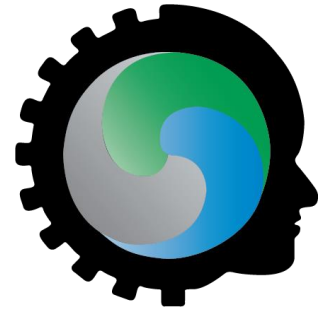


More effective use of disposable dust masks



Coaltech research project

By

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Contents

- Project Background
- Project scope
- Literature & Technical review
- Laboratory Fit tests
- Underground trial Results
- Points of concern
- Recommendations

Project Background

- Coaltech dust project (Task 2.6.1) – workshops
- Disposable masks – source of discomfort
- Initiated this research

Project scope

- Disposable masks (excl. full face / half face)
- Production sections only
- Initial Investigation (no shadowing)

Literature review

- Type of dust masks
- Effectiveness of the masks
- International & SA standards

Literature review

- Type of Respirable dust masks

Dust mask	Filter Efficiency	Micron Size	Cost (R/unit)	Hazard Type
FFP1	95%	>5	3.50	Non toxic dusts and water/oil based mists/aerosols.
FFP2	99%	2 - 5	9	Toxic dusts, metal fumes and water/oil based mists/aerosols.
FFP3	99.7%	Less than 2	82	Toxic and carcinogenic dusts, metal fumes and water/oil based mists/aerosols.

Literature review

- Effectiveness of the dust masks
 - NPF (Nominal Protection factor)
 - APF (Assigned Protection factor)


Dust mask type	Nominal PF	Assigned PF
FFP1	5	4
FFP2	12.5	10
FFP3	50	20
EN 136 (Full face mask)	1000	40

Literature review

- International & SA standards
 - Instructions, sealing, Face-shape, Facial-Hair, Folding
 - NIOSH recommends:
 - TL < 200mg or
 - service time limit < 8hr,.

Technical review

- Questionnaires
- Interviews
 - Distribution
 - Training material

COALTECH PROJECT – DISPOSABLE DUST MASKS		
COMPILED BY – ALAN COOK, 083 283 3544, alancook@latona.co.za		
PLEASE COMPLETE AND RETURN		
	MINE	MATLA 3
	DATE	19/06/2019
	COMPLETED BY	S BERGH
Does your mine issue disposable dust masks in production sections / areas?	YES	
How do you identify jobs that require disposable dust masks?	ALL JOBS AT MATLA REQUIRE	
Who is responsible to issue the disposable masks?	SUPERVISORS UPON RECEIPT FROM LAMP ROOM	
Do you keep records of the disposable masks issued?	NO	
When do disposable masks get replaced?	DAILY	
What type of disposable dust masks do you use? Make / style / code / supplier etc.	FFP 2 3M	
Do you use more than one protection class of disposable dust masks? i.e. FFP1, FFP2, other?	FFP 2	
Do you have standard procedures for disposable dust masks?	PPE PROCEDURE- YES	
Do you have formal training for the use and wearing of disposable dust masks?	YES	
Do you do fit testing for disposable dust masks?	NO	
Do you have more than one fit size or type of disposable mask, or one mask fits all?	ONE SIZE FITS ALL	
PLEASE ADD ANY OTHER INFORMATION YOU THINK IS APPROPRIATE:		

Laboratory Fit Test.

FFP1 disposable masks, non-adjustable straps.



One size fits all.

