

**Photography of Al Camp, Stu Levy, Ken Smith, Pat Morrissey,  
Paul Roark, Lynn Radeka**

**Handy Film Reciprocity Charts**

Tri-X Pan film ([Bruce Barnbaum suggested times\\*\\*](#))

Metered Exposure 曝光时间	Required Exposure 补偿后的曝光时间	<u>Contrast Increase*</u> 反差增加值
2 seconds	3 seconds	N+1/2
5 seconds	8 seconds	N+1/2
10 seconds	18 seconds	N+1/2
15 seconds	30 seconds	N+1
20 seconds	45 seconds	N+1
30 seconds	75 seconds	N+1
1 minute	3 minutes	N+1 1/2
2 minutes	7 minutes	N+1 1/2
4 minutes	16 minutes	N+1 1/2
10 minutes	50 minutes	N+2
20 minutes	2 hrs, 20 min.	N+2
30 minutes	4 hours	N+2

**\*Contrast Increase:**

\*Shown is approximate contrast increase due to reciprocity failure and extended exposure. For example, if contrast increase is N+1 for an exposure, then with normal film development the negative will increase in contrast as if you had a N+1 development. Give the negative a N-1 development to compensate for the contrast increase due to the long exposure. However, sometimes you may want to increase contrast of a low contrast scene and give a negative normal development instead of a compensation development.

\*\*Source: [Barnbaum, Bruce](#). The Art of Photography: An Approach to Personal Expression. Kendall/Hunt Publishing Co., Iowa. 1994. pp77. ISBN 0-8403-9647-3

T-Max 100 film ([Bruce Barnbaum suggested times\\*\\*](#))

Metered Exposure 曝光时间	Required Exposure 补偿后的曝光时间	<u>Contrast Increase*</u> 反差增加值

<b>2 seconds</b>	<b>2.5 seconds</b>	<b>N+1/2</b>
<b>5 seconds</b>	<b>7 seconds</b>	<b>N+1/2</b>
<b>10 seconds</b>	<b>15 seconds</b>	<b>N+1/2</b>
<b>15 seconds</b>	<b>24 seconds</b>	<b>N+1/2</b>
<b>20 seconds</b>	<b>33 seconds</b>	<b>N+1/2</b>
<b>30 seconds</b>	<b>50 seconds</b>	<b>N+1/2</b>
<b>1 minute</b>	<b>2 minutes</b>	<b>N+1</b>
<b>2 minutes</b>	<b>4.5 minutes</b>	<b>N+1</b>
<b>4 minutes</b>	<b>10 minutes</b>	<b>N+1</b>
<b>10 minutes</b>	<b>28 minutes</b>	<b>N+1 1/2</b>
<b>20 minutes</b>	<b>65 minutes</b>	<b>N+1 1/2</b>
<b>30 minutes</b>	<b>1 hr. 50 min.</b>	<b>N+1 1/2</b>

\*Shown is approximate contrast increase due to reciprocity failure and extended exposure. For example, if contrast increase is N+1 for an exposure, then with normal film development the negative will increase in contrast as if you had a N+1 development. Give the negative a N-1 development to compensate for the contrast increase due to the long exposure. However, sometimes you may want to increase contrast of a low contrast scene and give a negative normal development instead of a compensation development.

\*\*Source: [Barnbaum, Bruce. The Art of Photography: An Approach to Personal Expression](#), Kendall/Hunt Publishing Co., Iowa. 1994. pp77. ISBN 0-8403-9647-3

**T-Max 100 film ([Photo Technique Magazine suggested times\\*\\*](#))**

<b>Metered Exposure 曝光时间</b>	<b>Required Exposure 补偿后的曝光时间</b>	<b>Contrast Increase* 反差增加值</b>
<b>2 seconds</b>	<b>2.5 seconds</b>	<b>N</b>
<b>4 seconds</b>	<b>6 seconds</b>	<b>N</b>
<b>5 seconds</b>	<b>7 seconds</b>	<b>N</b>
<b>8 seconds</b>	<b>11 seconds</b>	<b>N</b>
<b>10 seconds</b>	<b>15 seconds</b>	<b>N</b>
<b>15 seconds</b>	<b>27 seconds</b>	<b>N</b>
<b>30 seconds</b>	<b>65 seconds</b>	<b>N</b>

<b>1 minute</b>	<b>2 minutes</b>	<b>unknown</b>
<b>2 minutes</b>	<b>4.5 minutes</b>	<b>unknown</b>
<b>4 minutes</b>	<b>10 minutes</b>	<b>unknown</b>
<b>10 minutes</b>	<b>28 minutes</b>	<b>unknown</b>
<b>20 minutes</b>	<b>65 minutes</b>	<b>unknown</b>
<b>30 minutes</b>	<b>1 hr. 50 min.</b>	<b>unknown</b>

\*\*Source: [Photo Technique Magazine](#). For meter indications of 1 to 30 seconds, expose for the times shown above the meter indication. Contrast gain with T-Max films in this range is small enough to be ignored.

**T-Max 100 film (Don Kirby suggested times\*\*)**

<b>Metered Exposure</b> 曝光时间	<b>Required Exposure</b> 补偿后的曝光时间	<b><u>Contrast Increase*</u></b> 反差增加值
<b>2 seconds</b>	<b>2.5 seconds</b>	<b>N+1/2</b>
<b>4 seconds</b>	<b>6 seconds</b>	<b>N+1/2</b>
<b>8 seconds</b>	<b>11 seconds</b>	<b>N+1/2</b>
<b>15 seconds</b>	<b>25 seconds</b>	<b>N+1</b>
<b>30 seconds</b>	<b>54 seconds</b>	<b>N+1</b>
<b>1 minute</b>	<b>1 min. 55 secs.</b>	<b>N+1</b>
<b>2 minutes</b>	<b>4 minutes</b>	<b>N+1 1/2</b>
<b>4 minutes</b>	<b>8.5 minutes</b>	<b>N+1 1/2</b>
<b>8 minutes</b>	<b>17.5 minutes</b>	<b>N+1 1/2</b>
<b>15 minutes</b>	<b>36 minutes</b>	<b>N+2</b>
<b>30 minutes</b>	<b>1 hr. 30 min.</b>	<b>N+2</b>
<b>1 hour</b>	<b>3 hr. 30 min.</b>	<b>N+2</b>

\*Shown is approximate contrast increase due to reciprocity failure and extended exposure. For example, if contrast increase is N+1 for an exposure, then with normal film development the negative will increase in contrast as if you had a N+1 development. Give the negative a N-1 development to compensate for the contrast increase due to the long exposure. However, sometimes you may want to increase contrast of a low contrast scene and give a negative normal development instead of a

compensation development.

\*\*Source: [Don Kirby workshop](#)