

### HH-7.1. Occupational scenario for discharging bags (25-50kg) into mixing vessels

Systematic title based on use descriptor	PROCs	
	4	Use in batch and other process (synthesis) where opportunity for exposure arises.
	5	Mixing or blending in batch processes for formulation of preparations / articles (multistage and/or significant contact).

### HH-7.2 Controlling worker exposure

Product characteristics	Granular or powder form.	
Amounts used	Dependent on the size of plant and preparation.	
Frequency and duration of use	Ranging from a few minutes up to an hour.	
Human factors not influenced by risk management	None	
Other given operational conditions affecting workers exposure	Activities take place indoors. The process temperatures are varied but release of the borate from bags is carried out at ambient temperature.	
Technical conditions and measures at process level (source) to prevent release	In some cases semi-automation of the bag emptying process.	
Technical conditions and measures to control dispersion from source towards the worker	LEV at the bag discharge point. Empty bag placed directly to waste.	
Organisational measures to prevent /limit releases, dispersion and exposure	Appropriate training. Regular testing and maintenance of plant and equipment.	
Conditions and measures related to personal protection, hygiene and health evaluation	Clothing	Standard work clothes
	Gloves	Not required for normal industrial exposure
	Eye protection	Required where good hygiene practice or substance classification demands it
	RPE	P2/P3 required where exposure is above the DNEL.

### HH-7.3. Exposure estimation

INHALATION							
	Activity	Source/ Parameters	RMM	Value 8h TWA mg B/m <sup>3</sup>	RCR DNEL = 1.45 mg B/m <sup>3</sup>		
Human Health Exposure Estimations	Measured	Discharge of 25kg bag into mixing vessels	90P of measured data (41 datapoints)	-	0.78	0.54	
	DERMAL						
		Activity	Source/ Parameters	RMM	Value mg B/day	RCR DNEL = 4800 mg B/day	
	Measured	Dermal contact unlikely	-	-	-	-	
	Modelled (MEASE)	Routine cleaning	Physical form	high dustiness	-	0.48	<0.001
			Content	> 25% boron			
			PROC	4			
			Duration	15 – 60 min			
			Use pattern	non dispersive			
			Handling	direct			
		Contact level	incidental				

### HH-7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

If the parameters used in the MEASE model outlined above do not reflect conditions at the DU facility, the DU can use MEASE and input the parameters that do reflect conditions at the DU facility to check whether the DU works inside the boundaries set by the ES. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16).