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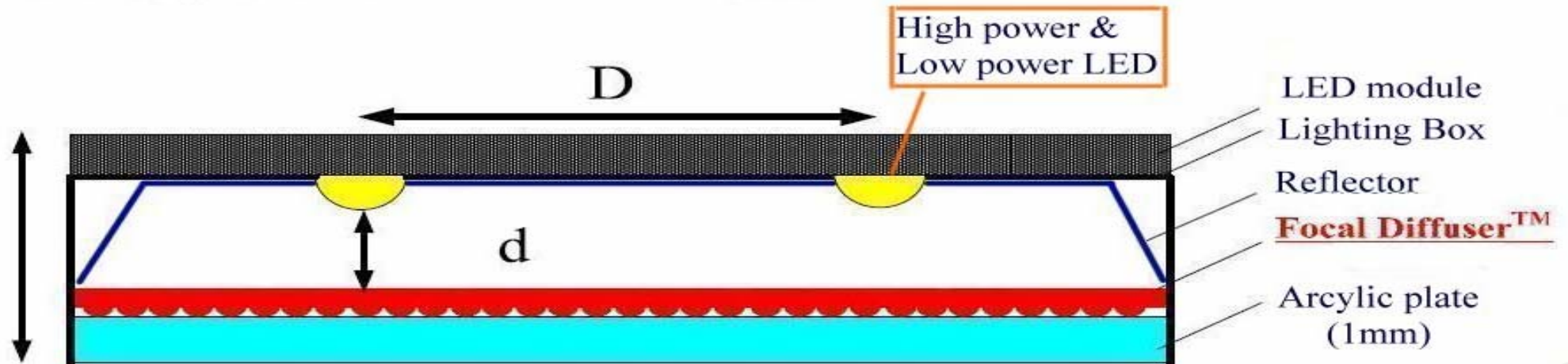
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Attention for the Usage of Focal DiffuserTM

- Focal Diffuser is called FD in shortening.
- FD should be set in front of light source. The structured surface should be on the outside, and the non-structured surface is on the inner side (i.e. Light irradiation side)
- Please follow the rule of “space ratio” to set up the distance from FD to LED light source.
- You should assemble FD to lamps in class 10000 clean room, and do not touch its micro-structured surface.
- FD is prohibited from pressing which will cause damaging to the structure on the surface.
- FD needs to be protected so that can prevent from scratching and damaging.
- FD is prohibited from using any kind of solvents.
- By using the reflector to fit FD, the function of FD can fully perform excellent

