



ISO - Respiratory Protective Devices (RPD)

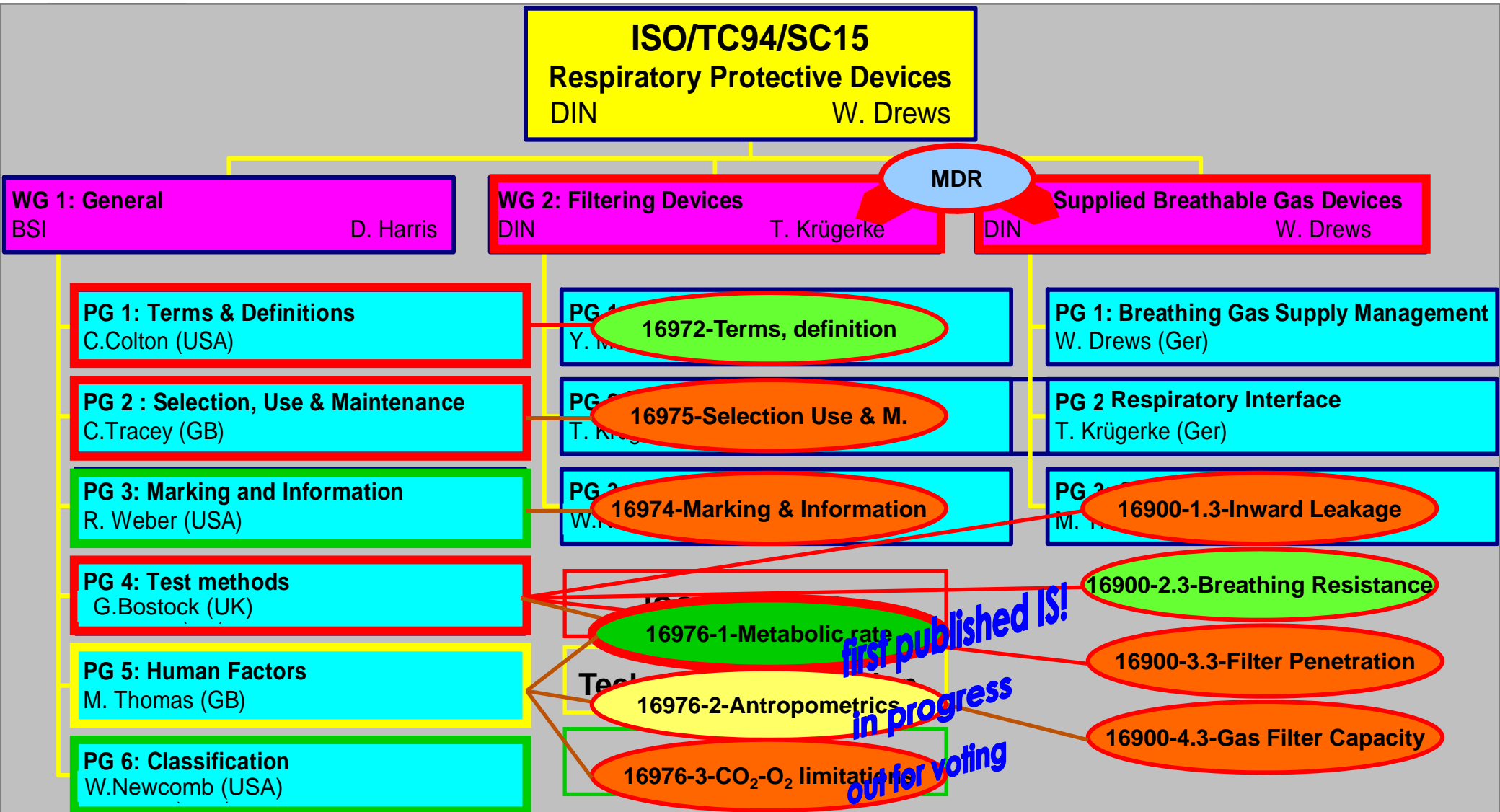
WOLFGANG DREWS
Chairman ISO TC94 SC15

WILHELM WEIHOFEN
Member German Delegation



ISO TC 94 SC 15 - PROGRESS REPORT

ISO-SC 15 STRUCTURE



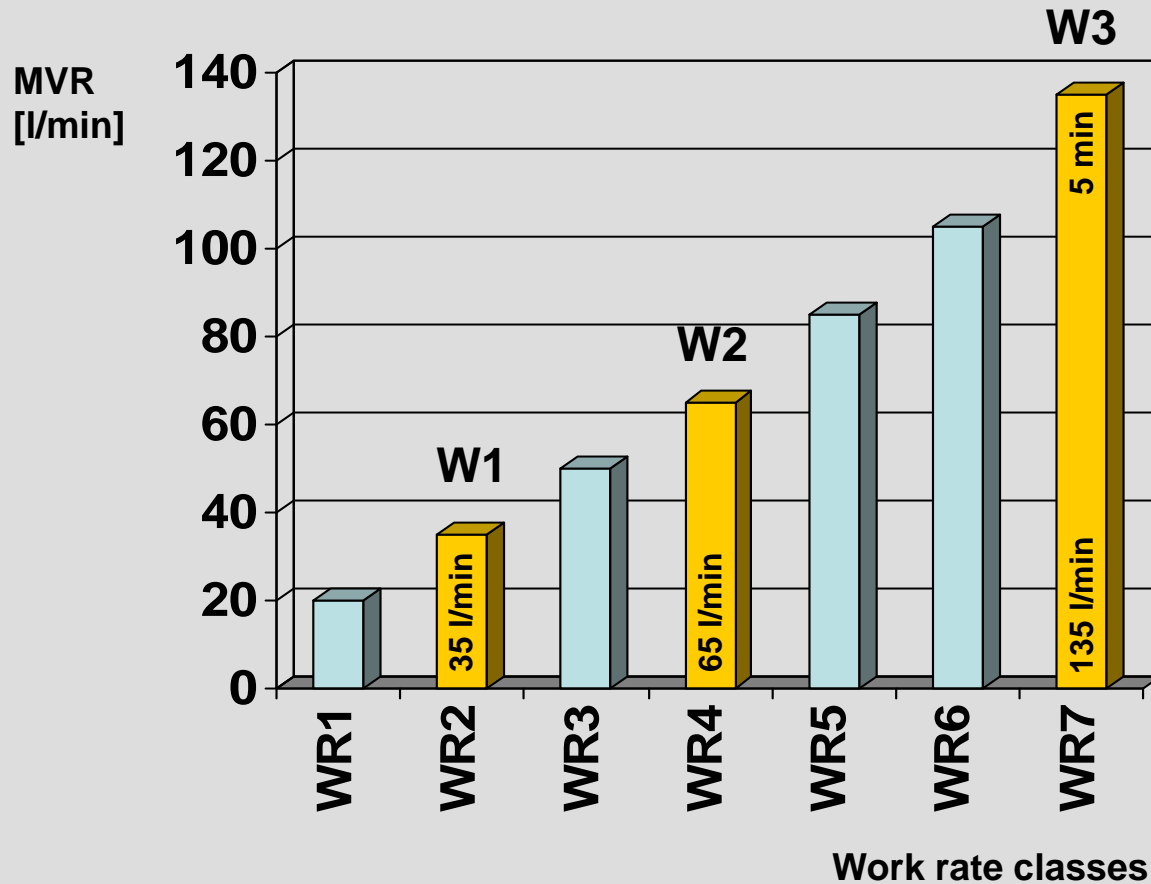


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METABOLIC RATES - SELECTED CLASSIFICATION WR

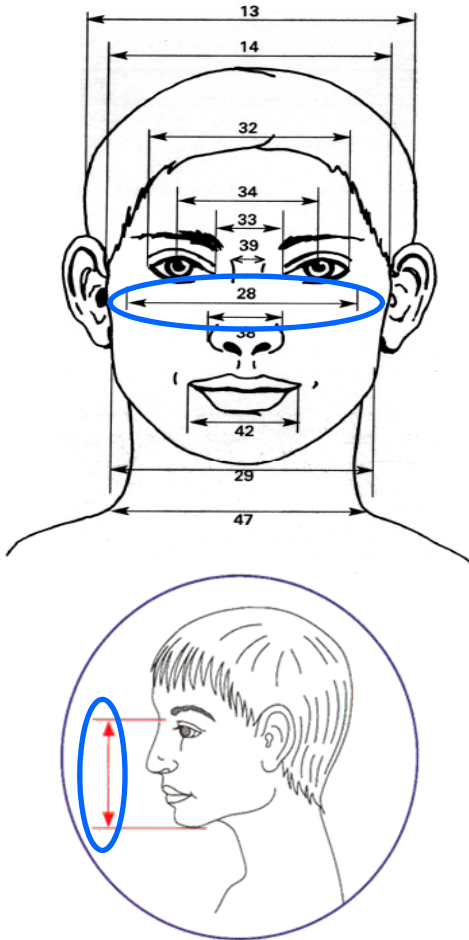


16976-1-Metabolic rate



Range of ISO work rate classes

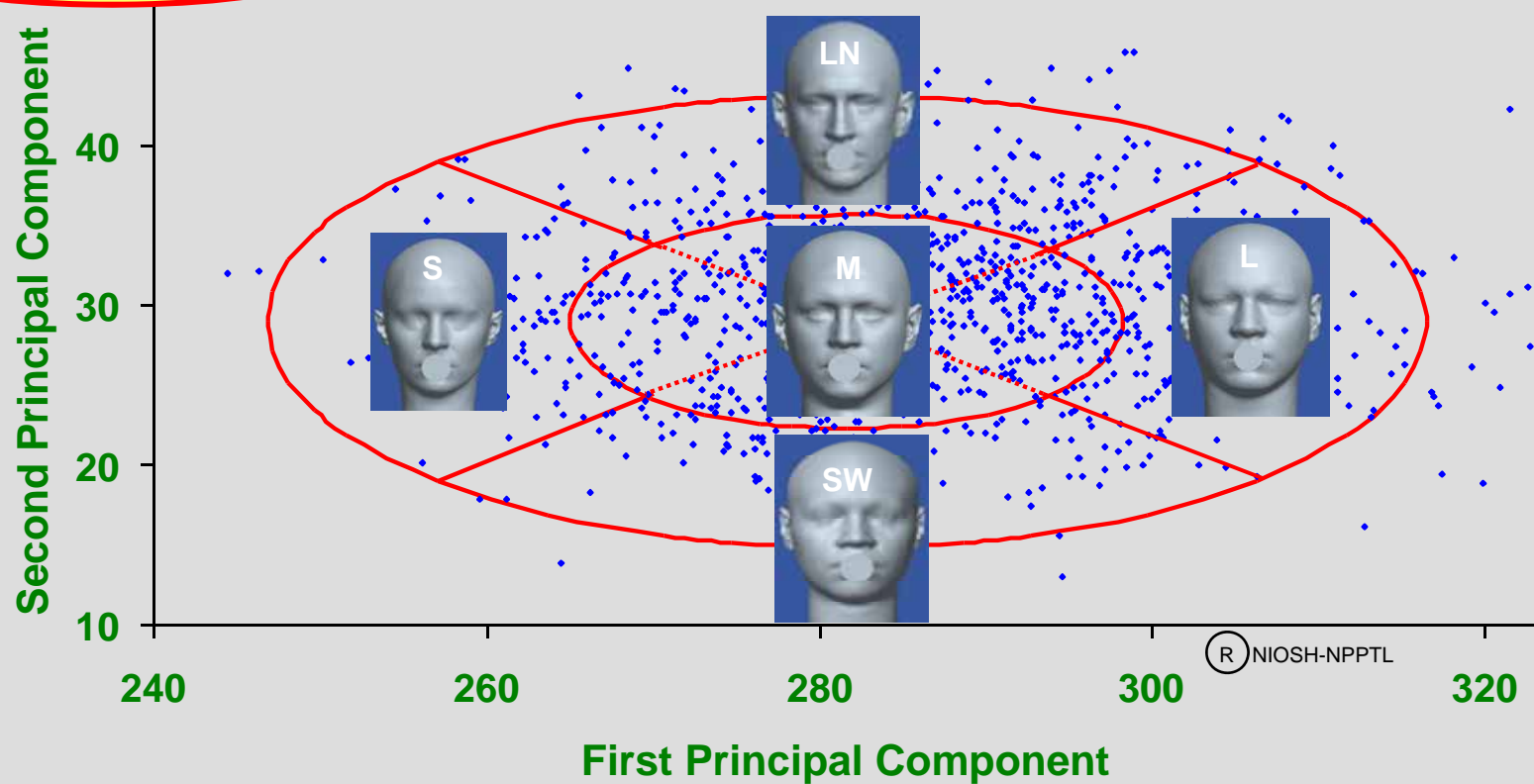
16976-2-Anthropometrics



- 1 Minimum Frontal Breadth
- 2 Face Width
- 3 Bigonial Breadth
- 4 Face Length
- 5 Interpupillary Breadth
- 6 Head Breadth
- 7 Nose Protrusion
- 8 Nose Breadth
