

Margin Collateral Framework

Margin Collateral Framework

Purpose

LME Clear has a robust margin collateral framework in place to protect against the risks related to collateral it accepts from its Members to cover margin liabilities. This includes;

- Assessing the acceptability of collateral to cover margin liabilities;
- Calculating and setting collateral limits and managing its collateral concentration risk;
- Calculating and setting collateral haircuts;
- Custody and Security arrangements in place for margin collateral.

Margin Collateral Framework

Collateral Acceptability

Collateral Types

LME Clear accepts the following collateral types against Member margin liabilities arising from all LME Clear products :

Cash	Financial Instruments	Gold	Eligible LME Warrants
USD	United States < 30 years	Allocated LBMA Gold	Aluminium HG
GBP	United Kingdom < 30 years		Copper
EUR	Germany < 30 years		Lead
JPY	France < 30 years		Nickel
CNH	Finland <30 years		Tin
	Netherlands < 30 years		Zinc
	Japan < 20 years		
	Supranational Issuers <30 years: ASIA, CoE, EIB, IBRD, IFC, NIB		
	Agency Issuers <30 years: RENTEN, KFW, CADES		
Notes:	UK and US Inflation Linked Bonds		

- All instruments can be used to cover debit contingent variation margin. Credit contingent variation margin can be used to offset margin requirements;
- For Financial Instruments, LME Clear offers both a bilateral and tri-party service. Supranational and Agency issuers as well as Inflation Linked Bonds are only accepted via the tri-party service.
- For financial instruments, the acceptable collateral type may differ per issuer.
- Members wishing to post non-cash collateral will be required to sign additional documentation. Certain formalities (including registration of security interests) may apply before non-cash collateral is accepted. LME Clear will only accept non-cash collateral from Members where it is satisfied that the arrangements are enforceable without delay in the event of a member default. In relation to warrants, members should note there is a lead time to posting warrants as collateral due to the requirement to obtain legal advice as to the enforceability of the arrangements in the relevant jurisdiction(s)

Margin Collateral Framework

Collateral Acceptability

Collateral Tiers

- The collateral tiers are classified to construct a portfolio weighted towards liquid and high credit quality collateral.

Collateral Tier 1	Collateral Tier 2	Collateral Tier 3
Collateral Types with; High Credit Quality AND High Market Depth	Collateral Types with High Credit Quality AND Medium Market Depth;	Collateral Types with; Medium Credit Quality AND Medium Market Depth OR Collateral Types with Medium Credit Quality AND High Market Depth;

Member Tiers

- LME Clear uses its internal credit scoring methodology to assign a credit score to each of its Members.
- The Members classification is to ensure that Members with lower credit rating predominantly lodge high quality collateral (liquidity and high credit quality) in order to remain within LME Clear's limits.

Collateral Tier 1	Collateral Tier 2	Collateral Tier 3
Member Tier: All	Member Tier: High	Member Tier: Medium
		Member Tier: High
		Member Tier: Medium

Wrong Way Risk Management

- If LME Clear assesses that there is material wrong way risk between the Member and the collateral lodged further diversification of collateral is also enforced.

Margin Collateral Framework

Collateral Limit Structure

Collateral Limit Overview

LME Clear has in place cash and non-cash collateral limits as well as currency limits (applicable across cash and non-cash collateral products). The limits are applied at the lower of all relevant calculations. Limits are managed across services on a consolidated basis where appropriate.

Each of these limits are described in the tables and sections below.

Cash and Currency Collateral Limits

- **Cash Liquidity Limits** (Member Minimum Cash Requirement) to ensure that LME Clear has sufficient cash to meet its BAU and default liquidity requirements in stressed conditions. This limit will be based on liquidity requirements for a 2 Member default. Any cash liquidity limits will be applicable after any contingent variation margin adjustments.
- **Cash Collateral Limits** are to ensure that LME Clear is able to appropriately invest cash (for each currency) that it has received from its Members in line with its Investment Policy;
- **Currency Limits**; linked to margin liabilities and the level of FX exposure that is acceptable to LME Clear. This is based upon ability to convert collateral into the currency of the underlying margin liability in a sufficiently timely fashion in stressed market conditions.

