of 2 CO ₂ Emissions			
Type of Steelmaking Method, etc	A	B	C	D
	Amount of Steel or Iron Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne crude steel produced, pig iron, DRI, sinter or pellet)	(tonne CO ₂ /tonne production)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Basic Oxygen Furnace				
Electric Arc Furnace				
Open Hearth Furnace				
Pig Iron Production (not converted into steel)				
Direct Reduced Iron (DRI) Production				
Sinter Production				
Pellet Production				
TOTAL				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Iron and Steel Production			
Category Code	2C1			
Sheet	2 of 2 CH ₄ Emissions			
Type of Production	A	B	C	D
	Amount of Production	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne sinter, DRI or pig iron)	(kg CH ₄ /tonne production)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Sinter Production				
Direct Reduced Iron (DRI) Production				
Pig Iron Production				
TOTAL				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Ferroalloys Production			
Category Code	2C2			
Sheet	1 of 2 CO₂ Emissions			
Type of Ferroalloy ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ferroalloy Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne ferroalloy produced)	(tonne CO ₂ /tonne ferroalloy produced)	(tonne CO ₂)	(Gg CO ₂)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of ferroalloy types, see Table 4.5 in Chapter 4 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Ferroalloys Production			
Category Code	2C2			
Sheet	2 of 2 CH₄ Emissions			
Type of Ferroalloy ^{1), 2)} (please specify)	A	B	C	D
	Amount of Ferroalloy Production	Emission Factor	CH ₄ Emissions	CH ₄ Emissions
	(tonne ferroalloy produced)	(kg CH ₄ /tonne ferroalloy produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
Total				
1) For details of ferroalloy types, see Table 4.7 in Chapter 4 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Aluminium Production			
Category Code	2C3			
Sheet	1 of 3 CO ₂ Emissions			
Type of Technology	A	B	C	D
	Amount of Aluminium Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne aluminium produced)	(tonne CO ₂ /tonne aluminium produced)	(tonne)	(Gg)
			$C = A * B$	$D = C/10^3$
Prebake				
Soderberg				
Total				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Aluminium Production			
Category Code	2C3			
Sheet	2 of 3 CF ₄ Emissions			
Type of Technology	A	B	C	D
	Amount of Aluminium Production	Emission Factor	CF ₄ Emissions	CF ₄ Emissions
	(tonne aluminium produced)	(kg CF ₄ /tonne aluminium produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
CWPB				
SWPB				
VSS				
HSS				
Total				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Aluminium Production			
Category Code	2C3			
Sheet	3 of 3 C ₂ F ₆ Emissions			
Type of Technology	A	B	C	D
	Amount of Aluminium Production	Emission Factor	C ₂ F ₆ Emissions	C ₂ F ₆ Emissions
	(tonne aluminium produced)	(kg C ₂ F ₆ /tonne aluminium produced)	(kg)	(Gg)
			$C = A * B$	$D = C/10^6$
CWPB				
SWPB				
VSS				
HSS				
Total				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Magnesium Production			
Category Code	2C4			
Sheet	1 of 2 CO₂ Emissions from Primary Production			
Raw Material Source	A	B	C	D
	Amount of Primary Magnesium Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
	(tonne primary magnesium produced)	(tonne CO ₂ /tonne primary magnesium produced)	(tonne)	(Gg)
			$C = A * B$	$D = C/10^3$
Dolomite				
Magnesite				
Total				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Magnesium Production			
Category Code	2C4			
Sheet	2 of 2 SF₆ Emissions from Magnesium Casting Processes			
A	B	C	D	
Amount of Magnesium Casting	Emission Factor	SF ₆ Emissions	SF ₆ Emissions	
(tonne magnesium casting)	(kg SF ₆ /tonne magnesium casting)	(kg)	(Gg)	
		$C = A * B$	$D = C/10^6$	
<p>Note: As regards HFC 134-a, FK 5-1-12 and their decomposition products (e.g., PFCs), no Tier 1 method is provided because the industrial experience in using these compounds (HFC 134-a and FK 5-1-12) for magnesium protection purposes is yet very limited. However, if the greenhouse gas emission from the use of magnesium cover gases is a national <i>key category</i>, it is <i>good practice</i>, for inventory preparation purposes, to collect direct measurements of these greenhouse gas emissions.</p>				