Focal Diffuser™ space ratio

Skeleton drawing of LED luminaire loading Focal Diffuser Film™



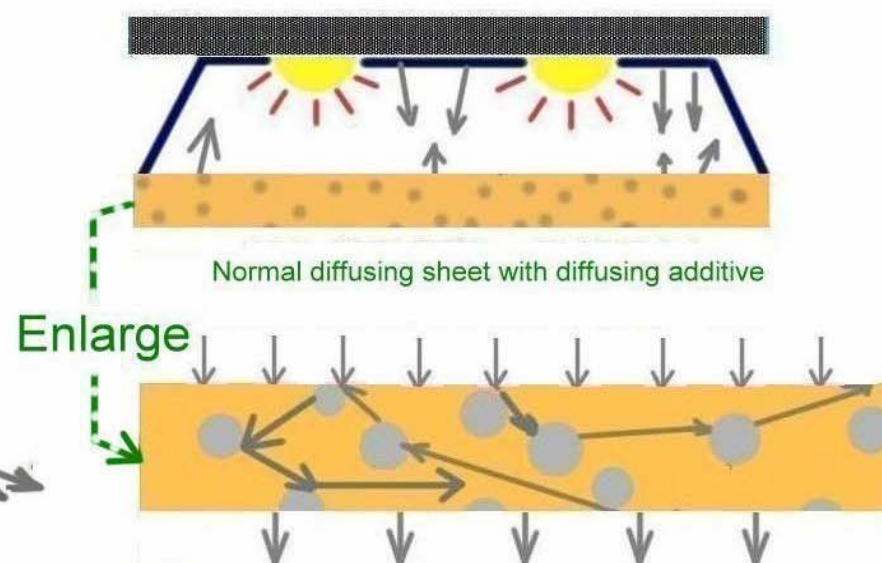
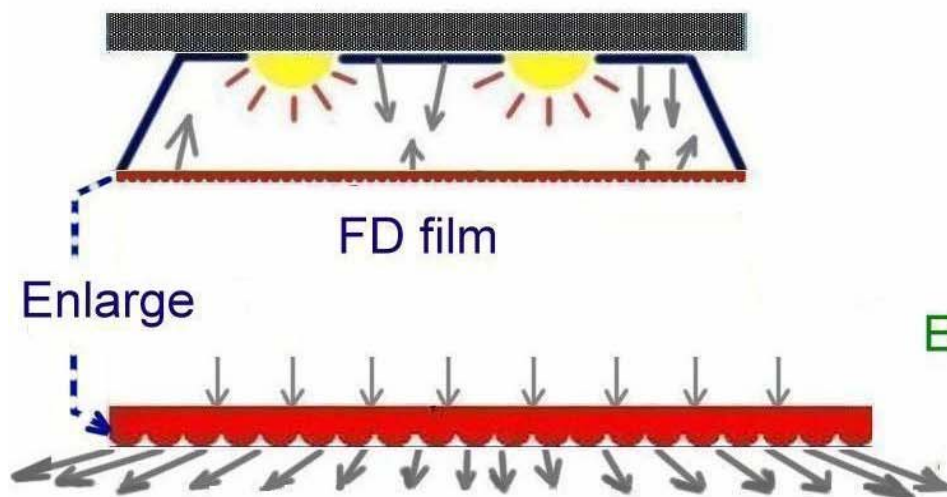
The Rules Of Design Space Ratio $(d/D) > 0.33$

D : LED spacing (dot to dot) d : LED to FD film (the distance)

●Remark	1.	FD can fit no matter high or low power LED.
	2.	The luminance of the surface can be adjusted according to the diffused area. (Enlarging the measurement of area of the FD film with the geometric proportion at the same measure of light can reduce the luminance of FD surface and make the light more comfortable.) (same as the relation between the pressure and the measurement of area)
	3.	You must add the device of high efficiency reflector to reflect LED light.(Higher reflection rate can get higher light efficiency.)
	4.	Fit for any kind of LED light source and any luminous angle.
	5.	Acrylic is the protective layer to keep FD structure away from scratching and polluting.
	6.	The thickness of lamps depends on d/D value. If the light can be recycled and reflected entirely, the d/D could be every value bigger than 0.33. But actually the light couldn't be efficiently recycled and reflected entirely, we recommend the d/D should be under the range from 0.33 to 2.

※ Please be sure to obey the rules of design, and FD can be performed perfectly.

FD compares with the normal Diffuser plate with diffusing additive



- Micro-structured on FD surface makes no lose of the light efficiency with multi-collisions. Light reflects in the structure regularly and the rates of light recycling and reusing are extremely high.
- There are many kinds of micro-structured diffuser sheets or films in current market (pyramid type, diamond type, pillar type, V shaped mirror.....), but they can't change the light source perfectly from point to area. As a result, we can not use single piece of diffuser sheets or films to deal with the problems such as glare, multiple shadows, and light efficiency at the same time.
- Due to high luminance on the surface, people misunderstand the glare does not be eliminated

- Light is transmitted inside the diffuser plate, and irregular reflects after colliding with the additive particle. Under the situation, light can't be recycled and reused completely and reflects out with majority consumption.
- If you reduce diffusing additive to raise the light efficiency, the light spots will show and glare and multi-shadows will not be eliminated.
- Generally speaking, we will use the "Mean Free Path" in modern physics to explain the light as a particle in Wave Optics. More collision will reduce more light efficiency. Normal diffusing additives produce more discrete differentiation of multi-phase refraction, and the "mean free path" of light is much more than in the transparent material. (The concept is like the fuel consumption different from driving on high way to downtown roads)

Light Efficiency is 90% - 95%

Light Efficiency is only 50% - 60%