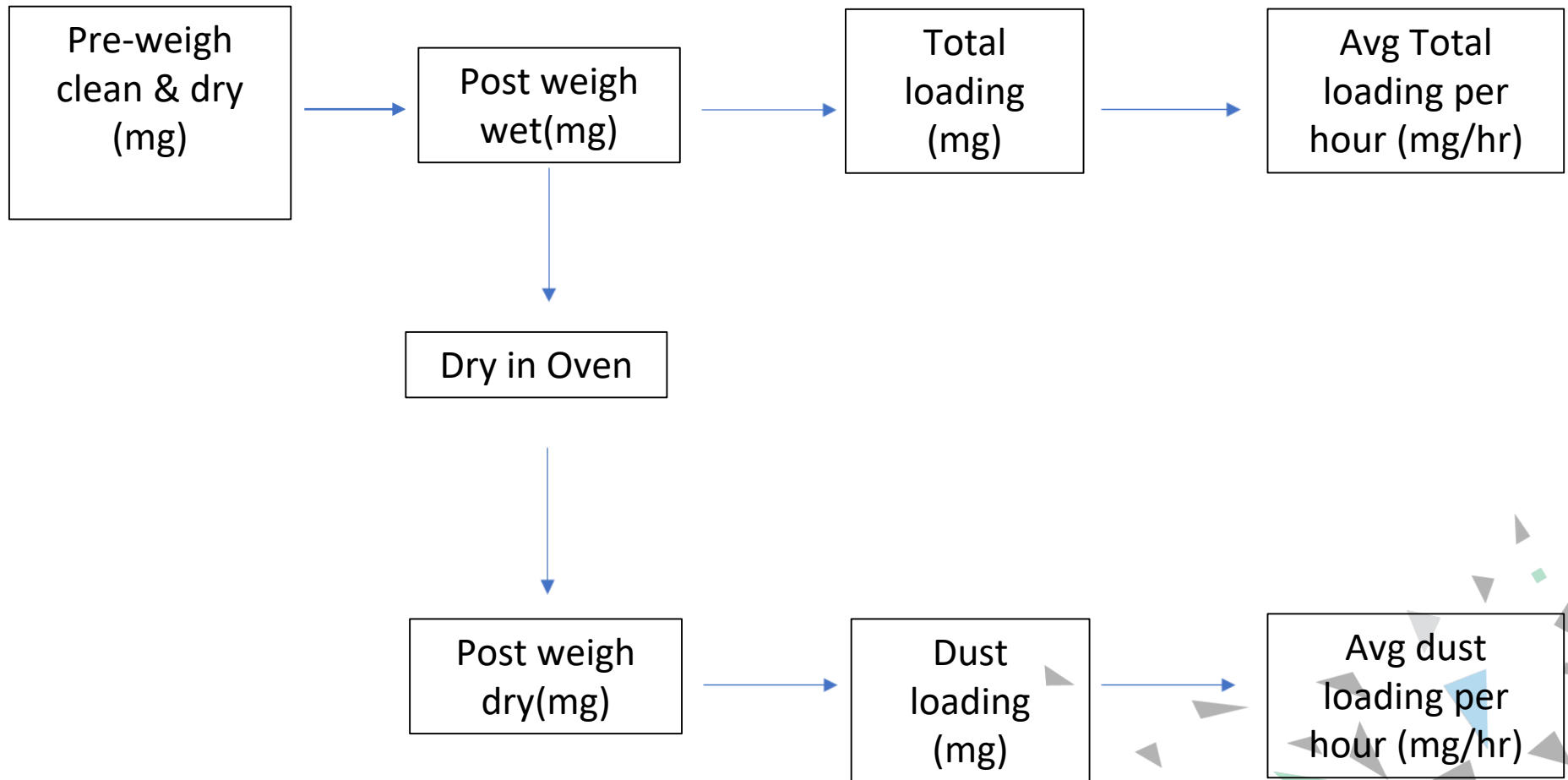
**5 faces,
5 failed tests.**

**One size fits
none**

UNDERGROUND TRIALS

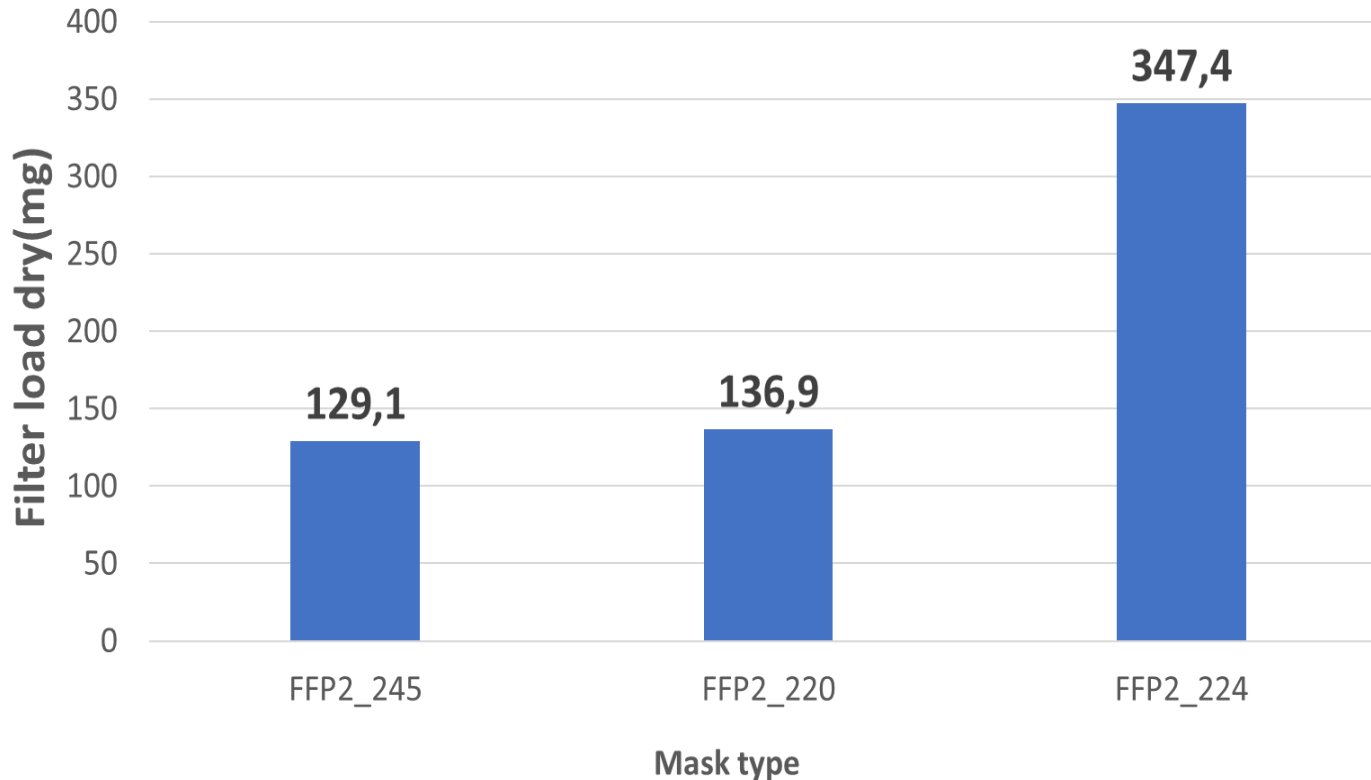
- Goedehoop & Kriel
 - Sasol Shondoni - Follow up tests (with Shadowing)
- High-risk dust occupations
 - CM, RB, SC & LHD
