TECHNICAL UNIVERSITY OF LIBEREC
Institute for Nanomaterials, Advanced Technologies and Innovation

Test protocol			
Test code	filter EN 143 149 14683		
Type of test:	Flat sheet sample according to EN 149, EN 143, EN 14683		
Customer	Rentier holding a.s.		
Laboratory:	Technical University of Liberec, CXI, INTEC		
Tester:	Jakub Hrůza		
Date of test:	29 October 2020	Signature:	

Test parameters	Value	Unit
filter area:	100	cm^2
face velocity:	15,50	cm/sec
dust/aerosol:	DEHS	-
discharge:	no	-
downstream test duration	60	sec
total volume flow:	95,00	l/min
particle size range	0,12 – 3,5	µm
number of test samples	3,00	-
temperature	21	°C
relative humidity	54	%
atmospheric pressure	1010	mbar

Test filter parameters	
Sample:	Description
type: R3 a	
type: R3 b	
type: R3 c	
type: R5 a	
type: R5 b	
type: R5 c	
type: R1 a	
type: R1 c	
0	
0	
0	

Tested properties	
Δp0 95 (Pa)	Initial pressure drop fro flow 95 l/min
Δp0 30 (Pa)	Initial pressure drop fro flow 30 l/min
BFE (%)	Estimation of efficiency for particle size 3 μm according to EN 14683.
E (0,6 μm)	Efficiency for particle size 0.6 μm - estimation of efficiency according to EN 143 or EN 149

Test results

Sample:	Δp_0 95 (Pa)	Δp_0 30 (Pa)	Δp_0 160 (Pa)	E (0,6 μm)	BFE (%)	Estimated class (EN 149)
type: R3 a	**263,0**	**129,0**	**755,0**	**97,04**	**100,00**	**high pressure**
type: R3 b	**273,0**	**129,0**	**831,0**	**97,32**	**100,00**	**high pressure**
type: R3 c	**273,0**	**126,0**	**747,0**	**96,20**	**100,00**	**high pressure**
type: R5 a	**213,0**	**90,0**	**408,0**	**91,28**	**100,00**	**high pressure**
type: R5 b	**216,0**	**87,0**	**410,0**	**94,02**	**100,00**	**FFP2 high pressure**
type: R5 c	**212,0**	**82,0**	**375,0**	**93,06**	**100,00**	**FFP2 high pressure**
type: R1 a	**900,0**	**1600,0**	**5100,0**	**99,25**	**100,00**	**high pressure**
type: R1 b	**200,0**	**200,0**	**1400,0**	**99,61**	**100,00**	**high pressure**
type: R1 c	**800,0**	**400,0**	**4000,0**	**98,18**	**100,00**	**high pressure**
0	**0,0**	**0,0**	**0,0**	**0,00**		
0	**0,0**	**0,0**	**0,0**	**0,00**		
0	**0,0**	**0,0**	**0,0**	**0,00**		

Result conclusion

All samples have too high pressure.

