

Natural waxes

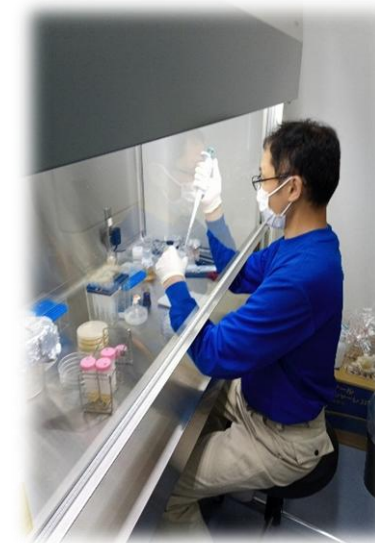
- ✓ Sustainable material
- ✓ Biological material
- ✓ Eco-friendly / Green material

- Company profile (P3~6)
- Natural wax list (P7~14)
- Wax data (P15~18)



Company	TOA KASEI CO., LTD.
President	Takeshi Asai
Found	10 th March in 1913
Established	29 th August in 1952
Location	Osaka head office Tokyo office Seoul office Aikawa wax factory Higashi-Osaka warehouse
Certification	ISO9001, 14001
Features	▪ Our wax has been approved for severe quality application like semiconductor encapsulant, cosmetics and food.

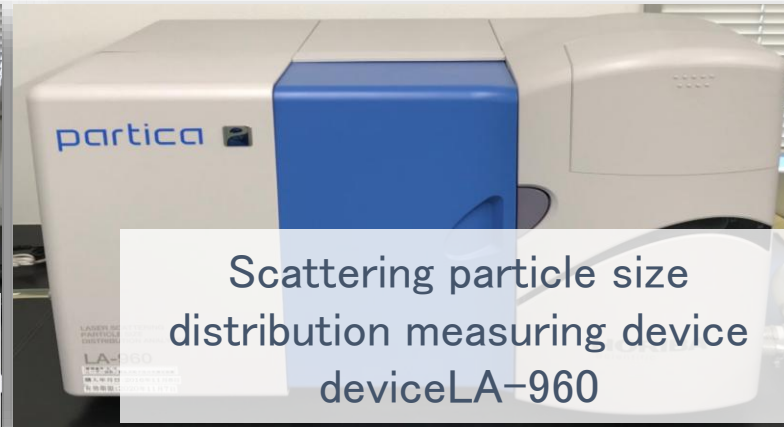
Aikawa wax plant



- Careful selection of raw materials by quality control
- Up to 1200t/a can be produced
- Can be refined and processed with original technology and equipment
- Responding to a wide range of individual customer needs



Thermal Analyzer
DSC 6200 TG/DTA 6200



Scattering particle size
distribution measuring device
device LA-960



Gas chromatography
GC-2010 Plus Plus



Spectrophotometer
UV-1850



Granulator

1913	Opened joint-stock company “Matsunami sho-ten”
1982	Increased capital stock to 10 million JPY
1993	Opened Tokyo branch
2000	Established Aikawa factory
2007	Passed ISO Certification 14001
2012	Passed ISO Certification 9001
2013	Our Centennial anniversary
2015	Received award as an Excellent Corporation from East Tax Office
2020	Established Higashi Osaka warehouse