Cash Liquidity Limits (Floor)

To ensure sufficient liquidity

Cash Collateral Limits (Cap)

Investment ability per currency

Currency Limits (Cap)

Based on the ability of LME Clear collateral to the currency of the underlying exposure in order to cover margin liabilities.
Currency limits will be set across both cash and non-cash collateral

Margin Collateral Framework

Collateral Limit Structure

Non-Cash Collateral Limits

All Member collateral positions are limited to the lower of the below non-cash collateral limits:

- **Diversification Limits** based on a combination of LME Clear's collateral and member tiers. The limits are applicable as a % of the total margin requirements after any applicable cash liquidity limits. The purpose of such limits is to ensure that the margin collateral portfolio remains sufficiently diversified. The actual % applicable for each tier is based on the probability of default for each collateral tier.
- **Tiers 2 & 3:** Limits are applied on a cumulative basis between all collateral types within each tier and across Tiers 2 and 3.
- **Market Liquidity Limits** are based on indicative tradable volume of the collateral types that it can liquidate within the close out period during the stressed conditions following a 2 Member default; assessed in conjunction with its Collateral Liquidity Working Group.
- **Lodgement Cap and Floor Limits** are to ensure that liquidation by LME Clear of collateral does not affect the market liquidity of any single issue in such a way to expose LME Clear to a potential loss or undue operational issues.

Cash Withdrawal Limits

- LMEC employs cash withdrawal limits which ensures that there is sufficient liquidity within the clearing service.

Quarterly Collateral Controls

- LMEC notifies clearing members by notice where collateral controls are put in place. These are typically around quarter-end and year-end periods where market conditions tighten and where liquidity in secured funding markets can become scarce.

CCP Limits

- LME Clear sets total margin collateral limits across all Members.
- The limits are enforced on a first come-first serve basis.

Margin Collateral Framework

Collateral Limit Structure

Non-Cash Collateral minus applicable Cash Liquidity Limits (Cap)						
	Collateral Tier : 1		Collateral Tier : 2		Collateral Tier : 3	
	Member Rating: All		Member Rating: High	Member Rating: Medium	Member Rating: High	Member Rating: Medium
Non-cash Collateral limited to the lower of the below:						
Diversification Limits - No Wrong Way Risk	100% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	100% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	70% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	70% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	35% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit.	35% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit.
Diversification Limits - Wrong Way Risk	100% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	100% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	35% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	35% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	0% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit	0% of total margin requirement, post CVM/NLV, not covered under Cash Liquidity Limit
Market Liquidity Limits	Estimated two day tradeable volume in stressed market conditions					
Lodgement Cap: Within Market Liquidity Limits no single ISIN may exceed 10% of outstanding issue size; Lodgement Floor: The minimum lodgement size for any ISIN by any member is \$1m/£1m/€1m/¥100m. Lodgements/Withdrawals of Gold Bullion must be in increments of 400oz Issuance Size Limit: Individual Securities must have Amount Outstanding that exceeds \$250m/£250m/€250m/¥2.5b;						

- Note that the above % numbers are only indicative. Limits will be applied after contingent variation margin and cash liquidity limits
- Please see below link to the secure area of LME Clear's website for actual limits currently applied;

<https://www.lme.com/en/Clearing/Collateral-management/Acceptable-collateral>

Margin Collateral Framework

Collateral Haircuts

Collateral Haircut Overview & Maturity Structure

- Haircuts are set to cover interest rate risk and FX risk on acceptable collateral
- Due to the predominance of USD open interest in cleared products, LME Clear sets FX haircuts upon all non USD denominated collateral assets.
- LME Clear applies collateral haircuts based on the following maturity structure:

