

The American National Standards Institute(ANSI)
4가

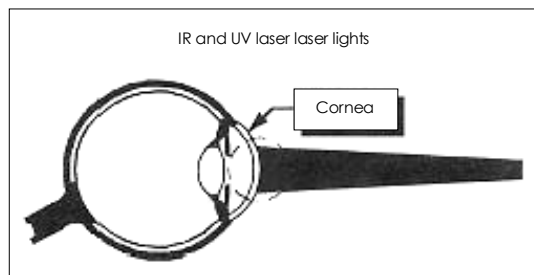
Class : 눈에 대한 위험
Maximum Permissible Exposure(MPE) FDA 1984~1989 134 Roc.kwell
1964~1994 272
Self - contained unit 75% 73%가
3)
Class : a :가 1000
b :가 (far - infrared)
0.25 1 mW (vitreous)
가 He - Ne alignment ()
(CO2 Nd : YAG) (Fig. 1).
laser pointer Argon, KTP/532, krypton 가

Class : Class a Class 1 , (fovea)
mW 가
aim beam 0.5
(blind spot)

Class b CW 0.5 W (Fig. 2). Diode Laser, Nd : YAG, Ho : YAG
intra - beam

infra - red solid - state 가
가
가
Class : 0.5 W

. CO2 laser
ser



la- Fig. 1. Far-infrared lasers with wavelengths greater than 2000 nm and ultraviolet lasers with wavelengths less than 400 nm are completely absorbed by the cornea and may damage the cornea. Prolonged exposure to infrared lasers allows penetration to the lens and may result in cataracts.

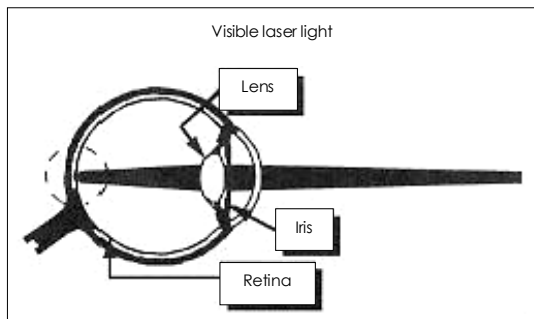


Fig. 2. Visible lasers with wavelengths between 400 and 800 nm are particularly hazardous to the retina. These visible lasers beams are focused by the cornea and lens to an extremely small point on the retina.

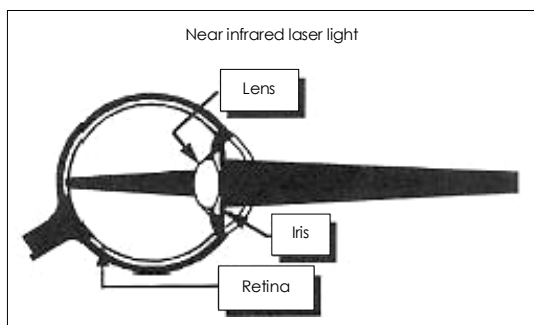


Fig. 3. Near infrared lasers with wavelengths between 800 and 2000 nm may damage the cornea, lens, and/or retina. Like visible laser light, the near infrared laser beams are also focused by the cornea and lens before impinging on the on the retina.



Fig. 4. This is the home-made version of the product of eye pads with metal foil eye cover. Saline soaked pads are placed over the patient's eyes. Then aluminum foil is taped over the pads to prevent laser irradiation from reaching the eyes.

800~2000 nm (near infrared) (Fig. 3).

maximal permissable corneal exposure(MPE)가 MPE가 (Fig. 4).

10 μmeter intra-beam exposure

가
10 μmeter
4)
extended source
Extended source 가 intra-beam exposure

5)
Class b
(goggle side shield가 (filter)가

in- tra-beam exposure
가 shutter

ANSI 가

장시간 노출 10 가 (char formation) drape drape

photochemical effect가

보호안경 가 가스 색전증(Gas embolism) Nd : YAG fiber 가 가 가

tra - beam MPE in- (gas - cooled) fiber 7)

side shield가) 레이저 연기(Plume) 가 0.1 mi- crometer (bronchioli), (alveoli) asbe- 8)9)

optical density가 intra - beam stos 10) Garden

argon laser optical density 10 HPV DNA

CO2 laser 15 (evacuator) 가 , 가 (guide beam) 2~5 cm (wall su- ction) 0.3 micrometer filter

피부에 대한 효과 가 mask(0.3 micrometer filtration) CO2 . Q - swi- tched laser가 mask tube, conne- ctor, adapter

(density of the beam)

반사되거나 잘못 방출된 레이저
가

레이저 기도수술의 마취 관리

가 CO2, Nd : YAG 가

가 CO2 fiberoptics firing (rigid) firing Nd : YAG KTP fiberoptics¹³⁾

Nd : YAG 5~7 mm 가 Nd : YAG 가 CO2 holmium Nd : YAG (contact mode) 가가 가

() platform 가

화재와 전기 위험

가 100 가 1~2 10~20¹¹⁾ (drape) 가 가¹²⁾ 가

상기도 수술

가 insufflation technique 가 가 가 가¹⁴⁾¹⁵⁾ Jet ventilation 가 가 (pneumomediastinum), (barotrauma)가

14) 가 . Xomed Laser Shield
 IITM , Rusch red rubber
 가 20) 86 59
 5~6 mm
 가 20,000 15
 가 15 6
 가 21)

16) 하기도 수술
 cuff 가
 cuff CO2 rigid
 17) side port
 red rubber, silicon rubber
 가
 bber polyvinyl chloride(PVC)가
 PVC 가
 18) (radio - opaque) 가
 Nd : YAG KTP
 19) cuff 가

19) Jet ventilation과 high frequency ventilation
 Jet 가 catheter
 Jet
 Xomed tube : 60~120
 Bivona tube : (tracheostoma) High
 Mallinkrodt : PVC frequency jet ventilation(HFJV)
 PVC 가 gas ,
 metal 가 가 HFJV ,
 가 가 가 가
 torch) 가 (blow- HFJV
 40% 17)

Tracheal fire management

commission on the Accreditation of Healthcare Organizations(JCAHO) ANSI

가
가

- 1.
- 2.
- 3.

레이저 위원회의 설치 및 역할

mask

protocol

가

(la-

vage)

(mechanical ventil-

ation),

가

(PVC)

(adult

respiratory distress syndrome)

가 LSO(laser safety officer,
)

LSO

가

의료기관과 의료인의 안전한 레이저 사용

1990

가

가

LSO

protocol

레이저 훈련과 요원의 구성

가

American National standards Institute

(ANSI)가

22)

Joint

:

(power), orientation
orientation

통제구역에서의 사용

20
8 10 Hands - on
Hands - on
가 (CO2
23)24) sign
sign

1

레이저 기자재의 Orientation과 시운전

ori- mode
entation
가 " Ready "mode " Stand - By "
fiber cali-
bration fiber, handpiece, waveguide
aiming beam therapeutic beam

:

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