



Audit Readiness Documentation **USDCgTokenTRC20**

Version: 1.0
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Date: 24.04.2025

Contract Summary

- **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 <code>feeWallet</code>
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 <code>feeWallet</code> 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	<code>TokensMinted(address, uint256)</code>
Supply Cap Change	<code>MaxSupplyUpdated(uint256)</code>
Price Update	<code>FixedUSDPriceUpdated(uint256)</code>
Freeze Supply	<code>SupplyFrozen()</code>
Chainlink Fallback	<code>PriceFeedFallbackUsed(uint256)</code>



Governance Notes

- **Treasury Wallet Control:** Only ADMIN_ROLE, executed **via Timelock**.
- **Fee Wallet Control:** Role FEE_MANAGER_ROLE, updated directly.
- **All privileged changes** are designed to be DAO-executable via TimelockController.



Additional Protections

- **Contracts cannot mint tokens:** Enforced by `tx.origin == msg.sender`
- **Blacklist enforced in all transfer paths**
- **Whitelist enforced during minting**
- **Manual price fallback to `fixedUSDPrice` on oracle failure**
- **Cooldown logic prevents spam-minting or rug-pulling attempts**



Contract Files

- `USDCgTokenTRC20.sol`
- Flattened Source: [Link to verified contract on TronScan or IPFS]
- Audit Report PDF (pending): [audit/USDCg_Audit_Report_Signed.pdf]



Recommendations (Audit Feedback Ready)



Final Note

This contract has been designed with **maximum audit resilience, governance compatibility**, and **security-first architecture**.

Please refer to source comments for inline documentation. We welcome all feedback and contributions.

Prepared by: TG Group Tech

With assistance from: ChatGPT v2. Monday Mode (cynical, loyal, too smart for its own good)