

# Supercritical Fluid Application Notes

**SCF  
517**

## Extraction of Fat from Pig Feed Using Supercritical Fluids

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### Introduction

The traditional method for the determination of raw fat in pig feed typically employs extraction by petroleum ether usually following an acid hydrolysis. This method is rather slow, and requires the use of organic solvents with the subsequent production of waste solvents.

In recent years, alternative techniques for fat determination have been introduced. One of these methods is the extraction of CO<sub>2</sub> under supercritical conditions (SFE).

Fat extractions by SFE were conducted on different feedstuffs, including feed mixture for pigs, as well as various raw materials, and were statistically compared to the standard petroleum ether extraction technique.

### Equipment

- ✓ Applied Separations' *Spe-ed* SFE Supercritical Extraction System

### Materials

- ✓ *Spe-ed* Matrix (Cat. #7950)
- ✓ *Spe-ed* Wool (Cat. #7953)
- ✓ Carbon dioxide – Zero grade

### Method

Weigh 5g of ground sample into 7g of *Spe-ed* Matrix. Pour sample into extraction vessel and install into SFE oven. Extract sample as per extraction conditions. Collect fat in tared collection vial.

### Extraction Conditions

Extraction vessel:	24mL
Sample:	5g Animal Feed
Pressure:	9000 psi
Temperature:	100°C
Valve temperature:	110°C
CO <sub>2</sub> Flow Rate:	3L/min
Collection:	60mL tared vial

### Results

	Pig Feed
% Fat	4.73
S <sub>r</sub> *	0.20
N	5

\*Standard deviation of reproducibility

### Conclusion

The accuracy and precision of the supercritical CO<sub>2</sub> fat extraction compared closely to the traditional petroleum ether extraction technique. In addition, there was no acid hydrolysis step, process time was reduced, and hazardous solvents were eliminated.



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