

Cytec Develops New Reagent to Increase Copper and Moly Recovery at Latin American Mine

Using its proprietary FLOTATION MATRIX 100™ process for mineral flotation, Cytec has developed a number of new reagents that are delivering measurable improvements over existing technology. One such reagent is AERO® XD 5003 promoter.

AERO XD 5003 promoter is a new chemistry developed by Cytec to improve the safety, health and environmental (SHE) characteristics of the industry while enhancing metallurgical results for Cu and Mo in lower pH flotation.

Laboratory development with Cytec’s AERO XD 5003 promoter was conducted at a mine in Latin America to determine the performance of this new reagent versus a competing product. The results shown below indicate that Cytec’s AERO XD 5003 promoter delivers significantly higher copper and moly recoveries.

MINERAL: Latin American Client

| | | | |
|-------------------|--|-------------|---------------|
| Head grade | % CuT | %FeT | ppm Mo |
| Avg. Calc.: | 1.17 | 1.70 | 101 |
| Analyzed: | 1.22 | 1.80 | 100 |
| Granulometry: | 23%+65 #Ty | | |
| pH: | 10.5 | | |
| Collector 2 Moly: | Diesel; 11g/t to mill | | |
| Collector 3: | Xantate collector; 12g/t to cond. | | |
| Standard Frother: | Mixture of two frothers; 18 g/t to cond. | | |

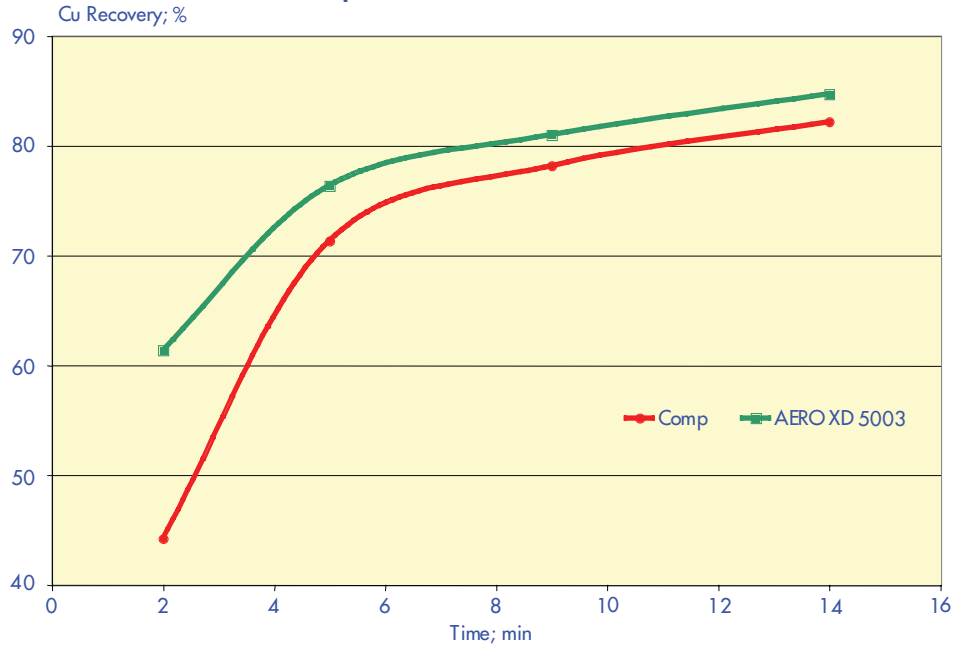
| | |
|---------------|---------------|
| Cell: | Denver |
| Ore weight: | 1101 |
| Flotation: | 30% |
| Milling Time: | 6 min 20s |
| Conditioning: | 3 min |
| Flotation: | 9 min |
| Agitation: | 1700 rpm |
| Volume: | 3L |
| Palleting: | every 15 seg. |
| Air: | Variable |

Collector: 12 gpt Conduc.

