REACH-Exposure Scenario

Downstream use of PM Production

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End application made at your site: Metal Injection Moulding	2	**MIM: Injection Moulding**	Raw Material: See list of Substances for MIM-Feedstocks REACH Status: Downstream use of substances

Process Step		Workplace Exposure Route of exposure to humans				Environmental Exposure Emission to environment			
N°	**Description See Table 2**	**Inhalation**	**Oral**	**Dermal**	**RMM in use See Table 1**	**Air**	**Water**	**Soil**	**RMM in use See Table 1**
1	Raw material handling	none	none	yes	GPuv	none**	none**	none**	
2	Injection moulding Green handling	none	none	yes	GPuv	none**	none**	none**	
3	Granulation of rejects, sprues, runners	yes	none	yes	RPEum PC SC GPum	none**	none**	none**	
4	Cleaning and Maintenance Pressing	yes	none	yes	RPEum PC SC GPum	none**	none**	none**	

Operational Conditions (OC)

Quality and Quantity of material used: See *List of Substance Pressing and Sintering*
Physical form (e.g. particle, gaseous media): particle
Annual operating days (days/year): 260
Number of working hours per day (hours/day): 8 hrs/day
Number of shifts per day: 1
Number of employees involved in the process steps (see above): 1 workers for raw material handling, injection moulding and maintenance
Frequency and duration (e.g. numbers of workers exposed and the time they are exposed and also how frequently are they exposed)**:** exposed time and frequency cannot be quantified

1 Table of Risk Management Measures (RMM) in use

Type of Risk Management Measures - Environment	**RMM in use (Codes)** (Delete whichever does not apply)	**Efficiency (if possible, provide a quantitative figure)**
To Air:		
Fabric or bag filters	F	unr
Other:		
To control general diffuse site emissions:		
Storage coverage	SC	
Other:		Mix: closed big bags or drums
Type of Risk Management Measures – Workers* **	**RMM in use (Codes)** (Delete whichever does not apply)	**Efficiency (if possible, provide a quantitative figure)**
Local Exhaust Ventilation (LEV)	LEV	unr
Cleaning of site	C	Efficiency can not be quantified
• Respiratory protection	Pattern of use mandatory: RPEum	Raw material handling: RPEuv

equipment: Pattern of use (mandatory, voluntary, not required?)	Pattern of use volontary: RPEuv Pattern of use not required: RPEunr	Injection Moulding: RPEunr Granulation: RPEum Maintenance: RPEum
• Face piece (e.g. quarter mask)	FP	Raw material handling: FPQM Granulation: FPQM Maintenance: FPQM
• Protection class (particles)	PC	Raw material handling: PC* Granulation: PC* Maintenance: PC*
• Gloves (G): Pattern or use (mandatory, voluntary, not required?)	~~Pattern of use mandatory: GPum~~ Pattern of use volontary: GPuv Pattern of use not required: GPunr	Raw material handling: GPuv Injection Moulding: GPunr
• Type of glove (description)		Standard work gloves for mechanical, latex for green handling, cotton for hot parts
Other:		

Comments:

* Depending on task um,uv or unr. To give a quantitative figure is not possible
** Environmental impact is assessed during normal production; emergencies are not put in consideration. Environmental Exposures are defined as environmental impact to the environment outside the plant.
*** General: There a several examinations by the company doctor which verifies that there is no negative impact on employees. Frequently examinations like breathing test, urine test, blood test and others are made

2 Table of Process Steps Full Descriptions

Process Step		
N°	**Description**	**Full Description**
1	Raw material handling	Transfer of Powder Mixes from storage site (closed bags or drums) into the injection moulding press hopper. Transfer of injected parts to other process steps.
2	Pressing Green handling	Melting the mix in a hot cylinder, inject the mass in the steel mould, wait for cooling and solidification, open mould, eject and collect part. Green part inspection, setting onto trays, deburring
3	Granulation of rejects, sprues, runners	The rejected parts and the material solidified in the feeding system are ground in grinding machines (chopped into small bits), so that they can be added to mixes during mixing for recycling
4	Cleaning and Maintenance Pressing	Cleaning the press

3 Glossary

Term	English	French	German
RPE	Respiratory Protective Equipment	Equipement protecteur respiratoire (EPR)	Atemschutzausrüstung
PPE	Personal Protective Equipment	Equipement protecteur personnel (EPP)	persönliche Schutzausrüstung
LEV	Local Exhaust Ventilation	Ventilation externe locale (VEL)	Absauganlage
RMM	Risk Management Method	Méthode de management du risque (MMR)	Risikomanagementmaßnahme
um	use mandatory	Utilisation obligatoire	Pflichtanwendung
uv	use voluntary	Utilisation volontaire	Freiwillige Anwendung
unr	use not required	Utilisation non requise	Anwendung nicht erforderlich
QM	quarter mask		
C	cleaning	Nettoyage	Reinigung

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