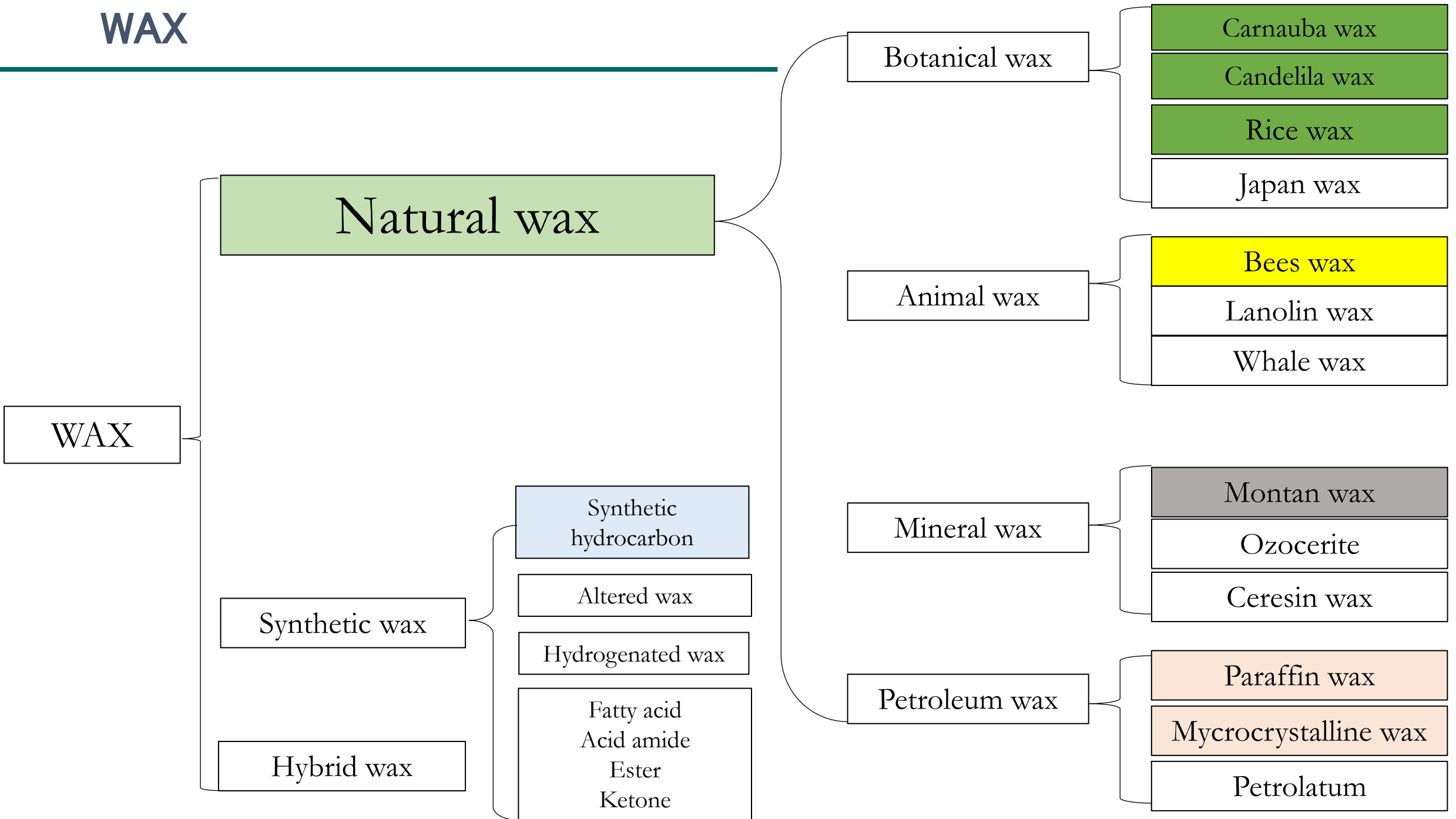
Main Customers



Main Partners



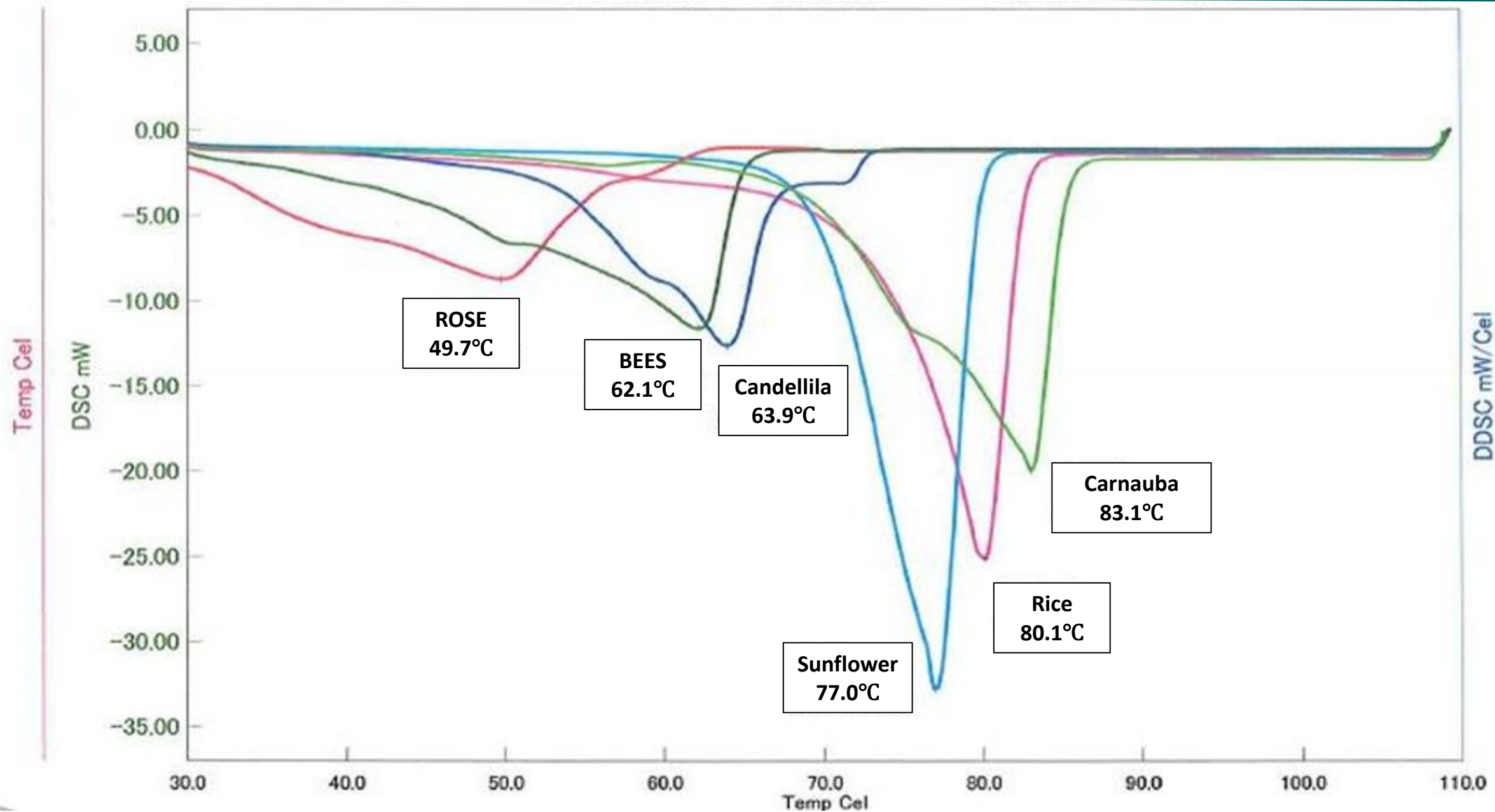
WAX



Compositions of natural wax

	CANDELILLA WAX	CARNAUBA WAX	RICE WAX	JAPAN WAX
ESTER	24~30% $C_{42} \sim C_{56}$ ALCOHOL : C_{30}、C_{32}、C_{34} FATTY ACID : $C_{16} \sim C_{34}$ MAINLY C_{20}、C_{32}、C_{33}、C_{34}	80~85% $C_{48} \sim C_{64}$ ALCOHOL $C_{20} \sim C_{34}$ MAINLY C_{30}、C_{32}、C_{34} 50%~60% C_{32} FATTY ACID : $C_{14} \sim C_{34}$ MAINLY C_{20}、C_{22}、C_{24}、C_{26}、C_{28} 30~35% HYDROXY ACID ESTER IT COUSES IMPROVING EMULSIVE.	93~97% : mainly C_{32} ALCOHOL $C_{22} \sim C_{36}$ (MAINLY C_{26}、C_{28}、C_{30}) FATTY ACID $C_{16} \sim C_{34}$ MAINLY C_{22}、C_{24}、C_{26} LITTLE QUANTITY C_{28}、C_{30}、C_{32} OTHERS: CYCLIC ALCOHOL ESTER FATTY ACID ESTER	MONOBASIC ACID GLYCERIDE <u>90~91%</u> C_{16}、C_{18}、C_{20}、C_{24}、 72~82% C_{16} OTHERS $C_{18:1}$、$C_{18:2}$ DIBASIC ACID GLYCERIDE <u>3~6.5%</u> $C_{20} \sim C_{22}$
