

Oxidation Stability of Gasoline and Aviation Fuels

Oxidation Stability of Gasoline (Induction Period Method) Oxidation Stability of Aviation Fuels (Potential Residue Method)

test method

Provides an indication of the tendency of gasoline and aviation fuels to form gum in storage. The sample is oxidized inside a stainless steel pressure vessel initially charged with oxygen at 100psi (689kPa) and heated in a boiling water bath. The amount of time required for a specified drop in pressure (gasoline) or the amount of gum and precipitate formed after a specific aging period (aviation fuels) is determined.

oxidation stability test apparatus

- Conforms to ASTM D525, D873, ISO 7536 and related specifications
- Oxidata® Pressure Measurement System
- Available in two, four or six-unit configurations
- Choice of water/liquid or solid block heating baths
- Oxidation pressure vessel incorporates burst disk assembly

Consists of Oxidation Pressure Vessel, Pressure Measurement Equipment, Oxidation Bath and Accessories.

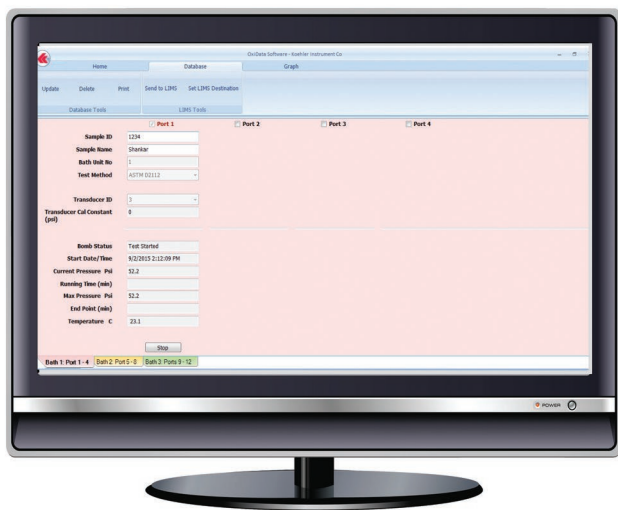


K10500 Oxidation Pressure Vessel

oxidation pressure vessel

Precision machined stainless steel pressure vessel includes threaded body; lid; stem with filler rod and mounting flange; needle valve for purging, pressurizing and exhausting pressure vessel with oxygen; and burst disk assembly. Pressure vessel interior and inside of stem have a high polish to facilitate cleaning and prevent corrosion. Stainless steel burst disk ruptures at 223psi (1537kPa) to prevent unsafe pressure build-up inside pressure vessel. Octagonal sections on the pressure vessel and lid permit tight closure with wrench. Includes buna-N gaskets.

Accessories available rupture disk assembly retrofit for existing pressure vessels. Can also be used as a pressure vessel in ASTM D5304 "Standard Test Method for Assessing Distillate Fuel Storage Stability by Oxygen Overpressure".



Oxidata® Pressure Measurement System

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solid block oxidation baths

- Solid block baths conforming to ASTM and related specifications. Constant temperature baths for heating K10500 Oxidation Pressure Vessels in accordance with ASTM specifications.

Solid Block Baths – Insulated aluminum block baths available in two or four-unit capacity. Baths feature microprocessor temperature control with built-in overtemperature protection and dual LED displays for setpoint and actual temperature values in °C/°F format. The solid block design offers operating advantages over the boiling water bath, and meets temperature control and other requirements of ASTM and related methods. It should be noted, however, that many applicable specifications for this test method call for a liquid bath medium. Housed in an insulated steel cabinet with chemical-resistant polyurethane enamel finish. Includes lids for pressure vessel ports. Order thermometer separately.

Communications software (RS232, etc.) ramp-to-set and other enhanced features are available on the solid block and 4-6 place liquid baths as extra cost options. Contact your Koehler representative for information.

specifications

Conforms to the specifications of: ASTM D525, D873; IP 40, IP 138; ISO 7536; DIN 51780, 51799; FTM 791-3352, 791-3354; NF M 07-012, 07-013

Maximum Temperature:

Solid Block Baths: 250°F (121°C)

Solid block baths meet temperature control and other requirements of ASTM and related methods. While the aluminum block design offers operating advantages over the standard boiling water bath, it should be noted that many applicable specifications for this test call for a liquid bath medium. Please refer to the test method for the specific requirements.

