SMART 6™
Moisture/Solids Analysis

Solids 11.44%
Overview

The SMART 6 is the most technologically advanced moisture/solids/volatiles rapid analyzer available.

The system features two major innovations, compared to other moisture analyzers: the ability to accurately analyze both wet and dry samples, and a significant reduction in sample drying times. These benefits are possible through the development of iPowe® technology, which features a patented dual-frequency drying technique.

This unique energy source allows for analysis times now up to 10x faster than traditional IR (infrared) and halogen drying systems. Never before has a moisture analyzer been able to offer so much, with the fastest and most accurate analysis for any sample type.

Features

- Up to 10x faster than infrared and halogen systems
- Up to 40% faster than CEM’s SMART 5 Turbo
- Analyze both dry and wet products on one system
- Pre-programmed methods for all sample types
- Compact and lightweight for easy at-line placement
- Analyze polar and non-polar solvents

Validation

- AOAC 985.14
- AOAC 2008.06
- AOAC PVM 1.2004
- Title 21 CFR, Part 11

Over 11,000 moisture analyzers sold worldwide
Common Applications

Dairy
- Adhesives
- Bacon
- Black Liquor
- Butter
- Chicken
- Chips
- Cod
- Condensed Milk
- Cosmetics
- Crackers
- Cream
- Cream Cheese

Meat
- Deli Chicken
- Deli Ham
- Detergents
- Dressings
- Dry Dog Food
- Duck
- Egg Whites
- Ground Beef
- Heavy Cream
- Hot Dogs
- Ice Cream Mix

Processed Foods
- Lamb
- Mayonnaise
- Milk
- Mixed Foods
- Natural Cheese
- Non-Fat Milk Powder
- Noodles
- Poultry Feed
- Powdered Infant Formula
- Processed Cheese
- Processed Meat
- Raw Pork

Chemical
- Resin
- Salmon
- Sausage
- Sour Cream
- TiO₂
- Turkey
- Wastewater
- Wheat Flour
- Whey Powder
- Whole Milk Powder
- Yogurt
- And many more...
Unparalleled Speed and Technology

iPower®

Analyze wet and dry samples with unmatched speed.

iPower® is an innovative heating process based on the use of a dual-frequency energy source controlled by an intelligent processing system. This prevents burning or incomplete drying, which can arise from other drying technologies. The result is a direct method for virtually any type of sample, with faster drying than traditional microwave or infrared based systems.

- Analyze wet and dry samples with unmatched speed
- Eliminates surface burning
- Little to no “cool down” time between tests

Collimated Energy

Accurate and repeatable results come standard.

Stray infrared irradiation can negatively impact sample temperature readings with the use of infrared temperature sensors. SMART 6 has a unique honeycomb lattice, providing collimated infrared irradiation for sample heating, thereby avoiding stray light. This provides highly accurate temperature control.

Time Comparison (in seconds)

![Graph showing time comparison between SMART 6, SMART 5, and IR/halogen methods for various samples such as Cheese, Coating, Cream, Deli Meat, Latex, Milk Powder, Raw Meat, Salad Dressing, Solvent Adhesive, and Sweet Condensed Milk. The graph includes bars for each sample indicating the time taken by each method.](image-url)
SMART 6 is the Most Accurate for Moisture/Solids Analysis

Unparalleled Speed and Technology

Application Support

Pre-installed Method Library

A simple touch is all it takes. Leave method development behind with SMART 6 One Touch Technology®.

Test virtually any sample with a library of ready-to-use methods at your fingertips.

