

POST-YIELD (Large strain) MEASUREMENT STRAIN GAUGES series YEF/YF/YHF



Self-temperature-compensation : Not available

LARGE STRAIN MEASUREMENT

Gauge pattern	Basic type	Gauge size L W	Backing L W	Resistance Ω
series YEF				
Operating temperature range				
-20°C +80°C				
Applicable adhesives				
CN -20 ~ +80°C				
CN-Y -20 ~ +80°C				
Strain limit in room-temperature				10 ~ 15%
Each package contains 10 gauges.				
Single element	YEFLA-2	2 1.8	7.5 4.0	120
	YEFLA-5	5 1.9	12.0 4.0	120
0°/90° 2-element plane Rosette	YEFLA-2	2 1.8	10.0 10.0	120
	YEFLA-5	5 2.0	14.5 14.5	120
0°/45°/90° 3-element plane Rosette	YEFLA-2	2 1.8	10.0 10.0	120
	YEFLA-5	5 2.0	14.5 14.5	120
series YF				
Operating temperature range				
-20°C +80°C				
Applicable adhesives				
CN -20 ~ +80°C				
CN-Y -20 ~ +80°C				
Strain limit in room-temperature				15 ~ 20%
Each package contains 10 gauges.				
Single element	YFLA-2	2 1.8	7.5 4.0	120
	YFLA-5	5 1.9	12.0 4.0	120
	YFLA-10	10 2.6	16.6 4.9	120
	YFLA-20	20 1.8	26.0 3.7	120
series YHF				
Operating temperature range				
-30°C +80°C				
Applicable adhesives				
CN -30 ~ +80°C				
CN-Y -30 ~ +80°C				
Strain limit in room-temperature				30 ~ 40%
Each package contains 10 gauges.				
Single element	YHFLA-2	2 1.5	8 2.7	120
	YHFLA-5	5 1.7	11 3	120

Refer to pages 19~20 for applicable integral leadwires.

Point**■ Performance of YEF/YF/YHF**

Series	Strain measurement	Fatigue limit at room temperature ^{*1}	Self-temperature compensation	Change of apparent strain due to cyclic loading of large strains ^{*2}	Applications
YEF	10~15%	5 x 10 ⁵ cycles	Not available	2000 x 10 ⁻⁶ strain/10 cycles	Measurement of repeated strain in elastic range.
YF	15~20%	1 x 10 ² cycles	Not available	2000 x 10 ⁻⁶ strain/10 cycles	
YHF	30~40%	2 x 10 ⁴ cycles	Not available	Not available	
F	5%	1 x 10 ⁶ cycles	Effective	400 x 10 ⁻⁶ strain/10 cycles	Measurement of repeated strain in elastic range.

*1 : The number of repetitions at which the indicated strain value changes by 100x10⁻⁶ strain or more by applying repeated strain of approx. ±1,500x10⁻⁶ strain at 15Hz

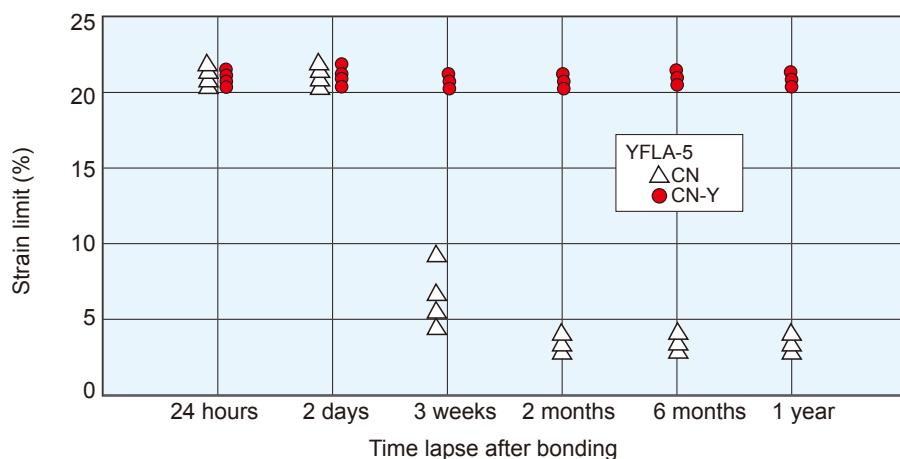
*2 : Change of indicated strain by applying a repeated strain of approx. ±10,000x10⁻⁶ strain at a speed of 4 minutes per cycle.

■ Adhesive for YEF/YF/YHF series gauges

These strain gauges should be bonded with CN or CN-Y adhesive. If measurement is made a few days or longer after the strain gauge bonding, the CN-Y should be used. Measurement of large strain is possible even after one year of bonding the strain gauge with the CN-Y adhesive, provided that the specimens are stored at room temperature without any unfavorable conditions (moisture, direct sunlight, etc.).

■ CN adhesive variation with time

Though CN adhesive is normally used for large elongation strain measurement, the strain limit gradually decreases with the number of days following strain gauge installation. This variation with time occurs as a consequence of exposure to direct sunlight (UV), temperature and humidity, as well as the number of days since installation. The following shows an example of the results of testing performed by TML for the effects of adhesive variation with time. While these results show marked differences due to the exposure conditions of the test specimens (temperature and humidity), they also show that the strain limits for strain gauges decrease as time passes after installation. While this does not pose a problem in ordinary strain measurement, TML recommends that the measurement ends in 1 or 2 days after installation in the case of large elongation strain measurement. If the strain gauge is to be left for a long period after being installed, use the CN-Y adhesive.

**■ Countermeasure in case there is a span between gauge installation and start of measurement**

Store the test specimen with the attached strain gauge in a cool, dark and dry location.

Use the CN-Y adhesive. (Refer to the instructions provided).

■ Repeatability of Post-Yield strain gauges

Post-Yield strain gauges can be used once to measure large elongation strain, but cannot be used for measurement of repeated large elongation strain. When repeated testing is performed in a strain range exceeding 5000x 10⁻⁶, the strain gauge experiences zero drift. Note that the amount of drift varies depending on factors such as the type of strain gauges and the level and frequency of strain.