- 9 Nasal Root Breadth
- 10 Menton-Subnasale Length

PCA-Panel distribution and 5 head forms

16976-2-Antropometrics



S = small; M = medium; L = large; SW = short/wide; LN = long/narrow

Head forms in relation to segmentation of wearer's distribution



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CLASSIFICATION SCHEME ISO/TC 94/SC 15 RPD



Basic Performance Characteristics

A respiratory Interface and filter with standardized connector shall be marked with their classification and this symbol (⊙) for Standardized connector.

The addition of a + in the classification designation indicates that efficiency test or gas filter validation test is done at 180 l/min; no indication means testing at 110 l/min

Chemical
symbol
Any
Chemical
As specified

F6

99.999

HG

Mercury

1 2 3

PH

Phosphine

1 2 3

F5

99.99

NOX

Nitrous
oxides

1 2 3

FM

Formal-
dehyde

1 2 3

ETO

Ethylene
Oxide

1 2

F4

99.9

OG

Organic
Gases

1

MB

Methyl
Bromide

1 2 3

CO

Carbon
Nonoxide

20 60 180

F3

99

AC

Acidic

1 2 3 4

HCN

Hydrogen
Cyanide

1 2 3 4

CD

Chlorine
Dioxide

1

F2

95

BC

Basic

1 2 3 4

OZ

Ozone

1

HF

Hydrogen
Fluoride

1 2 3

F1

80

OV

Organic
Vapours

1 2 3 4

NO2

Nitrogen
Dioxide

1 2 3

AH

Arsine

1

Minimum
Particle Filter
Efficiency
[%]

Group Gas
Filter Type
Class

Specific Gas Filter Type
Class

Note: XXXX equals the
amount of usable air in
Litres based on a specific
validation test (t.b.d.) to
the nearest 10 litres

SXXXX

Breathable gas
volume in XXXX litres

SY

Y = indication for air
line devices

Supplied Breathable
Gas Capacity

System

Filtration

Breathable Gas
Supply



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CLASSIFICATION SCHEME ISO/TC 94/SC 15 SUPPLIED BREATHABLE RPD



Basic Performance Characteristics

Supplied Breathable Gas Devices Classification

„CCBA 4h“

PL5 W2 S8400

PL6

10000

PL5

2000

PL4

250

PL3

30

W3

Maximal

PL2

10

W2

Very heavy

PL1

4

W1

Moderate

Protection
level

Application
work rate

*Note: XXXX equals the
amount of usable air in
Litres based on a specific
validation test (t.b.d.) to
the nearest 10 litres*