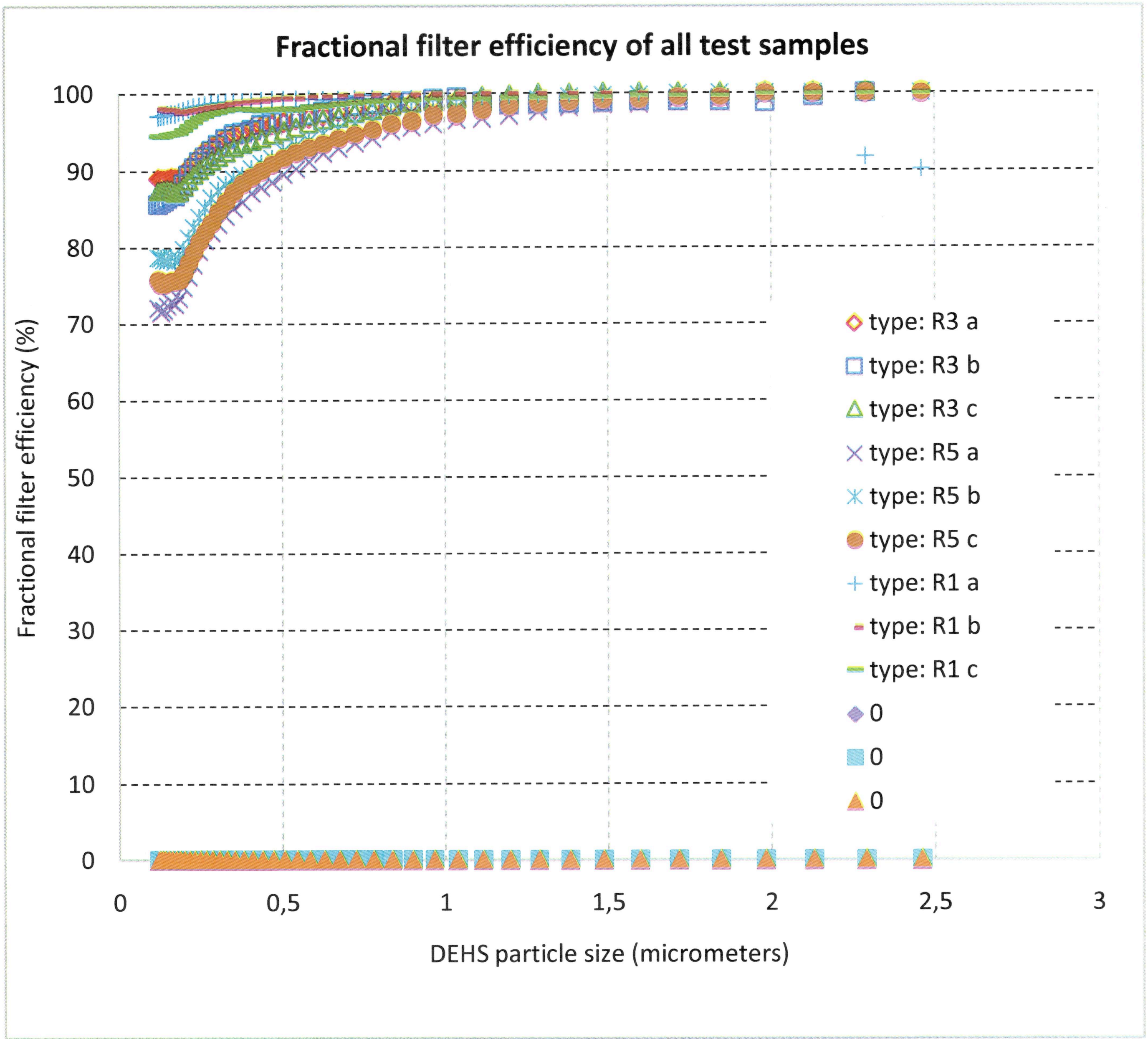
Classification according to EN 149 standard (EN 143)

Maximum pressure drops (Pa)			
Class	flow 30 l/min	flow 95 l/min	flow 160 l/min
FFP1	60	210	300
FFP2	70	240	300
FFP3	100 (120 for EN 143)	300 (420 for EN 143)	300

Minimum filter efficiency for particle with mean size 0,6 µm (%)		
Class	Sodium chloride particles	Parafin oil particles
FFP1	80	80
FFP2	94	94
FFP3	99	99

Classification according to EN 14683 standard

Class	minimum efficiency of 3 µm droplets with bacteria	Maximum pressure drop for air velocity 5,3 cm/sec (Pa)	Minimum splash resistance pressure (kPa)
Type I	95	40	no
Type II	98	40	no
Type IIR	98	60	



Fractional filter efficiency of all test samples
Fractional filter efficiency (%)
DEHS particle size (micrometers)
100
90
80
70
60
50
40
30
20
10
0
0
0,5
1
1,5
2
2,5
3
type: R3 a
type: R3 b
type: R3 c
type: R5 a
type: R5 b
type: R5 c
type: R1 a
type: R1 b
type: R1 c
0
0
0