Software compatible, inquire with Koehler Customer Service.

ordering information

catalog no	electrical requirements	heater range	dimensions lxwxh,in.(cm)
Type: Solid Block – 2 vessels			
K10401	115V 60Hz, 12A	0-1300W	15x10x17 (38x25x43)
K10491	220-240V 50/60Hz, 6A	0-1300W	15x10x17 (38x25x43)
Type: Solid Block – 4 vessels			
K10403	115V 60Hz, 22A	0-2500W	24x10x17 (61x25x43)
K10493	220-240V 50/60Hz, 11A	0-2500W	24x10x17 (61x25x43)



K10491 Solid Block Oxidation Bath

ordering information

catalog no.	description
K10540	Glass Sample Container and Cover with pour out spout
K10540/C	Glass Sample Container Cover Only
K10510	Gasket. Replacement composition gasket for K10500 Oxidation Pressure Vessel
K10551	Pressure Line. For pressurizing Oxidation Pressure Vessel. 6 ft. (1.83m) long, with quick release coupling for needle valve on pressure vessel and threaded fitting for oxygen tank
K10556	Oxygen Manifold Pressure Relief System Connects to oxygen source to prevent overcharging of vessel. Equipped with relief valve to vent at 125psi and 300 series stainless steel 150psi burst disk assembly. Constructed from 300 series stainless steel. Cleaned for oxygen service
K10520	Wrench. For tightening seal on Oxidation Pressure Vessel
K10530	Table Socket. Installs in benchtop to aid in tightening seal on Oxidation Pressure Vessel
K10560	Bronze Tubing. For connecting pressure recorder to vessel. Flexible seamless helical tubing with protective armor braid and connections. 5 ft (1.52m) long
K10525	Burst Disk Assembly. Retrofit kit for Oxidation Pressure Vessel without burst disk assembly
250-000-22F	ASTM 22F Thermometer, Range: 204 to 218°F
250-000-22C	ASTM 22C Thermometer, Range: 95 to 103°C

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test method

Water/liquid baths conforming to ASTM and related specifications. Constant temperature baths for heating K10500 Oxidation Pressure Vessels in accordance with ASTM specifications.

water/liquid oxidation baths

Water/Liquid Baths – Two different models, both equipped with low liquid level controllers in accordance with the latest ASTM specifications. Two-unit water bath can be flush mounted in a table top if desired, and is equipped with an overflow standpipe/drain to maintain the proper depth when the pressure vessels are inserted, and a plated brass reflux condenser to minimize evaporation loss.

The six unit model can be used with water or oil as a bath medium, and has a fully digital touch screen controller that provides quick temperature stabilization without overshoot. The bath is also protected by a redundant overtemperature control circuit that interrupts power should bath temperature exceed a programmed cut-off point. Display provides actual setpoint temperature values in °C/°F format. Both models feature double-wall insulated construction with stainless steel tanks, support racks and port covers. Order thermometer separately.

Communications software (RS232, etc.) ramp-to-set and other enhanced features are available on the solid block and 4-6 place liquid baths as extra cost options. Contact your Koehler representative for information.

Solid block baths meet temperature control and other requirements of ASTM and related methods. While the aluminum block design offers operating advantages over the standard boiling water bath, it should be noted that many applicable specifications for this test call for a liquid bath medium. Please refer to the test method for the specific requirements.

specifications

Conforms to the specifications of:
ASTM D525, D873, ISO 7536, and related specifications

Testing Capacity:

K64400/K64402: 2 Test Vessels

K64404: 6 Test Vessels

Temperature Range: ambient to 221°F (105°C)

Temperature Control Stability: ±0.09°F (± 0.05°C)

Heater: 2000W

Bath Medium:

K64400/K64402: 9.9 gal (37.5 L) water or white technical oil

K64404: 16.1 gal (60.9 L) water or white technical oil

ordering information

catalog no.	electrical requirements	dimensions lxwxh,in.(cm)
Type: Water/Liquid – 2 vessels		
K64400	115V 60Hz, 19A	23x11.8x28
K64402	220-240V 50/60Hz, 10A	(58.4x30x71.1)
Type: Water/Liquid – 6 vessels		
K64404	220-240V 50/60Hz, 10A	26x14.8x28.5 (66.1x37.6x72.4)

K64400 2-Position Liquid Oxidation Precision Bath



ordering information

catalog no.	description
K10540	Glass Sample Container and Cover with pour out spout
K10540/C	Glass Sample Container Cover Only
K10510	Gasket. Replacement composition gasket for K10500 Oxidation Pressure Vessel
K10551	Pressure Line. For pressurizing Oxidation Pressure Vessel. 6 ft. (1.83 m) long, with quick release coupling for needle valve on pressure vessel and threaded fitting for oxygen tank
K10556	Oxygen Manifold Pressure Relief System Connects to oxygen source to prevent overcharging of vessel. Equipped with relief valve to vent at 125 psi and 300 series stainless steel 150 psi burst disk assembly. Constructed from 300 series stainless steel. Cleaned for oxygen service
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K10530	Table Socket. Installs in benchtop to aid in tightening seal on Oxidation Pressure Vessel
K10560	Bronze Tubing. For connecting pressure recorder to vessel. Flexible seamless helical tubing with protective armor braid and connections. 5 ft (1.52 m) long
K10525	Burst Disk Assembly. Retrofit kit for Oxidation Pressure Vessel without burst disk assembly
250-000-22F	ASTM 22F Thermometer, Range: 204 to 218°F
250-000-22C	ASTM 22C Thermometer, Range: 95 to 103°C

