

Standard Safety Protocol

CEM Mars 5 Microwave Digestion Request for Use Form

Microwave Digestion Safety Precautions

Microwave digestion greatly enhances the destruction of chemical bonds thereby achieving a faster digest. Caution should be exercised when preparing unknown samples as the combination of acid and rapid heating in a closed vessel could result in an exothermic reaction. If a sample is prone to exothermic reactions (example alcohols, sugars, carbohydrates, etc.) the reaction could be so great as to break the vessels or damage the microwave system. Acid decomposition of certain chemical compounds or types of samples constitutes unreasonable, hazardous misuse of microwave digestion systems. The classes of compounds listed below are unsuitable for closed vessel microwave digestion because they are highly reactive with oxidizing acids and/or may become nitrated and potentially explosive. The TRACES Centre is not responsible for personal injuries resulting from microwave digestion of such compounds/samples.

Proper precautions must be taken to avoid contact with reagents or reagent vapors. Protective gear should be worn as outlined in the reagent manufacturer's safety data sheet. Refer to these guidelines for proper handling and disposal of the reagent.

IMPORTANT: Absence of a chemical compound from this list does not imply microwave acid decomposition of such a sample is safe under all conditions. It is the responsibility of the User to ensure if a chemical is suitable to undergo microwave digestion before analysis.

Compounds Unsuitable for Closed Vessel Microwave Digestion

Please check each box to confirm the absence of each unsuitable chemical class

<input type="checkbox"/>	Explosives (TNT, Nitrocellulose, etc.)
<input type="checkbox"/>	Pyrophoric chemicals
<input type="checkbox"/>	Propellants (Hydrazine, Ammonium Perchlorate, etc.)
<input type="checkbox"/>	Hypergolic mixtures (Nitric Acid and Phenol, Nitric Acid and Triethylamine, Nitric Acid and Acetone, etc.)
<input type="checkbox"/>	Animal Fats (Esters of glycerol capable of nitration and the formation of nitroglycerin or other nitrated organic compounds)
<input type="checkbox"/>	Aviation Fuels (JP-1, etc.)
<input type="checkbox"/>	Acetylides
<input type="checkbox"/>	Glycols (Ethylene Glycol, Propylene Glycol, etc.)
<input type="checkbox"/>	Perchlorates (Ammonium, Potassium, etc.)
<input type="checkbox"/>	Ethers (Cellosolve - Ethylene Glycol Phenyl ether, etc.)
<input type="checkbox"/>	Lacquers
<input type="checkbox"/>	Alkanes (Butane, Hexane, etc.)
<input type="checkbox"/>	Ketones (Acetone, Methyl Ethyl Ketone, etc.) and alcohols (methanol, etc.)

 TRACES Staff Microwave Digestion User Date Date(s) of USE

Approver:
 T. Adamo