Introduction of Sunflower Oil Process

1.Sunflower seeds pretreatment workshop

Sunflower seeds, as one kind of oilseeds with high oil content, need pretreatment for pre-pressing and then with extractor to extract oil from pressing cake. Pretreatment process mainly includes cleaning, de-stoning, shelling, crushing, flaking ,cooking and other processes.

1).Cleaning. Use magnetic selector to remove metal impurities and remove other impurities with cleaning screen, specific gravity stoner and dust remover. If it's sunflower seeds for oil usage, shelling is not required; if for edible type, shelling is required.

2).Crushing. Use crusher to crush sunflower seeds into pieces so as to get smaller particle size for flaking.

3).Flaking. Roll sunflower seeds particles into flakes with flaking roll, so as to break its cellular structure and then separate oil easier when extracting.

4).Cooking. Through adjusting sunflower seeds flakes to suitable moisture and temperature to break internal structure of sunflower seeds so as to separate oil from oilseeds .

5).Pre-pressing. Use oil press to press part of oil firstly to decrease oil content, and offer convenience for extraction.

2.Extraction Workshop

It includes oil extraction, wet meal toasting, miscella evaporation, solvent recovery, exhaust gas recovery with paraffin and other processes.

1).Extraction section. Convey sunflower seeds flakes with scraper conveyor to extractor, make them contact with organic solvent fully through soak and spray to get miscella, miscella into miscella tank for removing solvent, and wet meal out of the bottom of extractor to desolventizer-toaster for solvent removal.

Rotocel extractor is typical extractor to extract oil with solvent.

2).Toasting section. Use DTDC to separate solvent out from wet meal to get dry meal without solvent for animal feeds, and solvent can be recycled through condensation.

DTDC desolventizer-toaster is used in this section.

3).Evaporation and steam-stripping section. Because of different boiling point, remove solvent from miscella to get crude soybean oil with No.1 long tube

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evaporator, No.2 long tube evaporator and steam-stripping column.

4).Solvent from meal toasting and evaporation and steam-stripping of miscella can be recycled through condensation.

5).Exhaust gas recovery section. Use paraffin absorption tower, paraffin desorption tower to remove residual solvent.

3.Oil refining Workshop

Add hot water to remove phospholipids, decolorization (removing pigment from oil to make oil clear and transparent) through adsorption of active bleaching clay, continuous physical deacidification and deodorization.

1).Degumming,alkali refining deacidification, water washing and drying.

Through adding hot water and food grade phosphoric acid to remove hydratable phospholipids and nonhydratable phospholipids.Then add caustic soda to neutralize free fatty acid to decrease acid value.

2).Decolorization. Add active bleaching clay, and remove pigment from oil through adsorption of active bleaching clay.

3).Deacidification and .Remove free fatty acid from oil to decrease acid value. Use deacidification pot for batch deacidification and deacidification tower for continuous deacidification.

4).Deodorization. Remove odor from oil. Deodorization pot is used for batch oil deodorization, and deodorization tower is used for continuous deodorization.

5).Dewaxing. Through cooling crystallization to separate wax, then use filter to remove wax.

Finished Sunflower Oil Quality Indexes

Item	Quality Index			
	Grade 1	Grade 2	Grade 3	Grade 4
Color（Lovibond color slot 25.4mm）≤	——	——	Y35 R3.0	Y35 R5.0
Color（Lovibond color slot 133.4mm）≤	Y15 R1.5	Y25 R2.5	——	——
Odor/Flavor	Odorless, good taste	Good flavor and taste	With inherent odor and flavor of sunflower oil, odorless	With inherent odor and flavor of sunflower oil, odorless
Transparency	Clear, transparen	Clear, transparen	——	——

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Moisture and volatile matter/% ≤		0.05	0.05	0.10	0.20
Insoluble impurities（%）≤		0.05	0.05	0.05	0.05
Acid value（KOH）/(mg/g) ≤		0.20	0.30	1.0	3.0
Peroxide value/（mmol/kg） ≤		5.0	5.0	5.0	5.0
Heating test（280℃）		——	——	No precipitates, lovibond color: Yellow value unchanged,red value adds below 0.4	Little precipitates, lovibond color: Yellow value unchanged,red value adds below 4.0,blue value adds below 0.5
Saponified matter content/%≤		——	——	0.03	——
Smoke point/℃≥		215	205	——	——
Refrigeration test (storing for 5.5h at 0℃)		Clear, transparent	——	——	——
Residual solvent/（mg/kg）	Extraction oil	Not detected	Not detected	≤50	≤50
	Pressing oil	No	No	No	No

Note:
1. "——" means not testing these indexes.When the test value of residual solvent content is lower than 10mg/kg,it's seen as not detected.
2. The indexes of red letters are mandatory.

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