

MINERAL PROCESSING XR SERIES COLLECTORS

INTRODUCTION

Solvay XR Series Collectors are unique flotation reagents that can be used as partial or full xanthate replacements. Xanthate collectors were introduced in 1925 and have been used for easy-to-treat ores, where selectivity (especially against iron sulfides and penalty elements) is not an issue. They are usually supplied in powder or pellet forms since solutions have relatively poor long-term stability. In addition to the stability issues, there are safety, health, and environmental issues related to the usage of xanthates; they are combustible, self-ignite / explode, and release toxic gases such as CS₂, COS, etc. during storage, shipment and usage. Hence, Solvay has developed the XR Series of xanthate replacement products that exhibit a metallurgical profile very similar to that of the xanthates without the Safety Health and Environmental (SHE) concerns associated with xanthates.

XR SERIES

The safety, health and environment problems, as mentioned above, prompted Solvay to develop more sustainable options to xanthates while keeping or enhancing the metallurgical benefits. The novel solutions are liquid products that can be dosed directly to the process, substantially improving:

- Handling and level of exposure of the personnel to product
- Stock safety management
- Simplifying the plant operation

Xanthate replacements are typically custom-formulated products developed through Solvay's FM-100™ approach. There are several currently available formulations that can be used such as AERO® 3473, AERO® 3739, and AERO® MX-5160 promoters.

Features	AERO® 3473	AERO® 3739	AERO® MX5160
Target Minerals/ Ore Types			
Copper Sulfides	•	•	•
Precious metals (Au, Ag, PGM's)	•	•	•
Copper from copper lead/ zinc complex ores			•
Zinc from lead/zinc complex ores			•
Typical Operating Conditions			
Alkaline circuits (low, moderate, high)	•	•	•
Properties			
Liquid	•	•	•
Dosage (5-50 g/tons)	•	•	•
Undiluted	•	•	•

CASE STUDIES:

AERO® 3473: A sulfide gold mine was looking to improve their recoveries of gold while also lowering their overall reagent usage.

Original Reagent Suite	AERO® 3473 Reagent Suite
Collector Consumption: 67 g/tons	Collector Consumption: 35 g/tons
Frother Consumption: 44 g/tons	Frother Consumption: 25 g/tons
% Au Recovery: 79%	% Au Recovery: 81%

Recovery increased by 2% while reagent usage was decreased!

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AERO® MX5160: A sulfide copper-gold mine was looking to improve their recoveries while maintaining their overall reagent usage.

The customer was able to achieve an 8% increase in copper recovery and an 11% increase in gold recovery by switching to AERO® MX5160 with no change in collector usage!

Original Reagent Suite

Collector Consumption:
15 g/tons

% Cu Recovery: 81%

% Au Recovery: 58%

AERO® MX5160 Reagent Suite

Collector Consumption:
15 g/tons

% Cu Recovery: 89%

% Au Recovery: 69%

PRODUCT PROPERTIES

	AERO® 3473	AERO® 3739	AERO® MX5160
Color	Yellow-orange	Clear to light amber	Yellow to brown
Appearance	Liquid	Liquid	Clear liquid
Odor	Characteristic	Slight sulfur	Alcohol
Boiling Point	Not Available	>70°C	Not Available
Melting Point	<-15°C 5°F	<-15°C 5°F (crystallization point)	<-5°C 23°F
Specific Gravity/Density	1.1 - 1.2 g/cm ³ @ 20°C	1.20 - 1.25	1.1 - 1.2 g/cc
pH:	>12	>12	>12 (as is)
Evaporation Rate	Similar to water	Not Available	Similar to water
Solubility in Water	Soluble	Soluble	Soluble
Volatile Organic Content	<20 gm/L	Not Available	Not Available
Flash Point (Pensky-Martens Closed Cup)	>93°C 200°F	>70°C No flash up to boiling point	>102°C 215°F

REAGENT SELECTION AND OPTIMIZATION

Contact your Solvay sales representative for more information on Solvay novel XR Series of products and allow us to work with you in determining the appropriate reagent for your needs.

SHIPPING

XR Series reagents are shipped in drums, totes or bulk containers. For information on bulk delivery, contact your Solvay sales representative.

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