Sector	Metal Industry			
Category	Metal Industry - Lead Production			
Category Code	2C5			
Sheet	1 of 1			
	A	B	C	D
Source and Furnace Type ^{1), 2)}	Amount of Lead Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
(please specify)	(tonne lead produced)	(tonne CO ₂ /tonne lead produced)	(tonne)	(Gg)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of source and furnace types, see Table 4.21 in Chapter 4 of Volume 3.				
2) Insert additional rows if necessary.				

Sector	Industrial Processes and Product Use			
Category	Metal Industry - Zinc Production			
Category Code	2C6			
Sheet	1 of 1			
	A	B	C	D
Type of Process ^{1), 2)}	Amount of Zinc Production	Emission Factor	CO ₂ Emissions	CO ₂ Emissions
(please specify)	(tonne zinc produced)	(tonne CO ₂ /tonne zinc produced)	(tonne)	(Gg)
			$C = A * B$	$D = C/10^3$
Total				
1) For details of process types, see Table 4.24 in Chapter 4 of Volume 3.				
2) Insert additional rows if necessary.				

Sector		Industrial Processes and Product Use		
Category		Non-Energy Products from Fuels and Solvent Use - Lubricant Use		
Category Code		2D1		
Sheet		1 of 1		
A	B	C	D	E
Amount of Lubricant Consumed	Lubricant Carbon Content	Fraction Oxidized During Use (ODU factor)	CO ₂ Emissions	CO ₂ Emissions
(TJ)	(tonne-C/TJ)	(fraction)	(tonne CO ₂)	(Gg CO ₂)
			$D = A * B * C * \frac{44}{12}$	$E = D/10^3$

Sector		Industrial Processes and Product Use		
Category		Non-Energy Products from Fuels and Solvent Use – Paraffin Wax Use		
Category Code		2D2		
Sheet		1 of 1		
A	B	C	D	E
Amount of Paraffin Waxes Consumed	Paraffin Waxes Carbon Content	Fraction Oxidized During Use (ODU factor)	CO ₂ Emissions	CO ₂ Emissions
(TJ)	(tonne-C/TJ)	(fraction)	(tonne CO ₂)	(Gg CO ₂)
			$D = A * B * C * \frac{44}{12}$	$E = D/10^3$

Sector	Industrial Processes and Product Use				
Category	Electronics Industry - Integrated Circuit or Semiconductor				
Category Code	2E1				
Sheet	1 of 1				
Fluorinated Compounds (FCs)	A	B	C	D	E
	Fraction of Annual Plant Production Capacity Utilization ¹⁾	Annual Manufacturing Design Capacity ¹⁾	Tier 1 Default FC Emission Factor ²⁾	CO ₂ Equivalent Conversion Factor ³⁾	FC Emissions ⁴⁾
	(fraction)	(Gm ² of silicon processed)	(kg FC/m ² of silicon processed)	(tonne CO ₂ /tonne FC)	(Gg CO ₂ equivalent)
					$E = A * B * C * D * 10^3$
CF ₄			0.9		
C ₂ F ₆			1		
CHF ₃			0.04		
C ₃ F ₈			0.05		
NF ₃			0.04		
SF ₆			0.2		
Total					
<p>1) The same value should be entered in each row.</p> <p>2) In using Tier 1, inventory compilers should not modify, in any way, the set of the FCs assumed here. Inventory compilers should not combine emissions estimated using Tier 1 method with emissions estimated using the Tier 2 or 3 methods. Neither may inventory compilers change the values of any factors in this column.</p> <p>3) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. These factors should be the same as those used for other sectors/categories to ensure that they are all internally consistent in the inventory.</p> <p>4) The Tier 1 method, unlike the Tier 3 or 2 methods, is designed to give an aggregated estimate of FC emissions although its methodology appears to produce gas-specific emissions.</p>					