FREE FATTY ACID	<u>10~20%</u> $C_{20} \sim C_{35}$ (ALMOST C_{30}、C_{32}、C_{34})	<u>3~4%</u> $C_{16} \sim C_{32}$ MAINLY C_{20}、C_{26}、C_{28}、C_{30}	<u>4~7%</u> C_{16}、C_{18}、$C_{18:1}$、$C_{18:2}$ (MAINLY C_{16})	<u>3. 7~5.6%</u> C_9、C_{16}、$C_{18:1}$、$C_{18:2}$ (MAINLY $C_{18:2}$)
FREE ALCOHOL	<u>10~15%</u> $C_{26} \sim C_{34}$ (MAINLY $C_{28} \sim C_{32}$) OTHERS: STEROL, NEUTRAL RESIN. ODD — NUMBERD ALCOHOL	<u>10~12%</u> $C_{16} \sim C_{32}$		<u>1.2~1.6%</u> C_{20}、C_{26}、C_{30} etc.
HYDROCARBON	<u>40~45%</u> $C_{28} \sim C_{33}$ (ABOUT 70% C_{31})	<u>1~3%</u> $C_{20} \sim C_{33}$ (MAINLY C_{27}、C_{29}、C_{31})		

DSC chart



- Rice bran wax is excellent in glossiness, plasticity, lubricity and formability.
- The wax has a narrow carbon range of ester. So differential thermal analysis shows a sharp endothermic reaction.