SXXXX

Breathable gas
volume in XXXX litres

SY

Y = indication for air
line devices

Supplied Breathable
Gas Capacity

System

Breathable Gas
Supply



Breathable Gas RPD

Special Application Performance Characteristics

Note: Each special application may require different workrates

CCBA 4h Mining Firefighting

PL5 W2 S8400 MN3

*Note: validated by
work rate*

										MN	5	Underground Mining Explosive				
ES	180, 240, ... 180 minutes and above in increments of 60	FF	4 Structural Firefighting					MN	4 Underground Mining Non-Explosive							
ES	90, 120 90 to 120 minutes in increments of 30 minutes	FF	3 Hazardous Materials	Note: for CBRN several levels will be defined by PG3				MA	3 Marine Fire Fighting	MN	3 Mining Fire Fighting					
ES	40, 50, 60 40 to 60 minutes in increments of 10 minutes	FF	2 Rescue	CBRN	x CBRN	MA	2 Marine Escape	MN	2 Mining Escape			PW	2 Lower than atmospheric			
ES	5, 10, 15, 20, 25, 30 5 to 30 minutes in increments of 5 minutes	FF	1 Wildland Firefighting	CBRN	1 CBRN Escape	MA	1 Marine General	MN	1 Open Cast Mining	AB	1 Abrasive Blasting	WE	1 Welding	PW	1 Higher than atmospheric	
ES	Escape [nominal service life in minutes]	FF	Fire Fighting	CBRN	Chemical Biological Radiological Nuclear	MA	Marine (Shipboard and Offshore)	MN	Mining	AB	Abrasive Blasting	WE	Welding	PW	Abnormal Pressure Work Environment	

Special Applications

Master Document of Requirement - MDR - Section 5

5.1 Respiratory Requirements

5.2 Non-Respiratory Requirements

5.3 Special Application Requirements

5.4 Requirements for Optional Features

5.5 combined or multi-functional RPD

Title: Respiratory Protective Devices (RPD) – Requirements for filtering devices and supplied breathable gas devices excluding underwater diving

Note: this document will be split into Part 1: requirements for filtering devices and Part 2: requirements for supplied breathable gas devices. Requirements for RPD for underwater diving will be handled independently from this numbering.