Sector	Industrial Processes and Product Use				
Category	Electronics Industry - TFT Flat Panel Display				
Category Code	2E2				
Sheet	1 of 1				
Fluorinated Compounds (FCs)	A	B	C	D	E
	Fraction of Annual Plant Production Capacity Utilization ¹⁾	Annual Manufacturing Design Capacity ¹⁾	Tier 1 Default FC Emission Factor ²⁾	CO ₂ Equivalent Conversion Factor ³⁾	FC Emissions ⁴⁾
	(fraction)	(Gm ² of glass processed)	(g FC/m ² of glass processed)	(tonne CO ₂ /tonne FC)	(Gg CO ₂ equivalent)
					$E = A * B * C * D$
CF ₄			0.5		
NF ₃			0.9		
SF ₆			4		
Total					
<p>1) The same value should be entered in each row.</p> <p>2) In using Tier 1, inventory compilers should not modify, in any way, the set of the FCs assumed here. Inventory compilers should not combine emissions estimated using Tier 1 method with emissions estimated using the Tier 2 or 3 methods. Neither may inventory compilers change the values of any factors in this column.</p> <p>3) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. These factors should be the same as those used for other sectors/categories to ensure that they are all internally consistent in the inventory.</p> <p>4) The Tier 1 method, unlike the Tier 3 or 2 methods, is designed to give an aggregated estimate of FC emissions although its methodology appears to produce gas-specific emissions.</p>					

Sector	Industrial Processes and Product Use		
Category	Electronics Industry - Photovoltaics		
Category Code	2E3		
Sheet	1 of 2		
Fluorinated Compounds (FCs)	A	B	C
	Fraction of Annual Plant Production Capacity Utilization ¹⁾	Annual Manufacturing Design Capacity ¹⁾	Fraction of PV manufacture that uses fluorinated compounds
	(fraction)	(Mm ² of substrate processed)	(fraction)
CF ₄			
C ₂ F ₆			
Total			
<p>1) The same value should be entered in each row.</p>			

Sector	Industrial Processes and Product Use		
Category	Electronics Industry - Photovoltaics		
Category Code	2E3		
Sheet	2 of 2		
Fluorinated Compounds (FCs)	D	E	F
	Tier 1 Default FC Emission Factor ¹⁾	CO ₂ Equivalent Conversion Factor ²⁾	FC Emissions ³⁾
	(g FC/m ² of substrate processed)	(tonne CO ₂ /tonne FC)	(Gg CO ₂ equivalent)
			$F = A * B * C * D * E / 10^3$
CF ₄	5		
C ₂ F ₆	0.2		
Total			
<p>1) In using Tier 1, inventory compilers should not modify, in any way, the set of the FCs assumed here. Inventory compilers should not combine emissions estimated using Tier 1 method with emissions estimated using the Tier 2 or 3 methods. Neither may inventory compilers change the values of any factors in this column.</p> <p>2) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. These factors should be the same as those used for other sectors/categories to ensure that they are all internally consistent in the inventory.</p> <p>3) The Tier 1 method, unlike the Tier 3 or 2 methods, is designed to give an aggregated estimate of FC emissions although its methodology appears to produce gas-specific emissions.</p>			

