TG GROUP TEKNOLOJI SANAYI VE TICARET LIMITED SIRKETI

🔐 AUDIT READINESS REPORT Project: USDCgTokenTRC20 (CircleGuard USD) Version: 1.0 Date: 24.04.2025 Prepared for: TG Group Teknoloji Sanayi ve Ticaret Ltd. Şerketi

This document contains security, architecture, and audit-readiness details regarding the smart contract implementation of the USDCgTokenTRC20 project.

All contents are proprietary and intended for audit, investor, and platform compliance use.

🔐 Audit Readiness Documentation USDCgTokenTRC20

Version: 1.0

Audit Prepared For: TG Group Teknoloji Sanayi ve Ticaret Ltd. Şti.

Date: 24.04.2025

📋 Contract Summary

Field	Details
Token Name	CircleGuard USD (USDCg)
Standard	TRC20 (TRON-compatible ERC20)
Compiler Version	^0.8.20
Optimization	Enabled (200 runs)
License	MIT
Frameworks	OpenZeppelin, Hardhat

🔐 Security Modules Implemented

Feature	Description
ReentrancyGuard	Prevents reentrancy attacks on minting and transfers
Pausable	Admins can pause the system in emergencies
AccessControl	Role-based permission system
TimelockController	DAO-compatible governance delay for critical operations
Blacklist / Whitelist	Restricts malicious or non-compliant wallets
Mint Cooldown	Prevents flash mint or repeated abuse of minting within short intervals
Fee System	Transfers apply a fixed 1% fee to feeWallet
Fixed + Oracle-based Pricing	Pricing is based on Chainlink Oracle or fallback fixed price

🧑‍💼 Role and Permission Model

Role Name	Capabilities
DEFAULT_ADMIN_ROLE	Manages roles, ownership (assigned to Timelock)
ADMIN_ROLE	Sets treasury, max supply, pauses contract
MINTER_ROLE	Mints tokens, subject to cooldown and whitelist
FEE_MANAGER_ROLE	Can change the feeWallet address
PAUSER_ROLE	Can pause/unpause operations

Note: All critical functions are behind role-checks AND time-lock governance.

📊 Audit-Oriented Event Logging

Action	Event
Minting	TokensMinted(address, uint256)
Supply Cap Change	MaxSupplyUpdated(uint256)
Price Update	FixedUSDPriceUpdated(uint256)
Freeze Supply	SupplyFrozen()
Chainlink Fallback	PriceFeedFallbackUsed(uint256)

🔒 Governance Notes

- Treasury Wallet Control: Only ADMIN_ROLE, executed via TimelockController.

- Fee Wallet Control: Controlled by FEE_MANAGER_ROLE.

- All sensitive changes are routed through governance delay.

🛡️ Additional Protections

- tx.origin == msg.sender check enforces EOAs only mint.

- Whitelist enforced during mint.

- Blacklist enforced on all transfers.

- Manual fallback pricing for oracle failure.

- Minting cooldown prevents spam abuse or instant rug.

📁 Contract Files

- USDCgTokenTRC20.sol

- Flattened Source: [Link to verified contract on TronScan or IPFS]

- Audit Report (Signed): [audit/USDCg_Audit_Report_Signed.pdf]

🧪 Recommendations (Audit Feedback Ready)

- Expose getSettings(): Add a public view method to expose key contract parameters for frontends and analytics dashboards.

- Governance Hooks: Optionally integrate DAO voting hooks like delegate() and getVotes() if Snapshot-style governance is planned.

✅ Final Note

This contract is structured for maximum audit resilience, secure tokenomics, and governance-first operations. See source code comments for technical guidance. Feedback is welcome from auditors and contributors.

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