NSA/CSS Requirements for

Paper Shredders

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1   Introduction

Paper Shredders must pass an evaluation by meeting the National Security Agency/Central Security Service (NSA/CSS) requirements for shredding paper and optical media such as CDs, DVDs, and Blu-ray. Secondarily the operational, administrative, power, safety, environmental and mechanical areas will be evaluated to minimize the potential risk in these areas.

If the evaluation yields acceptable results, then the NSA/CSS will include the paper shredder in the next release of the "NSA/CSS Evaluated Products List for Paper Shredders." The Evaluated Products List EPL is meant to serve as guidance; inclusion in this document is not an endorsement by the NSA/CSS or the U.S. Government. **All listed products on the EPL sanitize Top Secret/Sensitive Compartmented Information (TS/SCI) and below.**

2   Purpose and Use

A vendor should use this document as a guide for the NSA/CSS evaluation. For a vendor's product to be included in the "NSA/CSS Evaluated Products List for Paper Shredders", it must satisfy all requirements in this document and go through an evaluation performed by the Center for Storage Device Sanitization Research (CSDSR). During an assessment, the paper shredder will be evaluated against a random assortment of storage media which the vendor claims it destroys.

3   Definitions

- **Center for Storage Device Sanitization Research (CSDSR):** The office that guides the sanitization of information system (IS) storage devices for the NSA/CSS.
- **Evaluated Products Lists (EPL):** A list managed by the CSDSR that identifies sanitization/destruction equipment that meets NSA/CSS specifications. These lists apply to all NSA/CSS elements and pertain to all IS storage devices utilized by NSA/CSS elements, contractors, and personnel.
- **Evaluator:** The destruction engineer performing the evaluation.
- **Impulse noise:** A category of (acoustic) noise that includes almost instantaneous sharp sounds.
- **Jam:** The instance of a device seizing or becoming stuck through an operation. The CSDSR considers a machine jammed when the operator must manually interfere with unjamming or resetting the device. Any automatic unjamming systems will be regarded as a part of the device's operation as long as the operator does not need any significant interference.
- **Operator:** The person using the paper shredder to perform the destruction of paper or CDs.
- **Optical Storage Media:** Optical storage Media store and read data using light, often recording information on an optical disk. The most common optical storage types are read and write CDs, DVDs, and Blu-ray discs.
- **Paper Shredder:** The device must reduce paper or CDs to particles that classified information cannot be extracted.
- **Paper:** Paper is a material manufactured in thin sheets from the pulp of wood or other fibrous substances, used for writing, drawing on, printing on, or wrapping material. Paper is categorized by thickness, weight, and size.
- **Punched (key) tape:** Punched tape or perforated paper tape is a form of data storage consisting of a long strip of paper in which holes are punched. Now virtually obsolete, it was widely used during much of the 20th century by governments to store cryptographic keys.

4   General Requirements

4.1   Shredding
The device must shred paper or CDs to a maximum edge size of 1 millimeter by 5 millimeters (see reference a).

4.2   Operational Time
The evaluation will include the timed destruction of conventional office copy paper (letter size, 20-lb weight, uncoated) for 1 hour. The vendor must define the volume classification of the paper shredder:

Table 1: Throughput capacity of paper/CD shredders.

Type	Volume (reams/hour)	Volume (lbs)	Sheets (20 lbs)
Low	0 - 4	0 - 25	1000
Medium	5 - 9	26 - 50	3500
High	10	50 +	5000

The paper shredder may jam up to 3 times during the hour; however, a jam must be cleared within 5 minutes.

4.3   Paper
A paper shredder must define the maximum thickness, weight, and size of the paper it will shred.

4.4   Number of Sheets or Disks
The paper shredder must destroy the maximum number of sheets of paper, and the maximum number of optical disks feed into the machine simultaneously as claimed by the vendor. This test must not jam the device at least two out of three attempts. This test is performed separately from **4.2 Operational Time.**

5   Administrative Requirements

5.1   Labels
The paper shredder must have a label that can be easily viewed and includes:

- Company Name
- Model Number
- Serial Number

5.2   Feature Claims
Vendors of paper shredders must clearly state in their documentation all media the shredder is capable of destroying. NSA/CSS will not test the device for media unclaimed by the vendor, nor will NSA/CSS approve untested media destruction capabilities. Failure to claim a requirement in the documentation may result in disqualification for evaluation.