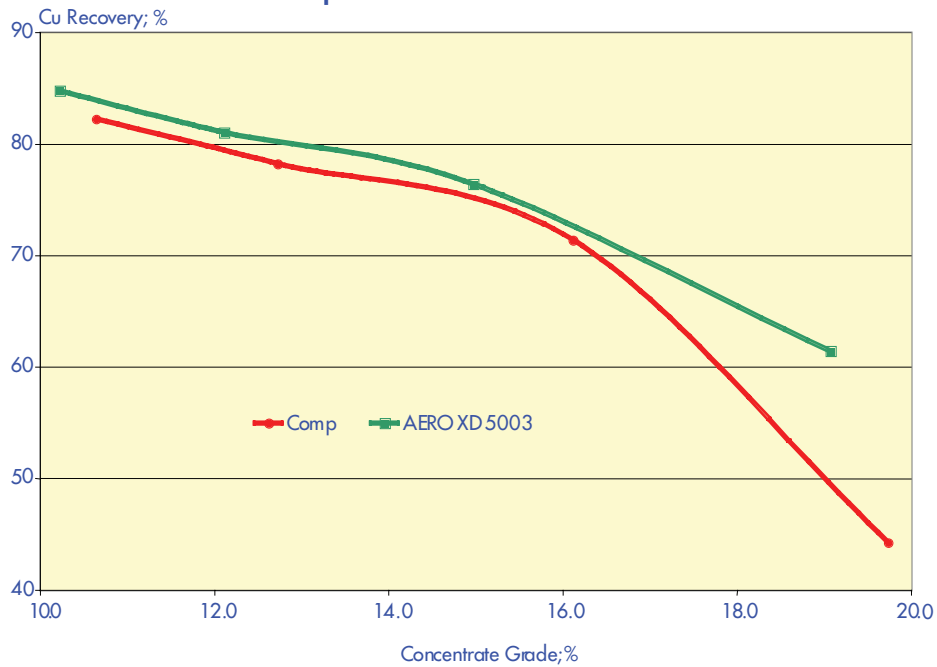
| Min. Time | Concentrate | | | | | | | | Tailing | | | |
|-----------|-------------|-------|-------|-------|--------|-------|--------|-------|---------|-------|-------|--------|
| | grams | | % CuT | | % Fe T | | ppm Mo | | 9 | CuT % | FeT % | Mo ppm |
| | Parc. | Cumm. | Parc. | Cumm. | Parc. | Cumm. | Parc. | Cumm. | | | | |
| 2 | 29.0 | 29.0 | 19.74 | 19.74 | 17.57 | 17.57 | 1637 | 1637 | | | | |
| 5 | 27.9 | 56.8 | 12.42 | 16.12 | 9.06 | 13.34 | 851 | 1244 | | | | |
| 9 | 22.0 | 78.8 | 4.00 | 12.73 | 2.83 | 10.39 | 282 | 975 | | | | |
| 14 | 20.3 | 99.0 | 2.54 | 10.65 | 2.18 | 8.71 | 167 | 810 | 1005.5 | 0.227 | 1.02 | 32 |
| 2 | 42.1 | 42.1 | 19.08 | 19.08 | 15.73 | 15.73 | 1387 | 1387 | | | | |
| 5 | 24.7 | 66.8 | 7.97 | 14.98 | 5.77 | 12.05 | 613 | 1101 | | | | |
| 9 | 20.7 | 87.5 | 2.93 | 12.12 | 2.42 | 9.76 | 195 | 886 | | | | |
| 14 | 21.0 | 108.4 | 2.34 | 10.23 | 2.10 | 8.28 | 146 | 743 | 995.6 | 0.201 | 0.97 | 31 |

| Min. Time | grams | | Recovery % | | | | | | Calculated Head | | | | weight conc. % |
|-----------|-------|-------|------------|-------|-------|-------|-------|-------|-----------------|-------|--------|-------|----------------|
| | Parc. | Cumm. | CuT | | FeT | | Mo | | CuT % | FeT % | Mo ppm | min g | |
| | Parc. | Cumm. | Parc. | Cumm. | Parc. | Cumm. | Parc. | Cumm. | | | | | |
| 2 | 29.0 | 29.0 | 44.2 | 44.2 | 26.6 | 26.6 | 41.6 | 41.6 | | | | | 2.6 |
| 5 | 27.9 | 56.8 | 27.1 | 71.3 | 13.4 | 40.0 | 21.1 | 62.8 | | | | | 5.1 |
| 9 | 22.0 | 78.8 | 6.8 | 78.2 | 3.3 | 43.3 | 5.5 | 68.3 | | | | | 7.1 |
| 14 | 20.3 | 99.0 | 4.0 | | 2.3 | | 3.0 | 71.3 | 1.16 | 1.71 | 102 | 1105 | 9.0 |
| 2 | 42.1 | 42.1 | 61.4 | 61.4 | 35.6 | 35.6 | 52.2 | 52.2 | | | | | 3.8 |
| 5 | 24.7 | 66.8 | 15.0 | 76.4 | 7.6 | 43.2 | 13.5 | 65.7 | | | | | 6.0 |
| 9 | 20.7 | 87.5 | 4.6 | 81.0 | 2.7 | 46.0 | 3.6 | 69.3 | | | | | 7.9 |
| 14 | 21.0 | 108.4 | 3.7 | 84.7 | 2.4 | 48.4 | 2.7 | 72.0 | 1.18 | 1.68 | 101 | 1104 | 9.8 |

Cu Flotation Kinetics Competitor vs. AERO XD 5003 Promoter



Recovery vs. Cu Concentrate Grade Competitor vs. AERO XD 5003 Promoter



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