- Procedure
 - FFP2 weighed @ lab
 - Sealed masks used as controls
 - Distributed Individually

UNDERGROUND TRIAL RESULTS



UNDERGROUND TRIAL RESULTS

CM (Both Mines)



Avg **dust** loading

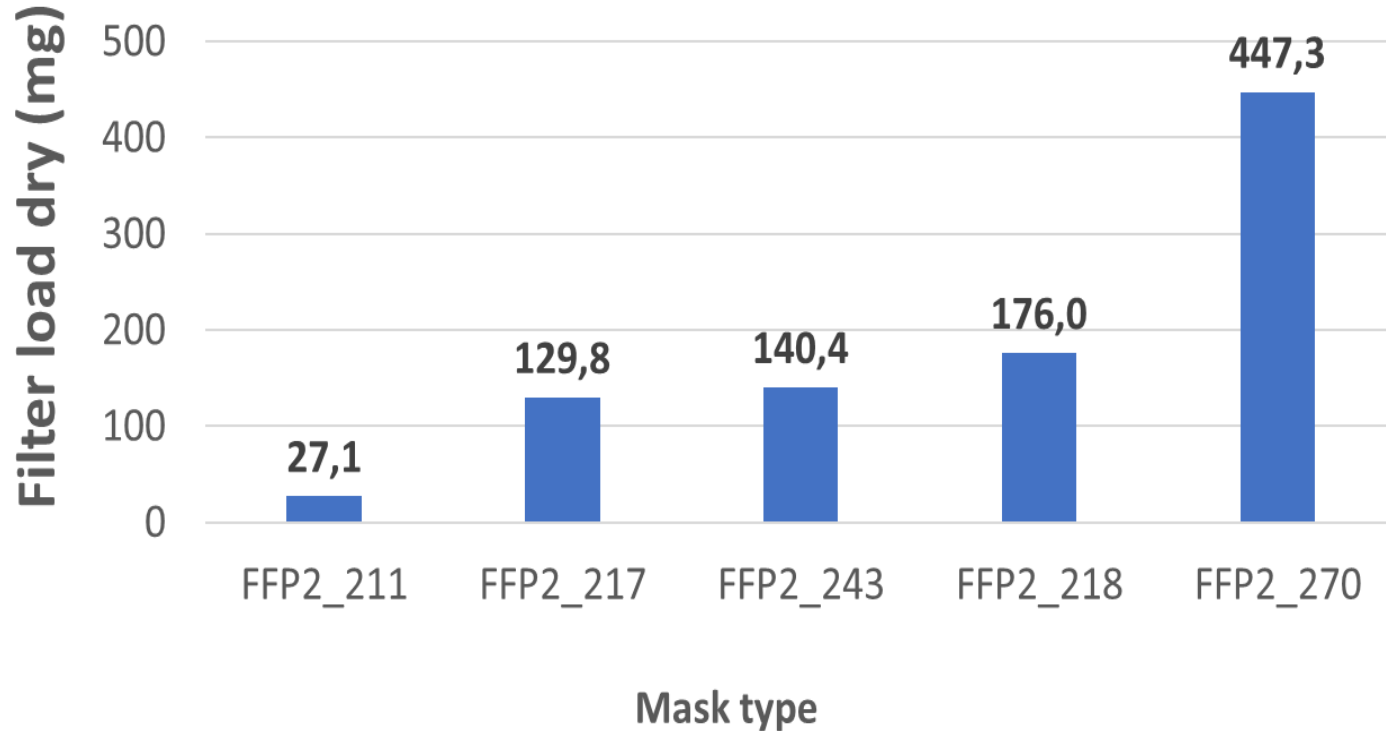
- 52 mg/hr (18 – 100 mg/hr)
- 200 mg in 4 hrs