Sector	Industrial Processes and Product Use				
Category	Electronics Industry - Heat Transfer Fluid				
Category Code	2E4				
Sheet	1 of 1				
Fluorinated Compounds (FCs)	A	B	C	D	E
	Fraction of Annual Plant Production Capacity Utilization	Annual Manufacturing Design Capacity	Tier 1 Default FC Emission Factor ¹⁾	CO ₂ Equivalent Conversion Factor ²⁾	FC Emissions ³⁾
	(fraction)	(Gm ² of silicon consumed)	(kg C ₆ F ₁₄ /m ² of silicon consumed)	(tonne CO ₂ /tonne C ₆ F ₁₄)	(Gg CO ₂ equivalent)
					$E = A * B * C * D * 10^3$
C ₆ F ₁₄			0.3		
<p>1) Tier 1 default emission factor assumes heat transfer fluids have the same GWP and C₆F₁₄ represents a suitable proxy. Inventory compilers should not change this value in using Tier 1 method.</p> <p>2) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. These factors should be the same as those used for other sectors/categories to ensure that they are all internally consistent in the inventory.</p> <p>3) The Tier 1 method, unlike the Tier 3 or 2 methods, is designed to give an aggregated estimate of FC emissions although its methodology appears to produce gas-specific emissions.</p>					

Sector	Industrial Processes and Product Use			
Category	Product Uses as Substitutes for Ozone Depleting Substances – Refrigeration and Air Conditioning			
Category Code	2F1			
Sheet	1 of 1			
	A	B	C	D
HFCs/PFCs (please specify)	Bank in Inventory Year ¹⁾	Average Emission Factor from installed base	Agent in Retired Equipment in Inventory Year	Emissions in Inventory Year
	(tonne)	(%)	(tonne)	(tonne)
				$D = A * B/100 + C$
	HFC-23			
...				
<p>1) In reality, it is necessary in the refrigeration and air conditioning application to deal with the development and tracking of banks. This means that an historical time series of country-specific or globally or regionally derived activity data is required dating back to the introduction of any new HFC or PFC. In order to do this, inventory compilers will need to implement spreadsheet calculations. A typical example, which is workable and inventory compilers could use, can be found in the <i>2006 Guidelines</i> CDROM. (V3_An1_Calculation_example_for_2F1.xls)</p>				

Sector	Industrial Processes and Product Use			
Category	Product Uses as Substitutes for Ozone Depleting Substances – Foam Blowing Agents			
Category Code	2F2			
Sheet	1 of 1			
	A	B	C	D
HFCs/PFCs (please specify)	Original Charge in Each of Previous Years ¹⁾	Annual Losses Emission Factor	First Year Loss in Inventory Year ²⁾	Emissions in Inventory Year
	(tonne)	(%)	(tonne)	(tonne)
				$D = A * B/100 + C$
	HFC-245fa			
...				
<p>1) In reality, it is necessary in the foam application to deal with the historical time series of country-specific or globally or regionally derived activity data dating back to the introduction of any new HFC or PFC. In order to do this, inventory compilers will need to implement spreadsheet calculations. A typical example, which is workable and inventory compilers could use, can be found in the <i>2006 Guidelines</i> CDROM. (V3_An1_Calculation_example_for_2F2.xls)</p> <p>2) For details on the first year loss emission factor, see Table 7.5 in Chapter 7 of this volume. In the case of open-cell foams, the first year loss emission factor is typically 100 %.</p>				

Sector	Industrial Processes and Product Use				
Category	Product Uses as Substitutes for Ozone Depleting Substances – Fire Protection				
Category Code	2F3				
Sheet	1 of 1				
HFCs/PFCs (please specify)	A	B	C	D	E
	Bank in Inventory Year ¹⁾	Average Emission Factor from installed base	Agent in Retired Equipment in Inventory Year	Rate of Recovery of the Agent in Retired Equipment	Emissions in Inventory Year
	(tonne)	(%)	(tonne)	(%)	(tonne)
					$E = A * B/100 + C * (1 - D/100)$
HFC-23					
...					
<p>1) In reality, it is necessary in the fire protection application to deal with the development and tracking of banks. This means that an historical time series of country-specific or globally or regionally derived activity data is required dating back to the introduction of any new HFC or PFC. In order to do this, inventory compilers will need to implement spreadsheet calculations. A typical example, which is workable and inventory compilers could use, can be found in the <i>2006 Guidelines</i> CDROM. (V3_An1_Calculation_example_for_2F3.xls)</p>					