Moisture/Solids Results

<table>
<thead>
<tr>
<th>Sample</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>St Dev</th>
<th>Moisture or Solids</th>
<th>S6 Average</th>
<th>Reference</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>11.93</td>
<td>11.94</td>
<td>11.94</td>
<td>11.94</td>
<td>11.94</td>
<td>0.02</td>
<td>Solids</td>
<td>11.95</td>
<td>11.91</td>
<td>0.04</td>
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<tr>
<td>Yogurt</td>
<td>23.31</td>
<td>23.30</td>
<td>23.45</td>
<td>23.47</td>
<td>23.35</td>
<td>0.07</td>
<td>Solids</td>
<td>23.38</td>
<td>23.25</td>
<td>0.13</td>
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<tr>
<td>Sour Cream</td>
<td>25.31</td>
<td>25.21</td>
<td>25.37</td>
<td>25.25</td>
<td>25.36</td>
<td>0.06</td>
<td>Solids</td>
<td>25.30</td>
<td>25.22</td>
<td>0.08</td>
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<tr>
<td>Condensed Skim Milk</td>
<td>33.45</td>
<td>33.46</td>
<td>33.48</td>
<td>33.58</td>
<td>33.35</td>
<td>0.07</td>
<td>Solids</td>
<td>33.46</td>
<td>33.39</td>
<td>0.07</td>
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<tr>
<td>Ice Cream</td>
<td>40.42</td>
<td>40.41</td>
<td>40.72</td>
<td>40.63</td>
<td>40.70</td>
<td>0.13</td>
<td>Solids</td>
<td>40.58</td>
<td>40.54</td>
<td>0.04</td>
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<tr>
<td>Cream</td>
<td>45.42</td>
<td>45.30</td>
<td>45.05</td>
<td>45.20</td>
<td>45.25</td>
<td>0.12</td>
<td>Solids</td>
<td>45.24</td>
<td>45.24</td>
<td>0.00</td>
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<tr>
<td>Milk Powder</td>
<td>3.56</td>
<td>3.64</td>
<td>3.66</td>
<td>3.50</td>
<td>3.59</td>
<td>0.06</td>
<td>Moisture</td>
<td>3.59</td>
<td>3.52</td>
<td>0.07</td>
</tr>
<tr>
<td>Cream Cheese</td>
<td>54.00</td>
<td>53.99</td>
<td>53.98</td>
<td>53.80</td>
<td>53.94</td>
<td>0.07</td>
<td>Moisture</td>
<td>53.94</td>
<td>53.94</td>
<td>0.00</td>
</tr>
<tr>
<td>Cheese</td>
<td>45.45</td>
<td>45.23</td>
<td>45.31</td>
<td>45.22</td>
<td>45.27</td>
<td>0.08</td>
<td>Moisture</td>
<td>45.30</td>
<td>45.36</td>
<td>-0.06</td>
</tr>
<tr>
<td>Salad Dressing</td>
<td>49.56</td>
<td>49.66</td>
<td>49.55</td>
<td>49.52</td>
<td>49.57</td>
<td>0.05</td>
<td>Solids</td>
<td>49.57</td>
<td>49.46</td>
<td>0.11</td>
</tr>
<tr>
<td>Beef</td>
<td>56.13</td>
<td>56.23</td>
<td>55.76</td>
<td>56.16</td>
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<td>0.16</td>
<td>Moisture</td>
<td>56.08</td>
<td>55.91</td>
<td>0.17</td>
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<tr>
<td>Chicken</td>
<td>66.94</td>
<td>66.55</td>
<td>66.77</td>
<td>66.84</td>
<td>67.12</td>
<td>0.19</td>
<td>Moisture</td>
<td>66.84</td>
<td>66.86</td>
<td>-0.02</td>
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<tr>
<td>Deli Meat</td>
<td>76.50</td>
<td>76.52</td>
<td>76.40</td>
<td>76.47</td>
<td>76.53</td>
<td>0.05</td>
<td>Moisture</td>
<td>76.48</td>
<td>76.45</td>
<td>0.03</td>
</tr>
<tr>
<td>Potted Meat</td>
<td>69.98</td>
<td>70.03</td>
<td>69.96</td>
<td>70.08</td>
<td>70.10</td>
<td>0.05</td>
<td>Moisture</td>
<td>70.03</td>
<td>70.38</td>
<td>-0.35</td>
</tr>
<tr>
<td>Hotdogs</td>
<td>52.71</td>
<td>52.66</td>
<td>53.28</td>
<td>52.74</td>
<td>52.62</td>
<td>0.24</td>
<td>Moisture</td>
<td>52.80</td>
<td>52.89</td>
<td>-0.09</td>
</tr>
<tr>
<td>Pork</td>
<td>57.48</td>
<td>57.54</td>
<td>57.37</td>
<td>56.95</td>
<td>57.11</td>
<td>0.22</td>
<td>Moisture</td>
<td>57.29</td>
<td>57.47</td>
<td>-0.18</td>
</tr>
<tr>
<td>Latex</td>
<td>56.83</td>
<td>56.82</td>
<td>56.70</td>
<td>56.80</td>
<td>56.78</td>
<td>0.05</td>
<td>Solids</td>
<td>56.79</td>
<td>56.80</td>
<td>-0.01</td>
</tr>
<tr>
<td>Coating</td>
<td>55.38</td>
<td>55.66</td>
<td>55.59</td>
<td>55.42</td>
<td>55.55</td>
<td>0.10</td>
<td>Solids</td>
<td>55.52</td>
<td>55.41</td>
<td>0.11</td>
</tr>
<tr>
<td>Adhesive, Solvent-based</td>
<td>63.39</td>
<td>63.60</td>
<td>63.40</td>
<td>63.46</td>
<td>63.44</td>
<td>0.08</td>
<td>Solids</td>
<td>63.46</td>
<td>63.17</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Application Support

Application support, when you need it.