Avg **total** loading

- 60 mg/hr (21 – 117 mg/hr)
- 200 mg in 3.5 hrs

UNDERGROUND TRIAL RESULTS

ShuttleCar (Both mines)



Avg **dust** loading

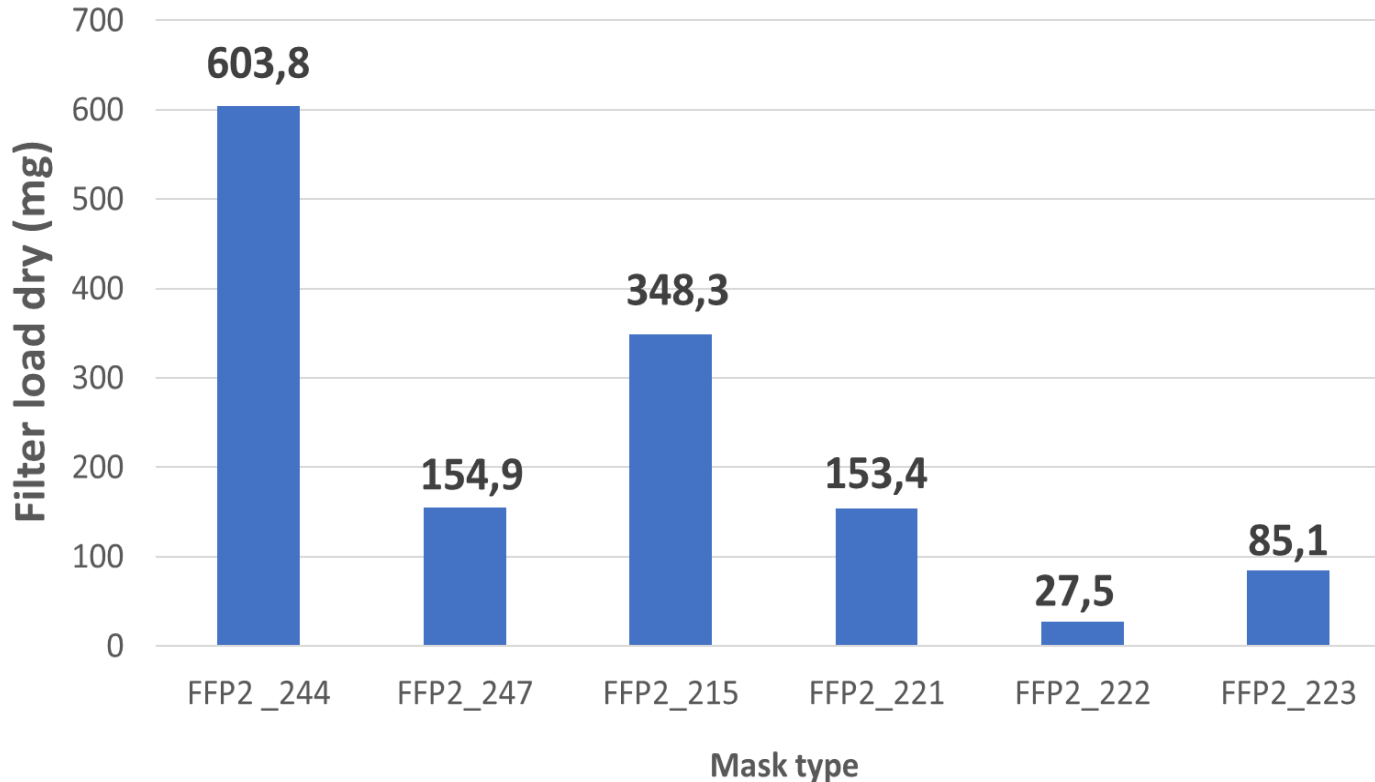
- 35 mg/hr (7 – 65 mg/hr)
- 200 mg in 6 hrs

