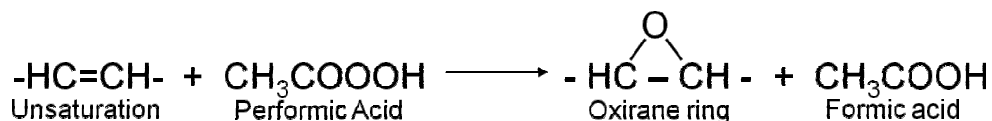


## IODINE INDEX

Effective Date: 03/15/2021

Iodine index measures the concentration of unsaturation of a given molecule. It is inversely proportional to the conversion of the epoxidation process.

The iodine index of the original raw materials affects the epoxidation reaction, as it depends on the available double bonds of the vegetable oil as shown on the equation below:



Different vegetable oils have different unsaturation averages, resulting in different iodine indexes of the raw material. Also, soy from different regions and varieties present different unsaturation averages, as the distribution of fatty acids of the triglycerides vary. To ensure consistency, a strict specification is determined for the acquisition of soybean oil to ensure the minimum level of unsaturations.

Vegetable Oil	Average MW	Fatty Acids			
		% Saturated	% single unsaturated	% double unsaturated	% poly unsaturated
SOYBEAN (USA)	278.5	11.4	28.0	52.6	8.1
SOYBEAN (Brazil)	277.5	14.9	35.0	44.0	6.1
LINSEED	277.2	10.9	21.0	17.4	50.7
CORN	278.6	11.7	46.0	42.3	0.0

The iodine index of the final plasticizer is dependent on the conversion of the epoxidation process, which is ensured by proper controls, including quality monitoring of all steps of the reaction and separation processes. Higher iodine indexes are associated with poorer long term compatibility of vegetable-based plasticizers.

The table below shows the iodine index specifications of Innoleic™ products.

	Iodine Index (wt%)
Innoleic™ E1	4.0 max
Innoleic™ B5	4.0 max
Innoleic™ MB50	4.0 max
Innoleic™ MB25	4.0 max

This information refers only to these specific materials here described and may not be valid if the products are used in combination with any other materials or processes. It is sole responsibility of the user to assure the product is adequate and integral for its particular use. Innoleics will not be liable for any loss or damage resulting from the use of this information.