Methodology for calculating the share of particle size fractions PM_{10} and $PM_{2.5}$ in emissions of solid pollutants

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The methodology of calculation depends on whether emissions are known or not:

1. Known emissions are used to calculate instantly.

2. If emissions are unknown, the calculation depends on whether the distribution of the aerodynamic diameters of the particles is known or not for the given source:

- If the size distribution is known, only size fractions 0-10 µm and 0-2.5 µm are considered.
- When data about size distribution are unavailable, Tables 1-3 are used:
  Tab. 1 shows size distribution according to the known separation device. We assume the size distribution of emissions of individual particle fractions depends on the separation device. When the separator type differs from the list in Tab. 1, the general value for individual types is used (filters, electrical separators, wet mechanical separators).
  Tab. 2 shows values for technological processes with missing or unknown separators.
  Tab. 3 shows the ratios of fuel combustion without any separation process. In the case of solid fuel, there is always a device with a fixed grid.

Tab. 1: Share of PM_{10} and $PM_{2.5}$ in total TSP emissions after the separator

Separator	TSP ratio	
	PM_{10}	$PM_{2.5}$
FILTERS		
F - textile with regeneration	85	60
F - ceramic	85	60
F - with a granular layer	85	55
F - sintered lamellar	100	99
ELECTRIC SEPARATORS	85	55
E – dry	85	55
E - wet	85	55
DRY MECHANICAL SEPARATORS		
S - vortex monocell (cyclone)	65	35
S - multicyclone	70	45
WET MECHANICAL SEPARATORS		
M - spray	90	60
M - foam	90	60
M - vortical	90	50
M – scrubber	90	50
M – current	95	75
M – rotary (disintegrator)	95	75
M - condensing	85	55
DESULFURING		
Wet methods	80	60
semi-dry methods	80	60
adsorption methods	90	70
OTHERS		
gas adsorption	95	75
thermal combustion	95	85

Tab. 2: Share of PM_{10} and $PM_{2.5}$ in total TSP emissions behind technological equipment

type of technology		TSP ratio %	
		PM_{10}	$PM_{2.5}$
1	**mechanical origin**		
	material handling, grinding, screening and drying of material (e.g. quarries, coal cleaning)	51	15
2	**mechanical origin**		
	fine grinding, sanding, paint application	85	30
3	**firing and other heat treatments**		
	agglomeration of ores, clays, etc.	53	18
4	**grain handling**		
	grain harvesting, grain handling, wood processing	15	1
5	**grain processing**		
	grain grinding, drying, sorting	61	23
6	**metal smelting (except aluminum)**		
	all primary and secondary production processes taking place at high temperatures, mineral wool production	92	82
7	**condensation, hydration, absorption, distillation**		
	meat smoking, charcoal production, tempering	94	78

Tab. 3: Share of PM_{10} and $PM_{2.5}$ in total TZL emissions behind the combustion stationary source

	TSP ratio %	
Type of fuel	**PM_{10}**	**$PM_{2.5}$**
Sorted types of coal	40	25
Wood	95	90
Pulverized types of coal	35	10
Other biomass	95	90
Lignite, slag	23	6
Heating oils	83	67
Coke	40	20
Gaseous fuels	100	100