Avg **total** loading

- 39 mg/hr (11 – 70 mg/hr)
- 200 mg in 5 hrs

UNDERGROUND TRIAL RESULTS

RoofBolt (Both mines)



Avg **dust** loading

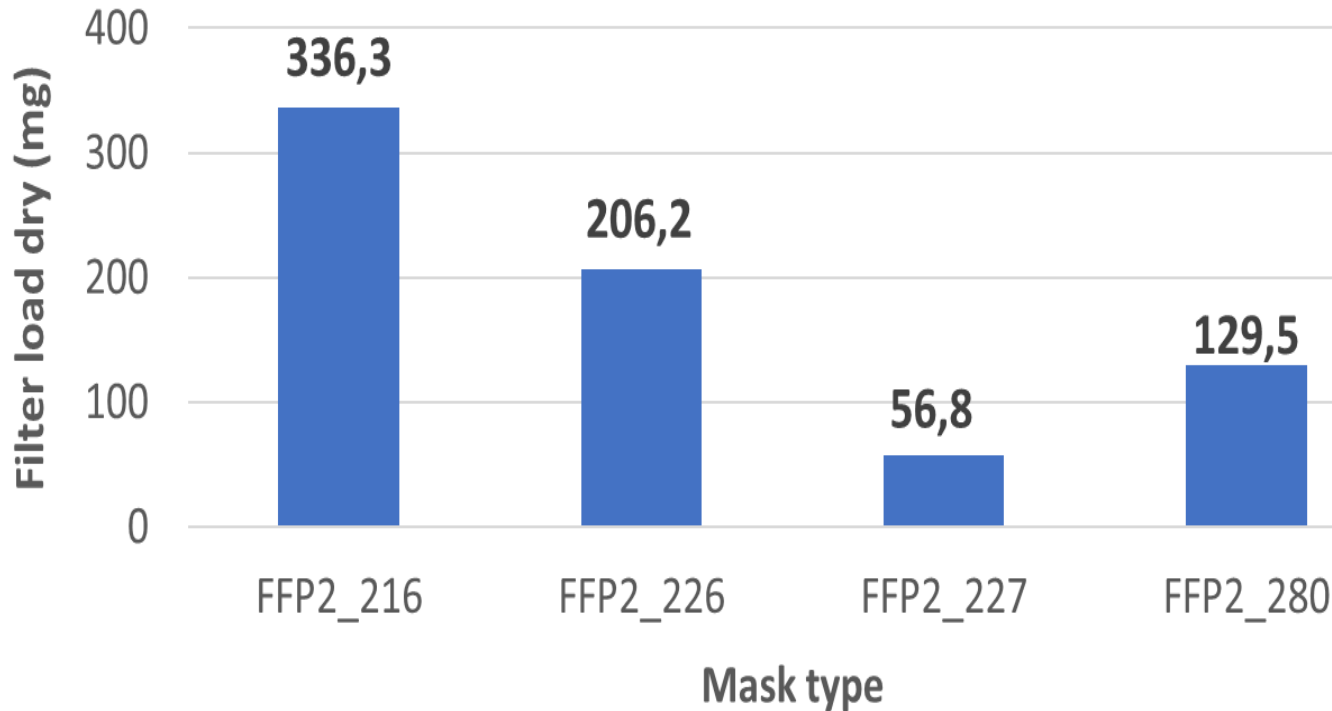
- 46 mg/hr (7 – 95 mg/hr)
- 200 mg in 4 hrs

Avg **total** loading

- 89 mg/hr 31 –242 mg/hr)
- 200 mg in 2 hrs

UNDERGROUND TRIAL RESULTS

LHD (Both mines)



Avg **dust** loading

- 51 mg/hr (13 – 90 mg/hr)
- 200 mg in 4 hrs

Avg **total** loading

- 116 mg/hr (18 – 340 mg/hr)
- 200 mg in 1.7 hrs

Points of Concern

- Failed Laboratory fit tests
- No set guidelines / procedures
- Average total loading from 18 samples

Occupation	Average time to 200mg (hrs)
CM	3.5
SC	5
RB	2
LHD	1.7

RECOMMENDATIONS

- More underground trials (with shadowing)
- Awareness on proper use
 - Fitting, seal-tests, adjustable straps.
- The Need for proper use
- Review training procedures
- Review record keeping



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