

## INNOVATIVE SEED PREPARATION

# Dox/Hivex™ Preparation Technology

Proper oilseed preparation ahead of Expeller® pressing has been and always will be a fundamental key to oil yield and oil and meal quality.

The traditional preparation includes seed cleaning, decortication, sizing via one or a combination of grinding, cracking and flaking. Then cooking and/or drying prior to expelling. These steps are necessary to have the seed materials at their ready point of releasing their oils under continuous expelling. Any lapses in the control or maintenance of this preparatory equipment, reduces capacities, yields and quality of the pressed products. In many cases, dramatically.

Today the industry demands better oil and meal quality, better than even the best controlled traditional methods can provide. Every working of the seed materials produces respective damage to oil and meal. This is why Anderson developed the Dox/Hivex™ expander, an extrusion based design that crushes the seed materials, cooks them, drains their free oils and fats, and efficiently shears their oil cells for the pressing operation.

## Dox/Hivex™ Principles and Benefits:

### Oil and Meal Quality:

The Dox/Hivex™ is an Anderson patented processing machine which reduces cooking time from the traditional 45 minutes to a total of 20 seconds. Instead of allowing enzymatic activity to create FFA, the enzymes are deactivated in seconds rather than allowed to become highly active in the warm moisture environment of the traditional steam jacketed vessels. The very short cooking cycle in the Dox/Hivex™ deactivates the enzymes before they can act on the oil, thus resulting in the same FFA that it had prior to mechanically being cooked.

Furthermore, traditional cooking can brown the meal with transfers color bodies into the oil elevating the yellow and red components of the oils and fats. When observing the meal discharging from the Dox/Hivex™, the meal is slightly darker than the natural color of the seed material, yet it is fully cooked.

### Oil Reduction:

The shearing activity within this novel processing machine between the shaft flights and interrupter pins creates a fair measure of free oil when processing high oil bearing seeds and materials. Incorporating our Expeller® technology as part of the design allows the free oil to drain, after which the seed materials are further worked through the discharge barrel.

Instantly arrests FFA development, browning of meals, disrupts enzymatic activity and produces exceptional quality oils. Here are examples:

#### CANOLA:

- Chlorophyll.....15 - 18 PPM
- FFA.....0.29 - 0.40%
- Phosphorous.....26 - 78 PPM

#### SUNFLOWER:

- Peroxide Value.....1.6
- FFA.....1.09 - 1.33%
- Phosphorous.....12 - 27 PPM



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At the discharge end of the Dox/Hivex™ expander there is a special Anderson designed die plate arrangement which forces the seed material through a venturi that effectively shears much of the remaining oil cells. Once again observing the discharging material one can witness the oil frothing on the surface of the meal evidencing that cell shearing activity. Within a few feet of the discharge the oil is reabsorbed into the meal, yet recognize that it is now free oil and not bound by the cells. This dramatically reduces the work load of the Expeller® to liberate the balance of the oil in the seed material.

### Steam Reduction:

It is known that efficient expelling requires specific temperatures and moistures of the seed materials. The Dox/Hivex™ provides this through the control of the venturi pressure, allowing temperature control from 240 - 330°F, depending

on the materials processed. The added benefit here is that ambient conditions have the moisture of the discharge flash into vapor thus reducing to a considerable extent the amount of drying required for proper expelling.

### Oil Expelling:

The final exceptional benefit resulting from the use of the Dox/Hivex™ to prepare the seed material is that it increases the capacity of the Expeller® by 100 - 200% depending on material being processed. This results not only in a major reduction of capital investment, it considerably increases wear life per ton of material processed. And instead of the Expeller® using 3 - 5 HP per ton-days, it uses from 1 - 1.5 HP per ton-days.

### Dox/Hivex™ Capabilities:

Model	Oilseed Capacity MTPD	Connected Power HP	Residual Oil Performance %	Physical Installation Data			
				Length	Width	Height	Weight
8" D/H - 200	30 - 60	100 - 200	23 - 27	14' - 9" (4496 mm)	3' - 4" (1016 mm)	36" (914 mm)	4950 Lbs. (2245 kg)
12" D/H - 400 (Projected)	100 - 120	300 - 400	23 - 27	19' - 1" (5817 mm)	3' - 4" (1016 mm)	42" (1067 mm)	10200 Lbs. (4626 kg)
12" D/H - 500 (Projected)	120 - 150	450 - 500	23 - 27	19' - 1" (5817 mm)	3' - 4" (1016 mm)	42" (1067 mm)	11200 Lbs. (5079 kg)



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