Sector	Industrial Processes and Product Use				
Category	Product Uses as Substitutes for Ozone Depleting Substances - Aerosols				
Category Code	2F4				
Sheet	1 of 1				
A		B	C	D	E
Quantity of HFCs/PFCs Contained in Aerosol Products Sold in Inventory Year		Quantity of HFCs/PFCs Contained in Aerosol Products Sold in Prior Year	Emission Factor (Loss of Current Year's Use)	Emissions of HFCs/PFCs from Aerosol Products	Emissions of HFCs/PFCs from Aerosol Products
Chemical ^{1), 2)}	(tonne)	(tonne)	(fraction)	(tonne)	(Gg)
(please specify)				$D = A * C + B * (1 - C)$	$E = D/10^3$
<p>1) For chemicals that are used for this application, see Table 7.1 in Chapter 7 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p>					

Sector		Industrial Processes and Product Use			
Category		Product Uses as Substitutes for Ozone Depleting Substances - Solvents			
Category Code		2F5			
Sheet		1 of 1			
A		B	C	D	E
Quantity of Solvents (HFCs/PFCs) Sold in Inventory Year		Quantity of Solvents (HFCs/PFCs) Sold in Prior Year	Emission Factor (Loss of Current Year's Use)	Emission of HFCs/PFCs from Solvents	Emission of HFCs/PFCs from Solvents
Chemical ^{1), 2)}	(tonne)	(tonne)	(fraction)	(tonne)	(Gg)
(please specify)				$D = A * C + B * (1 - C)$	$E = D/10^3$
<p>1) For chemicals that are used for this application, see Table 7.1 in Chapter 7 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p>					

Sector		Industrial Processes and Product Use			
Category		Product Uses as Substitutes for Ozone Depleting Substances - Other Applications			
Category Code		2F6			
Sheet		1 of 1			
A		B	C	D	E
Quantity of HFCs/PFCs Sold in Inventory Year		Quantity of HFCs/PFCs Sold in Prior Year	Emission Factor (Loss of Current Year's Use)	Emission of HFCs/PFCs from Other Applications	Emission of HFCs/PFCs from Other Applications
Chemical ^{1), 2)}	(tonne)	(tonne)	(fraction)	(tonne)	(Gg)
(please specify)				$D = A * C + B * (1 - C)$	$E = D/10^3$
<p>1) For chemicals that are used for this application, see Table 7.1 in Chapter 7 of Volume 3.</p> <p>2) Insert additional rows if necessary.</p>					

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - Electrical Equipment		
Category Code	2G1		
Sheet	1 of 5 Manufacturing Emissions of SF₆¹⁾		
Type of Equipment	A	B	C
	Total SF ₆ Consumption by Equipment Manufacturers (tonne SF ₆)	Manufacturing Emission Factor ²⁾ (fraction)	Manufacturing Emissions (tonne SF ₆)
			C = A * B
Sealed-Pressure			
Closed-Pressure			
Gas-Insulated Transformers			
Total			
1) Emissions of PFCs can be estimated by the same calculation procedure.			
2) Default emission factors depend on region for which emissions are being estimated. See Tables 8.2 through 8.4 in Chapter 8 of this volume.			

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - Electrical Equipment		
Category Code	2G1		
Sheet	2 of 5 Equipment Installation Emissions of SF₆¹⁾		
Type of Equipment	D	E	F
	Total Nameplate Capacity of New Equipment Filled on Site (not at the factory) (tonne SF ₆)	Installation Emission Factor ²⁾ (fraction)	Equipment Installation Emissions (tonne SF ₆)
			F = D * E
Sealed-Pressure			
Closed-Pressure			
Gas-Insulated Transformers			
Total			
1) Emissions of PFCs can be estimated by the same calculation procedure.			
2) Default emission factors depend on region for which emissions are being estimated. See Tables 8.2 through 8.4 in Chapter 8 of this volume.			

