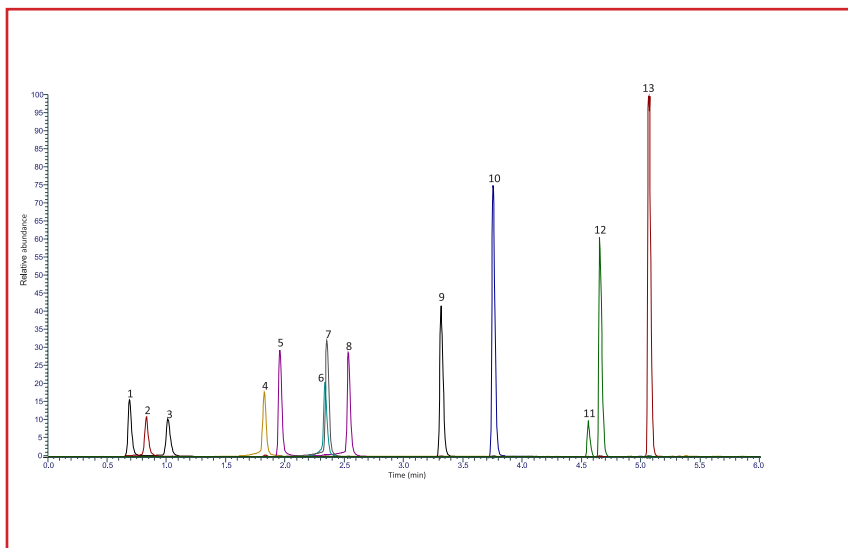




## LC-MS Separation of Pain Management Opiates on HALO® Biphenyl, 2.0 $\mu\text{m}$

Application Note 192-OP



PEAK IDENTITIES:	m/z
1. Morphine	286
2. Oxycodone	302
3. Hydromorphone	286
4. Naloxone	328
5. Codeine	300
6. Naltrexone	342
7. Oxycodone	316
8. Hydrocodone	300
9. cis-Tramadol	264
10. Meperidine	248
11. Fentanyl	337
12. Buprenorphine	468
13. ( $\pm$ )-Methadone	310

The 2.0  $\mu\text{m}$  HALO® Biphenyl is an ideal choice for high throughput analysis of drug panels, in which isobaric species separation is needed. Note the resolution between codeine and hydrocodone, (peaks 1 and 3, respectively) and morphine and hydromorphone (peaks 5 and 8, respectively).

### TEST CONDITIONS:

**Column:** HALO 90 Å Biphenyl, 2.0  $\mu\text{m}$ ,  
2.1 x 100 mm

**Part Number:** 91812-611

**Mobile Phase:**

A: Water/0.1% formic acid

B: Acetonitrile/0.1% formic acid

Gradient:	Time (min)	% B
	0.00	10
	2.22	20
	5.00	60
	5.50	60
	5.51	10
	6.50	END

**Flow Rate:** 0.4 mL/min

**Initial Pressure:** 325 bar

**Temperature:** 40 °C

**Detection:** +ESI MS

**Injection Volume:** 1.0  $\mu\text{L}$

**Sample Solvent:** 95/5 water/acetonitrile

**LC System:** Shimadzu Nexera X2