The applications team at CEM has developed a library of method notes to guide you in programming methods. View them at cem.com/methods.

If no method note exists for your application, contact us at process.support@cem.com and we will be happy to develop one for you.

Pre-installed Method Library

A simple touch is all it takes. Leave method development behind with SMART 6 One Touch Technology®.

Test virtually any sample with a library of ready-to-use methods at your fingertips.
Simplicity

1. Tare Pads
2. Add Sample
3. Press “Start”

Workflow

Individual User Logins
Password protected and CFR 21 Part 11 compliant

Built-In Training Videos
Ensure your technicians run the SMART 6 correctly

Method Import
Import from other users or CEM’s method library from anywhere in the world

Data Export
For easy data review and storage
<table>
<thead>
<tr>
<th></th>
<th>SMART 6</th>
<th>SMART 5 Turbo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal Species</td>
<td>Free + Bound Moisture, Polar + Non-Polar</td>
<td>Free Moisture, Polar Volatiles</td>
</tr>
<tr>
<td>Moisture/Solids Range</td>
<td>0.01 to 99.99 %, 0.01 % resolution (optional 0.001 %)</td>
<td>0.01 to 99.99 %, 0.01 % resolution (optional 0.001 %)</td>
</tr>
<tr>
<td>Energy Source</td>
<td>Dual-frequency Electromagnetic Irradiation (iPower)</td>
<td>Microwave Energy</td>
</tr>
<tr>
<td>Display</td>
<td>7-inch capacitive LCD touchscreen (800 x 600)</td>
<td>Black and White VGA (320x240)</td>
</tr>
<tr>
<td>Program/Data Storage</td>
<td>Unlimited</td>
<td>100 methods, 300 results</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>Advanced Statistical Processing</td>
<td>Standard</td>
</tr>
<tr>
<td>System Wake-up</td>
<td>Proximity Detection</td>
<td>Push Button</td>
</tr>
<tr>
<td>Exhaust</td>
<td><strong>15,600 RPM</strong> (adjustable with speed control)</td>
<td><strong>3,100 RPM</strong> (non-adjustable)</td>
</tr>
<tr>
<td>Footprint</td>
<td>• <strong>13.0 (W) x 23.0 (D) in (299 in²)</strong></td>
<td>• <strong>22.0 (W) x 23.3 (D) in (513 in²)</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>33.0 (W) x 58.5 (D) cm (1931 cm²)</strong></td>
<td>• <strong>55.9 (W) x 59.1 (D) cm (3304 cm²)</strong></td>
</tr>
<tr>
<td>Weight</td>
<td><strong>62 lbs (28 kg)</strong></td>
<td><strong>68 lbs (31 kg)</strong></td>
</tr>
</tbody>
</table>
Over 50,000 systems sold worldwide

CEM has been an ISO-certified facility since 1994

All systems serviced & supported by experts with an average of 15 years of experience

CEM invests 11% of annual revenue into R&D, the result...11 R&D 100 awards

IQ/OQ/PQ Validation by certified CEM Technicians

United States (Headquarters)
800-726-3331
704-821-7015
Fax: 704-821-7894
info@cem.com

France
33 (01) 69 35 57 80
Fax: 33 (01) 60 19 64 91
info.fr@cem.com

Germany, Austria, Switzerland
(49) 2842-9644-0
Fax: (49) 2842-9644-11
info@cem.de

Ireland
+353 (0) 1 885 1752
Fax: +353 (0) 1 885 1601
info.ireland@cem.com

Italy
(39) 35-896224
Fax: (39) 35-891661
info.srl@cem.com

Japan
+81-3-5793-8542
Fax: +81-3-5793-8543
info@cemjapan.co.jp

United Kingdom
(44) 1280-822873
Fax: (44) 1280-822873
info.uk@cem.com

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