ODOR AND OFFGASSING TEST CAPABILITIES

SUMMARY

White Sands Test Facility (WSTF) conducts odor testing (Test 6, Odor Assessment) and offgas testing (Test 7, Determination of Offgassed Products) for NASA in accordance with NASA-STD-6001, as well as ISO-14624-3 *Determination of Offgassed Products from Materials and Assembled Articles*.

Offgas testing refers to detecting, identifying, and quantifying all gaseous compounds released from a material or article under human habitable atmospheric conditions. Offgassing is the evolution of gaseous products from a liquid or solid material into an atmosphere.

Odor testing is the human evaluation of odors released from materials or components destined for use in the habitable areas of spacecraft. Odor testing is only performed after offgassing (Test 7) has previously been performed and all offgassed products are known to be below a specified toxic rating.

EXPERIENCE

WSTF has over 30 years experience performing offgas testing for NASA, military agencies, and numerous commercial customers.

LABORATORY CAPABILITIES

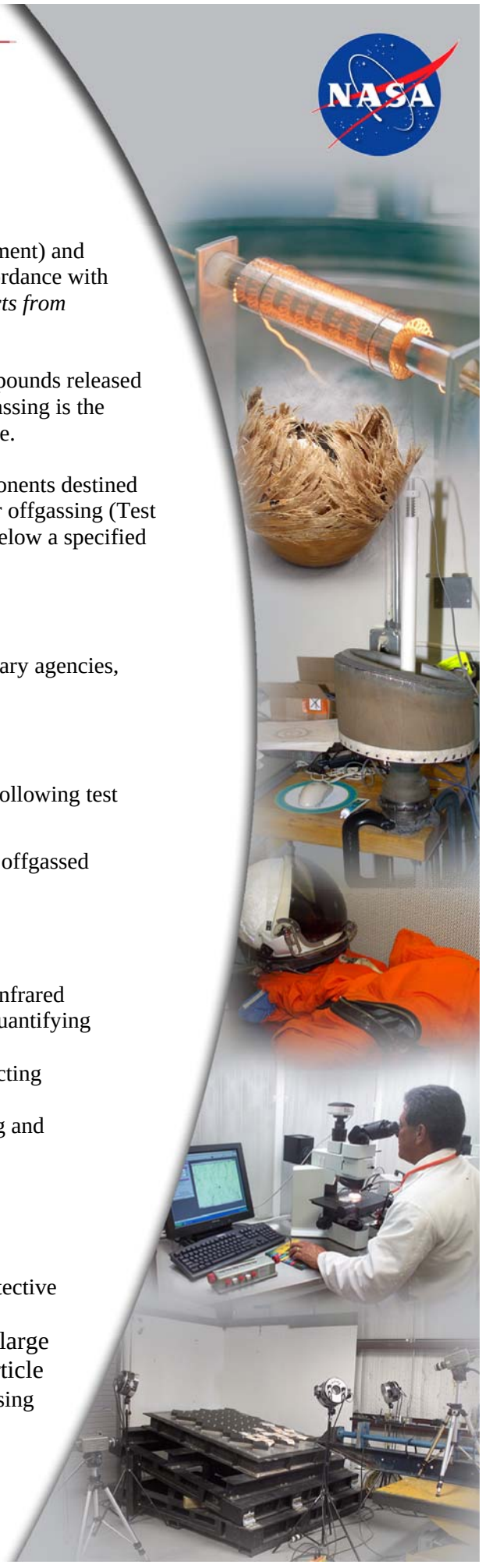
Led by analytical and technical personnel, the laboratory is equipped with the following test chambers and support equipment to support odor and offgas testing:

- Four trained and certified analytical chemists to identify and quantify all offgassed products.

- Analytical capabilities include:

    1. Two Gas Chromatographs (GC) equipped with Fourier transform infrared (FTIR) detectors and mass spectrometers (MS) for detecting and quantifying offgassed inorganic and organic compounds.
    2. One GC equipped with a Flame Ionization Detector (FID) for detecting and quantifying offgassed organic compounds.
    3. One GC equipped with a methanizer coupled to a FID for detecting and quantifying carbon monoxide and methane.
    4. One GC equipped with a thermal conductivity detector (TCD) for detecting and quantifying hydrogen.

- Simulated-use testing conducted in two airtight gloveboxes.
- Handling of electrostatic discharge (ESD) components. Class 1 ESD protective workstation available.
- Capability to test small to very large materials and components. A large array of offgassing chambers to fit most any size material or test article (2 L through 86700 L) are maintained for testing. Our largest offgassing chamber is the CVI® self-heating cylindrical offgassing chamber.



This chamber is 1.83 m (6 ft) in diameter and 2.74 m (9 ft) long. This chamber can achieve vacuums as low as 1.33 Pa (1×10^{-2} torr), with a temperature range from ambient ~ 21 to 93 °C (70 to 200 °F).

- Thermal conditioning capabilities range from ~21 to 316 °C (~70 to 600 °F). Five thermal conditioning ovens (incorporating multiple temperature measurement systems) are connected to an automatic alarm system to notify personnel of power outages and/or temperature nonconformities. Ovens can handle the entire size range of sample chambers.
- Odor Test Panel maintained and tested for odor testing (Test 6). An "Odor Mission" is conducted by five certified odor panel members under the direction of an Odor Panel Test Conductor. These five odor panel members are selected randomly out of a pool of all odor panel members and their sense of smell tested to ensure sensitivity.
- On-site state-of-the-art test article/material preparation and analytical laboratories with full sample preparation, measurement, thermal conditioning, and chemical analysis capabilities are maintained.
- A secure, limited-access storage area for spaceflight items and other high cost/importance items is utilized.
- Direct test data entry and storage into a secure, laboratory information and tracking system that automatically generates the reports for review and transmittal is maintained.
- Validated software programs for performing data reduction (utilizing electronic data transfer to eliminate transcription errors) can be operated.
- Materials and equipment to handle heavy and bulky articles up to 909 Kg (2000 lbs) (heavier with prior notification), are available. In addition to a full rack, sized to hold test articles in the 3 m (10 ft) by 1.8 m (6 ft) chamber.

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