【Application】 Tonner / Release agent for plastic / textile auxiliaries

Product name	Acid value (mg/g)	Saponification value(mg/g)	Iodine value (g/100g)	Melting point(°C)	Shape Color/Others
TOWAX-3F15	10 $\geq$	70~95	13 $\geq$	77~83	Light Yellow
TOWAX-3F17	10 $\geq$	70~95	13 $\geq$	77~83	Light Yellow
TOWAX-3F18	8 $\geq$	70~95	15 $\geq$	77~83	Light Yellow
TOWAX-3F19	10 $\geq$	70~95	13 $\geq$	77~83	Whitish
TOWAX-3F20	58.7	78.3	10.2	73.9	Light Yellow



- Carnauba wax is most excellent in luster, glossiness, hardness and microcrystalline in natural waxes.
- The wax is also excellent in dispersibility and emulsifiability.

【Application】 Release agent for plastic and encapsulant, toner, thermal ink, paint, textile oil

Product name	Acid value (mg/g)	Saponification value(mg/g)	Iodine value (g/100g)	Melting point(°C)
TOWAX-131	10 $\geq$	78~95	5~14	80~86
TOWAX-132	10 $\geq$	78~95	5~14	80~86
TOWAX-143	10 $\geq$	78~95	5~14	80~86
TOWAX-171	10 $\geq$	78~95	5~14	80~86



- Candelilla wax is excellent in
gloss, hardness, tenacity, film thickness uniformity and moisture resistance.

【Application】 Additives for plastic and rubber, inked ribbon, floor polish, adhesive, food additives

Product name	Acid value (mg/g)	Saponification value(mg/g)	Iodine value (g/100g)	Melting point(°C)
TOWAX-4F2	12～22	43～65	10～22	68～73
TOWAX-4P4	12～22	43～65	10～22	68～73



- Bees wax is excellent in emulsifiability, tenacity and microcrystalline.

【Application】 Release agent for transparent plastic, cosmetic, lost-wax casting

Product name	Acid value (mg/g)	Saponification value(mg/g)	Iodine value (g/100g)	Melting point(°C)
AR-100	10 $\geq$	—	3 $\sim$ 15	78 $\sim$ 85



- We could narrow material properties with natural waxes in comparison to synthetic waxes.
- Customizing our wax products to meet each customer's request.

Product name	Acid value (mg/g)	Saponification value(mg/g)	Iodine value (g/100g)	Melting point(°C)	Features
TOWAX-125	$8 \geq$	75~95	$15 \geq$	79~85	▪ Natural wax base ▪ low viscosity , hard
TOWAX-541	$10 \geq$	—	3~15	78~85	▪ Natural wax base ▪ High heat-resistance ▪ Low viscosity



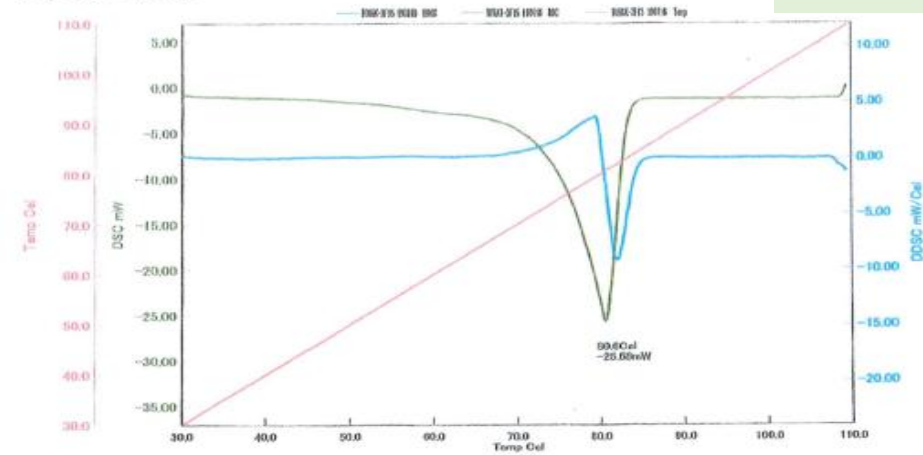
DSC chart 1/2

モジュール: DSC
データ名: TOWAX-3F15 190716
測定日時: 2022/04/17
測定場所: TOWAX-3F15 190716
サンプル名: TOWAX-3F15 (10.250 mg)
サンプル質量: 10.250 mg (10.000 mg)
リファレンス名: blank
リファレンス質量: 10.350 mg