Instrument	Maturity
GOLD	Spot
Eligible LME Warrants	Cash
FX:EUR	Spot
FX:JPY	Spot
FX:GBP	Spot
FX:CNH	Spot
Financial Instruments	5/10 days to 1 year + 1 day
Financial Instruments	>1 year and <3 years + 1 day
Financial Instruments	>3 years and <5 years + 1 day
Financial Instruments	>5 years and <7 years + 1 day
Financial Instruments	>7 years and <10 years + 1 day
Financial Instruments	>10 years and <15 years + 1 day
Financial Instruments	>15 years and <20 years + 1 day
Financial Instruments	>20 years and <30 years + 1 day

Margin Collateral Framework

Collateral Haircuts

Collateral Haircut Methodology

- LME Clear uses zero coupon curves (Financial Instruments) and spot/cash prices (FX and Gold/LME Warrants) in the calculation of margin collateral haircuts.
- In order to capture both recent volatility as well as limit potential pro-cyclicality, the LME Clear's haircut methodology is based upon a combination of a Filtered Historical Simulation (FHS) VaR and 10-year stress.
- The VaR element is based on a 2 year data history.
- The stress loss element is based upon the worst one or two day stress returns observed over the previous 10 years. In some circumstances, e.g. where a currency is not fully free floating, a higher weighting is given to stress volatility;
- In the event that LME Clear deems it necessary, it also includes hypothetical stress scenarios.
- In the event that LME Clear deems that there is insufficient stress in the lookback period, historical stresses are retained

Collateral Haircut Setting Process

- Quarterly: Collateral haircuts are reset on at least a quarterly basis.
- Monthly: Collateral haircuts are subject to review on at least a monthly basis. Should LME Clear identify a material change in price/FX risk it will adjust haircuts accordingly.
- Daily and intra-month: LME Clear backtest the appropriateness of collateral haircuts on a daily basis; should significant breaches arise we are required to immediately recalculate collateral haircuts.
- Backtesting: All haircuts are back tested on a daily basis including risk factor and portfolio back testing. In the event that the number of backtesting breaches exceed LME Clear risk appetite then the haircut model parameters or haircut calculation methodology are adjusted in line with its collateral policy.
- Haircuts are consistent for the same ISINs whether accepted via the bilateral or tri-party service.

Margin Collateral Framework

Collateral Valuation

Collateral Valuation Methodology

- Margin collateral is valued at End of day and on multiple occasions intra-day;
- Collateral lodged via the tri-party service is subject to pricing and frequency as applied by the tri-party agent;
- All valuations are subject to parameterised checks and assessment of their robustness ;
- Between intra-day valuations underlying data is monitored and large movements highlighted by exception;
- Valuations are subject to external independent verification on a regular basis;

Margin Collateral Framework

Custody and Security Arrangement

Financial Instruments

- Securities are, where available, deposited with operators of securities settlement systems that ensure their full protection. Alternatively, LME Clear uses other highly secure arrangements with authorised financial institutions.
- Within the Eurozone and UK, LME Clear has accounts with a major CSD.
- Within the US, all USD non-cash collateral received as margin cover from its Members is managed through an approved custodian's omnibus account with the Federal Reserve and is reflected in an LME Clear account in the custodians books and records.
- All collateral is covered under LME Clear's security deed documentation and for Triparty a separate deed document is required. Financial instruments are received on a pledged, rather than Title Transfer, basis.

Gold

- LME Clear has appointed an approved London Precious Metals Clearing Ltd (LPMCL) Clearing Member to act as gold custodian and London Bullion Market Association (LBMA) gold bullion shall be held directly in an LME Clear account with them.
- LME Clear's gold custodian is given standing instructions to allocate all gold holdings after they have been lodged by Clearing Members in an un-allocated form. LME Clear only assigns value to any gold lodgement from a Clearing Member following confirmation of allocation by the gold custodian.

Warrants

- Only LME approved warrants, held in an approved warehouse, which are eligible for delivery into the LME will be acceptable to cover margin liabilities as described in the limits.