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - Electrical Equipment		
Category Code	2G1		
Sheet	3 of 5 Equipment Use Emissions of SF₆¹⁾		
Type of Equipment	G	H	I
	Total Nameplate Capacity of Installed Equipment	Use Emission Factor ^{2), 3)}	Equipment Use Emissions
	(tonne SF ₆)	(fraction)	(tonne SF ₆)
			$I = G * H$
Sealed-Pressure			
Closed-Pressure			
Gas-Insulated Transformers			
Total			
<p>1) Emissions of PFCs can be estimated by the same calculation procedure.</p> <p>2) Default emission factors depend on region for which emissions are being estimated. See Tables 8.2 through 8.4 in Chapter 8 of this volume.</p> <p>3) The 'use emission factor' includes emissions due to leakage, servicing, maintenance, and equipment failures.</p>			

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - Electrical Equipment		
Category Code	2G1		
Sheet	4 of 5 Equipment Disposal Emissions of SF₆¹⁾		
Type of Equipment	J	K	L
	Total Nameplate Capacity of Retiring Equipment	Fraction of SF ₆ Remaining at Retirement ²⁾	Equipment Disposal Emissions
	(tonne SF ₆)	(fraction)	(tonne SF ₆)
			$L = J * K$
Sealed-Pressure			
Closed-Pressure			
Gas-Insulated Transformers			
Total			
<p>1) Emissions of PFCs can be estimated by the same calculation procedure.</p> <p>2) Default emission factors depend on region for which emissions are being estimated. See Tables 8.2 through 8.4 in Chapter 8 of this volume.</p>			

Sector	Industrial Processes and Product Use	
Category	Other Product Manufacture and Use - Electrical Equipment	
Category Code	2G1	
Sheet	5 of 5 Total Emissions of SF₆¹⁾	
Type of Equipment	M	N
	Total Emissions (tonne SF ₆)	Total Emissions (Gg SF ₆)
	$M = C + F + I + L$	$N = M/10^3$
Sealed-Pressure		
Closed-Pressure		
Gas-Insulated Transformers		
Total		
1) Emissions of PFCs can be estimated by the same calculation procedure.		

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - SF₆ and PFCs from Other Product Uses		
Category Code	2G2		
Sheet	1 of 7 SF₆ Emissions from Military Applications (AWACS)		
A	B	C	D
National AWACS Fleet	Emission Factor	SF ₆ Emissions	SF ₆ Emissions
(number of AWACS)	(kg SF ₆ /plane)	(kg)	(Gg)
		$C = A * B$	$D = C/10^6$

Sector	Industrial Processes and Product Use				
Category	Other Product Manufacture and Use - SF₆ and PFCs from Other Product Uses				
Category Code	2G2				
Sheet	2 of 7 SF₆ Emissions from University and Research Particle Accelerators				
A	B	C	D	E	F
Number of University and Research Particle Accelerators in the Country	SF ₆ Use Factor	SF ₆ Charge Factor	SF ₆ Emission Factor	SF ₆ Emissions	SF ₆ Emissions
(number)	(fraction)	(kg SF ₆ /particle accelerator)	(fraction)	(kg)	(Gg)
				$E = A * B * C * D$	$F = E/10^6$

Sector	Industrial Processes and Product Use				
Category	Other Product Manufacture and Use - SF ₆ and PFCs from Other Product Uses				
Category Code	2G2				
Sheet	3 of 7 SF ₆ Emissions from Industrial and Medical Particle Accelerators				
Process Description	A	B	C	D	E
	Number of Particle Accelerators that use SF ₆ by Process Description in the Country	SF ₆ Charge Factor	SF ₆ Emission Factor	SF ₆ Emissions	SF ₆ Emissions
	(number)	(kg SF ₆ /particle accelerator)	(fraction)	(kg)	(Gg)
			$D = A * B * C$	$E = D/10^6$	
Industrial Accelerator (High Voltage: 0.3-23 MV)					
Industrial Accelerator (Low Voltage: <0.3 MV)					
Medical					
Total					

