

Total risk matrix regarding dangers for humans for Filmetrics F20 – Reflectometer

Very Serious (E)					
Serious (D)	2, 3				
Moderate (C)					
Small (B)		1			
Very small (A)					
Cons. ↑ Propab. →	Very small (1)	Small (2)	Average (3)	High (4)	Very high (5)

The colours show areas with evaluated risks which are acceptable (green), considerable, measures should be taken (yellow) and not acceptable, measures MUST be taken to reduce the risk (red).

Description of Consequences

A => Very small	Security / immediate damage to people => damage which requires first aid only	environmental consequences => insignificant damage and short restitution time
B => Small	=> damage which requires professional medical attention	=> less damage and short restitution time
C => Moderate	=> serious damage /illness	=> less damage but long restitution time
D => Serious	=> Serious damage/illness with possible inability to work	=> long lasting damage with long restitution time
E => Very serious	=> Death	=> long lasting and not reversible damage

Description of Propability

1 => Very small	=> Ca. one incident in 50 years or less often
2 => Small	=> Ca. one incident in 10 years or less often
3 => Average	=> Ca. one incident per year or less often
3 => High	=> Ca. one incident per month or less often
4 => Very High	=> weekly

Risk evaluation of Filmetrics F20 – Reflectometer

Participants during risk evaluation (+function): Søren Heinze (Chief engineer and instrument responsible)

The responsibility for all described risks lies at the NTNU NanoLab leader and this document is approved by him or her:

ID	Activity/Name	Description (involved dangers and consequences)	Law, regulation	Existing safety measures	Existing documentation and other comments	Probability (1-5)	Consequences (A-E)	
							Humans (A-E)	Environment (A-E)
1	Intense light	At the end of the light fibre intense light is emitted which may cause eye damage		=> The end of the light fibre is mounted in a way that it is pointing down => the area of emission is very small and must be pointed directly towards the eye to cause damage => During the instrument course the users are made aware of the intense light source	Course and manual	2	B	--
2	Potentially dangerous voltages	Potentially dangerous electrical currents, might be present in the inside of parts of the machine while power is connected to the instrument, which could cause an electric shock if a cover is removed from the main unit and internal parts are touched	Law regarding service at and work with electrical constructions and equipment (Lov om tilsyn med elektriske anlegg og elektrisk utstyr)	'=> users are not allowed to remove covers from the instrument or parts of it => parts of the machine must just be opened to replace the lamp => such work will just be done by properly trained engineers => the power cord will be unplugged prior work that requires the removal of covers	Course and manual	1	D	--
3	Danger for fire	If the lamp housing is covered or if the ventilation slits are blocked heat may accumulate which could start a fire.	Fire regulations	=> During the instrument course the users are made aware to not cover the ventilation slits or the lamp housing => Under normal operation the lamp housing will get hot	Course and manual	1	D	--