

clean area product selector

Clean Room Lighting Considerations

Lighting in Clean Rooms and Sterile Environments must address two key factors to satisfy regulatory bodies like the FDA. (Food and Drug Administration).

Firstly; will the luminaire protect the room from void contaminants? This requires luminaires to have the correct and independently certified IP rating on both front frame and body. Installation methods must also ensure full and even compression of luminaire seals against ceilings.

Secondly; are luminaires suitable for a sterile environment? To achieve this, luminaires must be easy to clean with minimal grooves and crevices and meet ISPE (International Society of Pharmaceutical Engineering) Baseline Guide recommendations for different classes of room. Seals should be bacterially inert and in more critical rooms luminaire frame fixings should be tightly capped. Luminaire components must be resistant to sterilising chemicals (glass diffusers are fully resistant but thermoplastic diffuser materials which can be attacked could be preferred only if ceiling loading is an issue).

Additional considerations include the need to maximise light output, as space in clean room ceilings is limited. To satisfy section 6, B2 of the Building Regulations, TP(a) diffusers are required in recessed luminaires in rooms over 30m² and this reduces light output. T5 lamps help address this problem and make higher lumen packages available while extending lamp life to 24,000 hours and ensuring good colour rendition.

To ensure luminaires do not generate particles (i.e. corrosion or paint shedding), all our clean room luminaires use extruded aluminium frames (recommended in the ISPE guide) and are painted as standard to a depth of 120µm baked at 180°C for a hard durable scratch resistant finish.

So we can assist in selecting the best luminaire, it is helpful to have the following information:

- Room classification, activity and IP/IP (frame on/frame off) rating required.
- Is the environment bio-hazardous? If so please provide details.
- Front or back access? (Will lamps be changed from inside the room or from the room above).
- Is the ceiling non-modular prepared aperture or a modular T bar ceiling?
If non-modular how thick is the ceiling panel?
- If capping is used to strengthen around prepared apertures on non-modular ceilings how far does this extend below the ceiling? (Curie and DTFN conceal up to 15mm of capping).
- On non-modular ceilings, is the standard suspension method suitable? If not, is a deeper ceiling bracket or special suspension method required?
- Is the room area >30m²? In which case TP(a) diffuser materials are normally necessary in the UK. In smaller rooms and certain export markets TP(b) may be acceptable.
- Does the room have computer screens and is a louvre needed?
- If a thermoplastic diffuser is being considered, what chemicals and sterilising compounds are present?
- On Spring T ceilings a recessing panel must be ordered if it is necessary to maintain room integrity to the void to IP65.

National and international standards comparison chart

Country	USA		EU	ISO		France	Germany	Australia
Standard	209D	209E	GGMP	BSEN 14644-1	BS5295	AFNOR X44101	VD I.2083.3	AS 1386
Date of issue	1988	1992	1997	1999	1989	1981	1993	1989
				2				
	1	M1.5		3	C		1	0.035
	10	M2.5		4	D		2	0.35
	100	M3.5	A&B	5	E, F	4000	3	3.5
	1,000	M4.5		6	G, H		4	35
	10,000	M5.5	C	7	J	400,000	5	350
	100,000	M6.5	D	8	K	4,000,000	6	3500

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STANDARD		PRODUCT					
FS209D	EU GMP	Curie	DTFN	DTFA	Lister ²	DTBY	DTFN TA
	1997	Elite	Elite	Elite			Elite
		IP65/65	IP65/54	IP65/54	IP65/20	IP65	IP65/54
1							
10							
100	A&B	•					
1,000		•	•	•			•
10,000	C	•	•	•		•	•
100,000	D	•	•	•	•	•	•
Unclassified	Unclassified	•	•	•	•	•	•
CONTAINMENT							
ACDP 1-2		•	•	•			
ACDP 3-4		•					
CEILING COMPATIBILITY							
Prepared aperture ceilings (See product pages for thickness range)		•	•		•		•
25mm Exposed T				•	•		
Spring T (Order a recessing panel if it is necessary to maintain room integrity)				•	•		
Surface Mounted						•	
Page		346	352	348	356	359	332

Clean room luminaires are designed on the assumption there will be a positive pressure regime in the room. Containment facilities operate at a negative pressure & particularly in the case of levels 3 & 4, present a considerable hazard if any escape occurs from the room. For these applications we would request further details.



Curie Elite



DTFN Elite



DTFA Elite



Lister²



DTBY



DTFN through access
see Healthcare section
page 332