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - SF ₆ and PFCs from Other Product Uses		
Category Code	2G2		
Sheet	4 of 7 SF ₆ Emissions ¹⁾ from Adiabatic Uses		
Type of Applications ^{2), 3)} (please specify)	A	B	C
	Sales into application in year t-3	SF ₆ Emissions in year t	SF ₆ Emissions in year t
	(tonne)	(tonne)	(Gg)
		$B = A$	$C = B/10^3$
Total			
<p>1) Emissions of PFCs can be estimated by the same calculation procedure.</p> <p>2) For example, car tires, sport shoe soles and tennis balls.</p> <p>3) Insert additional rows, if necessary.</p>			

Sector	Industrial Processes and Product Use				
Category	Other Product Manufacture and Use - SF₆ and PFCs from Other Product Uses				
Category Code	2G2				
Sheet	5 of 7 SF₆ Emissions from Sound-Proof Glazing				
A	B	C	D	E	F
SF ₆ Purchased to Fill Windows Assembled in Inventory Year	Assembly Emission Factor	Assembly Emissions	Capacity of Existing Windows in Inventory Year	Leakage Emission Factor	Leakage Emissions
(tonne SF ₆)	(fraction)	(tonne SF ₆)	(tonne SF ₆)	(fraction)	(tonne SF ₆)
		$C = A * B$			$F = D * E$

Sector	Industrial Processes and Product Use			
Category	Other Product Manufacture and Use - SF₆ and PFCs from Other Product Uses			
Category Code	2G2			
Sheet	6 of 7 SF₆ Emissions from Sound-Proof Glazing			
G	H	I	J	K
Amount Left in Windows at End of Lifetime (Disposed of in Inventory Year)	Recovery Factor ¹⁾	Disposal Emissions	Total Emissions	Total Emissions
(tonne SF ₆)	(fraction)	(tonne SF ₆)	(tonne SF ₆)	(Gg SF ₆)
		$I = G * (1 - H)$	$J = C + F + I$	$K = J/10^3$
1) Recovery factor is assumed to be zero unless country-specific information is available.				

Sector	Industrial Processes and Product Use			
Category	Other Product Manufacture and Use - SF₆ and PFCs from Other Product Uses			
Category Code	2G2			
Sheet	7 of 7 Emissions of SF₆ and PFCs from Other Prompt Emissive Applications			
Type of Applications ^{1), 2)} (please specify)	A	B	C	D
	Sales into application in year t	Sales into application in year t-1	Emissions in year t	Emissions in year t
	(tonne)	(tonne)	(tonne)	(Gg)
			$C = 0.5 * (A + B)$	$D = C/10^3$
Total				
1) For example, tracers and use in production of optical cables.				
2) Insert additional rows, if necessary.				

Sector	Industrial Processes and Product Use		
Category	Other Product Manufacture and Use - N ₂ O from Product Uses		
Category Code	2G3		
Sheet	1 of 2		
Type of Applications	A	B	C
	Quantity of N ₂ O Supplied in this Application Type in Year t	Quantity of N ₂ O Supplied in this Application Type in Year t-1	Emission Factor
	(tonne)	(tonne)	(fraction)
Medical Applications			
Propellant in Aerosol Products			
Other (please specify) ¹⁾			
Total			

1) Insert additional rows, if necessary.

Sector	Industrial Processes and Product Use	
Category	Other Product Manufacture and Use - N ₂ O from Product Uses	
Category Code	2G3	
Sheet	2 of 2	
Type of Applications	D	E
	N ₂ O Emission (tonne)	N ₂ O Emission (Gg)
	$D = (0.5 * A + 0.5 * B) * C$	$E = D/10^3$
Medical Applications		
Propellant in Aerosol Products		
Other (please specify) ¹⁾		
Total		

1) Insert additional rows, if necessary.