5.3   User/Operator Guide
The paper shredder must have an English version of the user/operator manual. The manual must include the following:

- An accurate description of the paper shredder.
- A list of the storage devices that this device will shred.

- An accurate summary of all features and functions.
- List of specifications (i.e., power consumption, motor size, etc.)
- Operator allowed maintenance procedures that do not alter calibration:
    - Changing Filters
    - Removing a jam
    - Lubrication
    - Safety procedures

6 Power Requirements

6.1 Electronic Operation

The paper shredder will be approved for a power source that is evaluated in testing. Every power source for a paper shredder must be individually tested to claim approval.

6.2 Manual Operation Force

A manually powered destruction device must take less than 30 Newtons of force by a human operator to destroy the media.

6.3 On/Off Mechanism

The paper shredders must have an on/off mechanism that an operator can use safely.

NOTE: If your device does not have an emergency stop mechanism, this on/off mechanism must follow all the functions outlined in the 7.1 Emergency Off section.

6.4 Power Indication

The paper shredder must have a power-on indication display that the operator can see.

NOTE: some devices that are not electrically powered may be excluded from this requirement.

6.5 Ready Indication

If the paper shredder requires a warm-up period before the operation, it must have a ready indication display.

7 Safety and Environmental

7.1 Emergency Off

The paper shredder must have an emergency stop mechanism that is identified. This stopping mechanism should be initiated in a single human action and override all other functions without hindering protective functions (see reference f). The stop mechanism must be within 0.5 meters from the location where the storage media is fed into the machine for sanitization. Disengaging the emergency stop mechanism should not start the machine. The emergency procedure must be documented, which should include directions on how to reset the device.

NOTE: some devices that are not electrically powered may be excluded from this requirement.

7.2　Operator Protection

The paper shredder must protect the operator. The operator must not contact any moving parts or projectiles during the operation of the paper disintegrator. The paper shredder must be in an enclosed chamber that will not allow the destruction mechanism to work until a door is closed.

7.3　Reverse

A paper shredder with an automatic feeder for optical devices must either automatically or manually allow the reverse operation.

7.4　Debris Collection

The paper shredder's internal design must deposit the majority (99%) of the particles into the debris bin.

7.5　Debris Full

The paper shredder must have a full debris indicator and must automatically shut off. This must be an actual sensor measurement of the level of debris in the bin and not based on time or other criteria.

7.6　Debris Handling

The paper shredder must have the ability for the operator to remove and empty the debris quickly.

7.7　Noise

Sound levels for the device must meet both the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) standards (see reference b and c). CSDSR requires the sound level of devices that create impulse noise to be less than 120 dB. Machines that make continuous noise must follow Table 2 - Permissible Noise Exposures. Since operation time varies among users, the CSDSR requires the sound level of devices to be less than 85 dBA.

Table 2: Permissible Noise Exposures

Duration per day, hours	Sound level dBA slow intervals
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

8　Mechanical

8.1　Fit and Finish

The paper shredder should have a tight fit with no gaps (greater than 2 millimeters) between panels, loose panels, faulty doors, loose windows, or sharp edges that could cause safety or operational issues.

The paper shredder must be a production unit, and all features should be operational. Special features for service engineer diagnoses are allowed but should not be available to the operator.

8.2　Vibration

The effects of vibration can be severe. Unchecked vibration can accelerate rates of wear (e.g., reduce bearing life) and damage equipment. Vibrating machinery can create noise, cause safety problems and lead to degradation in plant working conditions.