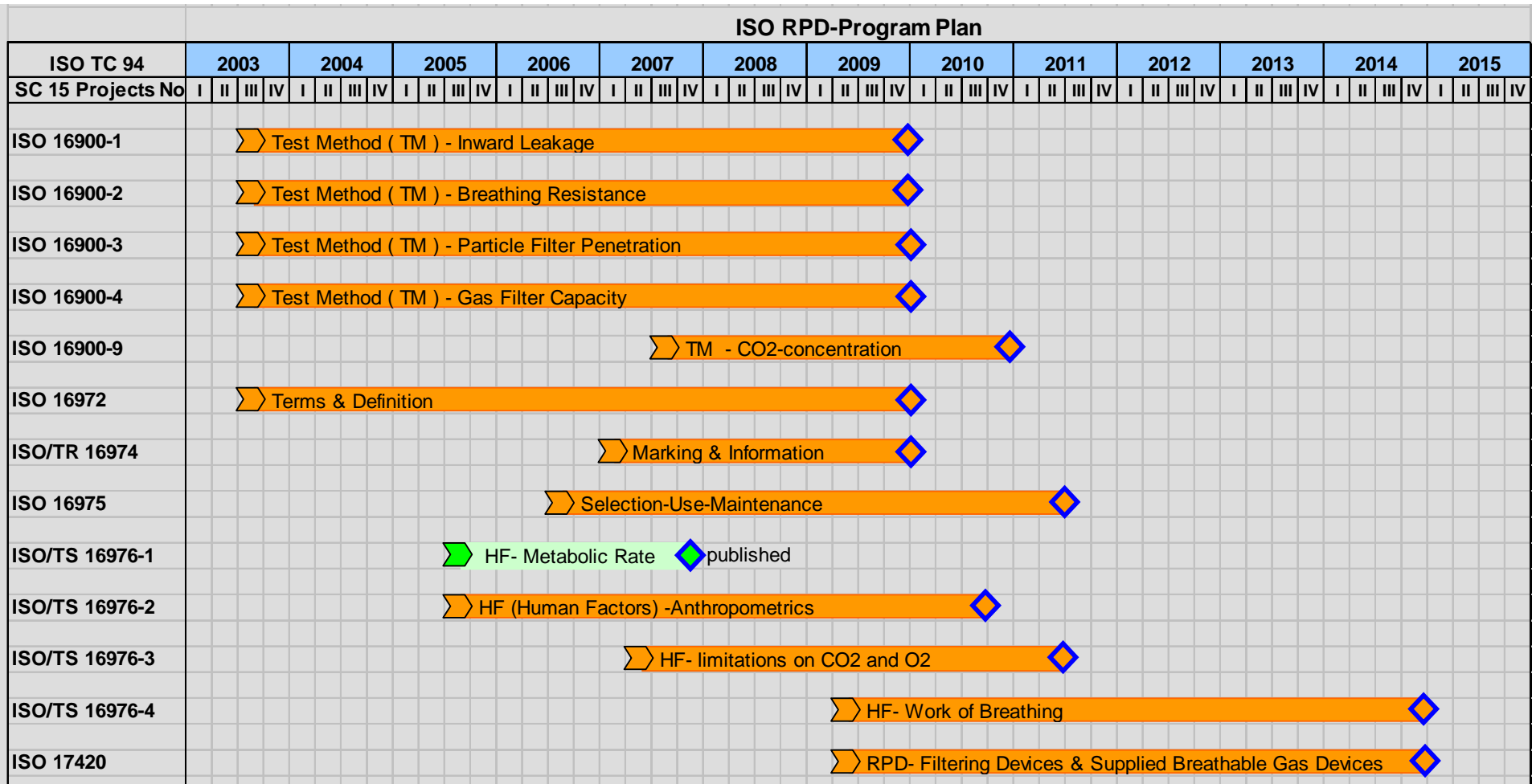
Filtering RPD	Supplied Breathable Gas RPD
1 Introduction	1 Introduction
2 Normative references	2 Normative references
3 Terms and Definitions •Respiratory Requirement- having to do with respiration or the breathing gas quality or quantity •Non-respiratory Requirement – other function of components that do not directly affect the respiration or breathing gas, but may affect the respirator performance •Specific-requirement that are application specific	3 Terms and Definitions •Respiratory Requirement- having to do with respiration or the breathing gas quality or quantity •Non-respiratory Requirement – other function of components that do not directly affect the respiration or breathing gas, but may affect the respirator performance •Specific-requirement that are application specific
4 Classification	4 Classification
5 Requirements The following respiratory requirements and non-respiratory requirements are basic requirements, which have to be fulfilled by all RPD (5.1 and 5.2). In addition specific application requirements have to be fulfilled by RPDs designated for their specific application(s). Some of the specific requirements supersede the related basic requirement, as stated in the specific requirement section (5.3).	5 Requirements The following respiratory requirements and non-respiratory requirements are basic requirements, which have to be fulfilled by all RPD (5.1 and 5.2). In addition specific application requirements have to be fulfilled by RPDs designated for their specific application(s). Some of the specific requirements supersede the related basic requirement, as stated in the specific requirement section (5.3).
5.1 <u>Respiratory Requirements</u> 5.1.1 general When testing one filter of a multiple filter device with the proportioned test air flow, the appropriate performance requirements of this standard are to be met.	5.1 <u>Respiratory Requirements</u>