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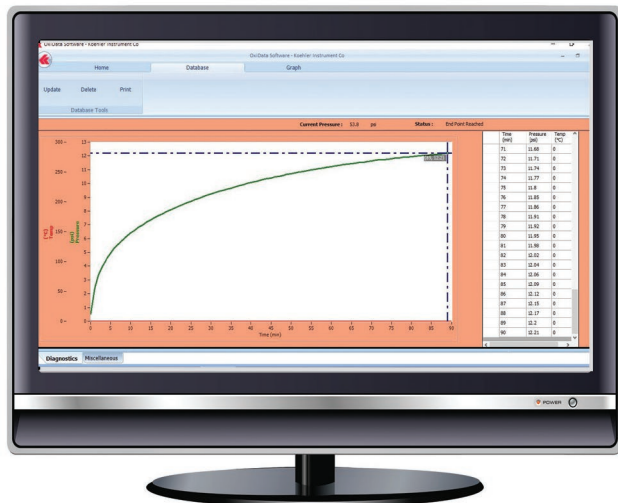
oxidata® pressure measurement systems

- Electronic pressure measurement systems exclusively designed for ASTM oxidation test methods
- Powerful Oxidata® software for Windows® environments
- Monitors up to twelve pressure and four temperature channels
- Automatic end-point detection
- Real-time average bath temperature display
- Can be installed to most manufacturer's fuels oxidation test apparatus

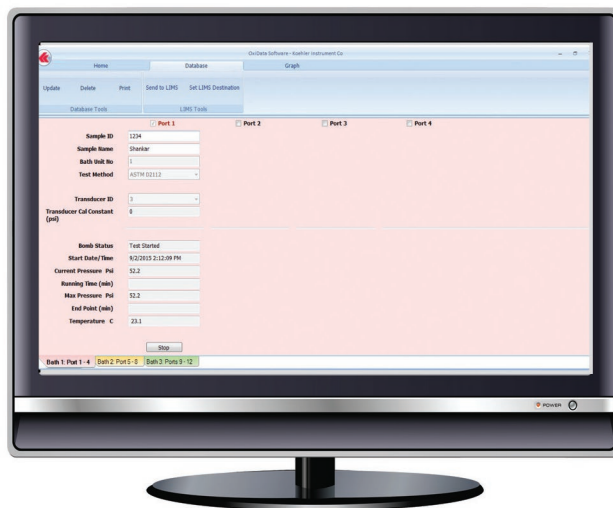
Complete electronic measurement systems for plotting pressure versus time and temperature in oxidation testing of fuels. Each system includes transducers, USB multiplexer, software, and mounting and connecting hardware. Systems are available in two, three and four pressure vessel configurations, and additional channels can be added for up to a total of twelve pressure and four temperature channels.

Koehler's pressure measurement systems for fuels oxidation testing features Oxidata®, a high accuracy pressure measurement software package designed exclusively for ASTM oxidation test methods. Designed to run in a Windows® environment, Oxidata® monitors up to twelve samples simultaneously, with graphical or tabular display of results. Each channel can be independently configured for any of the applicable ASTM standard test methods without compromising the independence or accuracy of the other channels. Independent start and stop times and user programmable end points add even greater flexibility.

The software plots your data on screen in real time. Multiple display options include the ability to view the status of all twelve pressure channels on screen simultaneously and then click on any one channel for a graph display; or to view four channels in graphical format simultaneously. Powerful program features allow user to zoom in on a specific plot section to view data in greater detail. Color-coded bath identification is built into the software for easy identification of test baths. The software will determine the break point and induction period according to the test method and will save the test data in csv format for further data assessment.



Oxidata® software automatically tracks measured data in real-time and calculates the endpoint of RPVOT (RBOT)/TFOUT test methods



oxidata® features and specifications

- On line, real time monitoring of up to twelve samples simultaneously – results plot directly to the screen for instant monitoring or printout of results
- Automatic detection and reporting of break point and induction period
- Invalid test indication when a pressure leak is detected
- Menu options for fuels oxidation testing and other ASTM oxidation tests
- Programmable automatic end point detection with graphical and tabular representation
- Each channel can be configured and operated independently with different start/stop times and different ASTM test methods
- Zoom in feature allows for magnification of any plot sector on any channel for a more detailed study
- Monitors and reports temperatures of as many as twelve pressure vessels simultaneously using accessory cables, and calculates and displays average temperature for each of up to four baths
- Exports data to spreadsheet programs such as Microsoft Excel®, csv readers, etc.
- Temperature and pressure calibration capability
- Data is saved directly to the disk or hard drive during testing to prevent loss of valuable data
- Operates in Windows® 7 or higher

Included Accessories (for the pressure measurement systems)

- Transducers (connects directly to pressure vessel)
- USB multiplexer box
- Oxidata® software
- Connecting cables and hardware

Computer Requirements

- Processor: Intel® Core Duo Processor or similar (minimum)
- Memory (RAM): 1GB (32-bit) / 2GB (64-bit) or higher
- Windows® 7 or higher
- Disk Space: 1 GB free space (minimum)
- Communications Port: Two USB ports
- Other Software: Microsoft® Excel (2007 or above)



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