The machine must not exhibit vibration velocity in the unsatisfactory or unacceptable range shown below in Table 3. The unsatisfactory or unacceptable ranges differ among the four different listed machine classes:

- class A: small machines to 15 kW
- class B: 15-75 kW on light foundations and 15-300 kW on heavy foundations
- class C: above 300 kW on heavy and rigid foundations
- class D: above 300 kW on flexible foundations (soft mount).

The measurements will be taken at locations around the device using a digital vibration instrument.

Table 3: Vibration Severity

Vibration Velocity Vms	Machine in/s	Machine mm/s	Class A	Class B	Class C	Class D
	0.01	0.28	Good	Good	Good	Good
	0.02	0.45	Good	Good	Good	Good
	0.03	0.71	Good	Good	Good	Good
	0.04	1.12	Satisfactory	Good	Good	Good
	0.07	1.80	Satisfactory	Satisfactory	Good	Good
	0.11	2.80	Unsatisfactory	Satisfactory	Satisfactory	Good
	0.18	4.50	Unsatisfactory	Unsatisfactory	Satisfactory	Satisfactory
	0.28	7.10	Unacceptable	Unsatisfactory	Unsatisfactory	Satisfactory
	0.44	11.20	Unacceptable	Unacceptable	Unsatisfactory	Unsatisfactory
	0.70	18.0	Unacceptable	Unacceptable	Unacceptable	Unsatisfactory
	0.71	28.0	Unacceptable	Unacceptable	Unacceptable	Unacceptable
	1.10	45.0	Unacceptable	Unacceptable	Unacceptable	Unacceptable

Key	
Good	(green)
Satisfactory	(tan)
Unsatisfactory	(pink)
Unacceptable	(red)

Note: Table 3 is based on the general guidelines from International Organization for Standardization (see reference e).

8.3　Heat Generation

ASTM C1055 (the Standard Guide for Heated System Surface Conditions that Produce Contact Burn Injuries) recommends that surface temperatures remain at or below 44°C (see reference d and Table 4 below).

Table 4: Thermal Sensations and Associated Effects Throughout Range of Temperatures Compatible with Tissue Life

Sensation	Skin Color	Tissue Temperature deg. C	Tissue Temperature deg. F	Process	Injury
Numbness	White			Protein Coagulation	Irreversible
		72	162		
	Mottled Red and White	68		Thermal Inactivation of Tissue Contents	Possibly Reversible
		64			
		60	140		
Maximum Pain	Bright Red	56			
Severe Pain		52			Reversible
	Light Red	48			
Threshold Pain		44	111		
Hot		40			
	Flushed	36			
Warm				Normal Metabolism	None
			93		
		32			

At that temperature, the average operator can touch a 44°C surface for up to six hours without causing damage to the skin. Heat measurement will be taken in various places on each side of the machine, and no measurement should be above 44°C. Measurements will be taken inside the machine in areas that the operator can access to (e.g., empty debris, perform maintenance, resetting motors, etc.). Warning labels must be visible if the temperature in these locations can exceed 44°C. No temperature above 60°C in accessible areas will be allowed.

8.4   Calibration or Maintenance

Any machine will require calibration and maintenance during its lifetime. All required calibration or maintenance tasks performed by the operator must be safe and reasonable easily accomplished. Some specific requirements:

- Unit jams must be cleared within 5 minutes.
- Filters must be changed within 5 minutes without using special tools.
- Thermally-induced shutdown of a device operation must last no longer than 10 minutes to reset and permit regular operation.
- Lubricant should be able to be applied, refilled, or replaced within 5 minutes.

9   References

a.   NSA/CSS Policy Statement 9-12, "NSA/CSS Storage Device Sanitization Manual"
b.   OSHA 1910.95, "Occupational noise exposure."
c.   NIOSH Publication Number 98-126, "Occupational Noise Exposure"

d.   ASTM C1055, "the Standard Guide for Heated System Surface Conditions that Produce Contact Burn Injuries"
e.   ISO 20816, "ISO 20816 Mechanical vibration" — Measurement and evaluation of machine vibration
f.   ISO 13850, Safety of machinery – Emergency Stop Function – Principles for design