Special Application Requirement Matrix – page 1 - 2009 06 25

Requirement	Special Application	Escape		Firefighting				CBRN		Marine		Mining						Abrasive Blasting	Welding
		Escape from Fire	Escape except CBRN, Marine and Mining	Structural Firefighting	Hazardous Materials	Rescue	Wildlands Firefighting	CBRN	CBRN Escape	Shipboard and Off-shore	Marine Escape	Underground Explosive Atmosphere	Underground Non- explosive Atmosphere	Open Cast (Pit) Mining	Firefighting & Rescue	Mining Escape			
Abrasion Resistance-Visor				X	X	X	X	X		X		X	X	X	X				
Abrasion Resistance-Abrasive blasting RPD																	X		
Chemical resistance of Materials				X	X			X	X	X					X				
Chemical resistance of Materials-structural				X	X					X					X				
Chemical resistance of Materials-CBRN								X	X										
Resistance to smoke			X	X	X		X	X	X	X	X				X	X			
Six burner flame test				X						X					X				
.1 Six burner flame test- static				X						X					X				
.2 Six burner flame test-dynamic	X						X		X		X					X		X	
Flame Engulfment				X						X					X				
Flame resistance of material				X		X	X	X		X					X			X	
Single burner test	X																		
Intrinsic Safety - explosive atmosphere					X			X	X	X	X								
Intrinsic Safety - firefighting				X						X									
Intrinsic Safety - Mining												X			X	X			
Permeation				X	X	X	X	X	X	X									
Protection to radioactive particles / gases				X	X	X		X	X	X									
Radiant heat															X				
1 Radiant heat (level 1) 1.25 KW/m ² for 30 minutes				X	X	X	X	X		X					X			X	
2 Radiant heat (level 2) 8.0 KW/m ² for 5 minutes				X						X					X				
3 Radiant heat (level 3) 84 KW/m ² for 8 seconds				X						X					X				
Resistance to Biological Agents				X	X	X		X	X	X									
Resistance to hot particles (embers, sparks, ash)				X			X											X	
Resistance to UV (welding)																		X	
Resistance to Water Spray / Splash				X	X	X		X	X	X	X	X	X	X	X	X	X	X	
Performance during exposure to dust				X	X	X	X	X				X	X	X	X	X	X	X	
Submersion				X	X			X		X	X				X				

Special Application Requirement Matrix (SARM)- page 2 – 2009 06 25

Requirement	Special Application	Escape		Firefighting				CBRN		Marine		Mining					Abrasive Blasting	Welding
		Escape from Fire	Escape except CBRN, Marine and Mining	Structural Firefighting	Hazardous Materials	Rescue	Wildlands Firefighting	CBRN	CBRN Escape	Shipboard and Off-shore	Marine Escape	Underground Explosive Atmosphere	Underground Non-explosive Atmosphere	Open Cast (Pit) Mining	Firefighting & Rescue	Mining Escape		
Heat resistance of material 260°C				X			X			X					X			
1 Temperature of operation -32 to +71°C continuous				X	X	X	X	X	X	X	X	X	X		X	X		
2 Temperature of operation 100°C (30 minutes)				X	X	X	X	X	X	X	X	X	X		X	X		
3 Temperature of operation 255°C (5 minutes)				X						X					X			
4 Temperature of operation 950°C (10 seconds)				X						X					X			
Connections other than to the Respiratory Interface				X	X	X		X		X		X	X	X			X	
Vibration Resistance				X	X	X	X	X	X	X	X	X	X	X	X	X		
Material avoidance of frictional sparks				X	X	X		X	X	X	X	X			X	X		X
Ready to use packaging			X					X	X		X					X		
Antistatic properties				X	X	X		X	X	X	X	X			X	X		
Enhanced Corrosion Resistance					X	X		X	X	X	X	X	X		X	X		
1 Enhanced Corrosion Resistance - Intermittent test												X	X	X	X	X		
2 Enhanced Corrosion Resistance – Constant test																		
3 Enhanced Corrosion Resistance – Acidic test																		
Practical performance according to its class				X	X	X	X	X				X	X	X	X	X		



RPD Program Plan



THANK YOU FOR YOUR ATTENTION!