温度プログラム:
1* 30 110 Cel/min 5 2 0.1

コメント:
オペレータ: TA
190716
製品検査

TOWAX-3F15
Rice bran wax

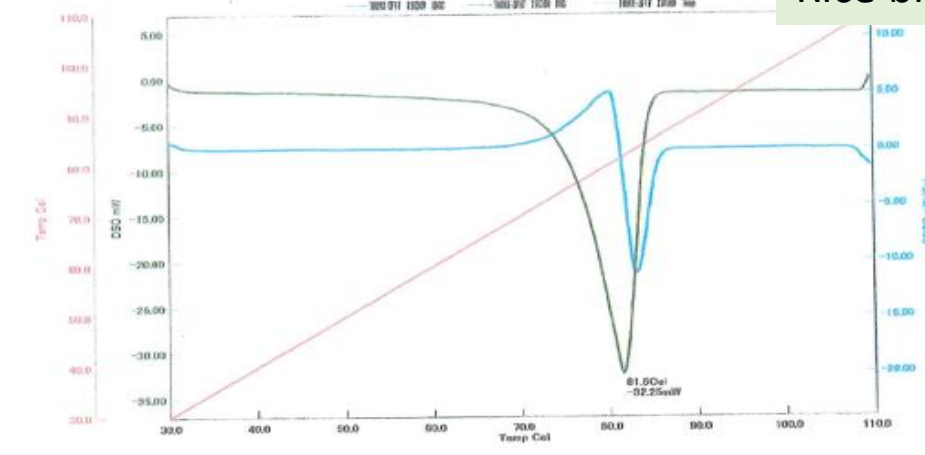


モジュール: DSC
データ名: TOWAX-3F17 220309
測定日時: 2022/05/24
測定場所: TOWAX-3F17 220309
サンプル名: TOWAX-3F17 (10.350 mg)
サンプル質量: 10.350 mg
リファレンス名: blank
リファレンス質量: 10.450 mg

温度プログラム:
1* 30 110 Cel/min 5 2 0.1

コメント:
オペレータ: TA
220309
製品検査

TOWAX-3F17
Rice bran wax

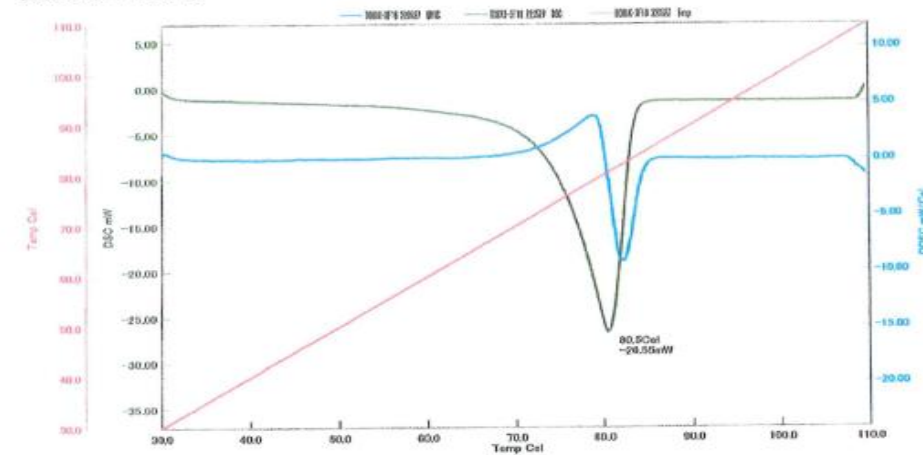


モジュール: DSC
データ名: TOWAX-3F18 220539
測定日時: 2022/06/02
測定場所: TOWAX-3F18 220539
サンプル名: TOWAX-3F18 (10.400 mg)
サンプル質量: 10.400 mg (10.000 mg)
リファレンス名: blank
リファレンス質量: 10.600 mg

温度プログラム:
1* 30 110 Cel/min 5 2 0.1

コメント:
オペレータ: TA
220539
製品検査

TOWAX-3F18
Rice bran wax

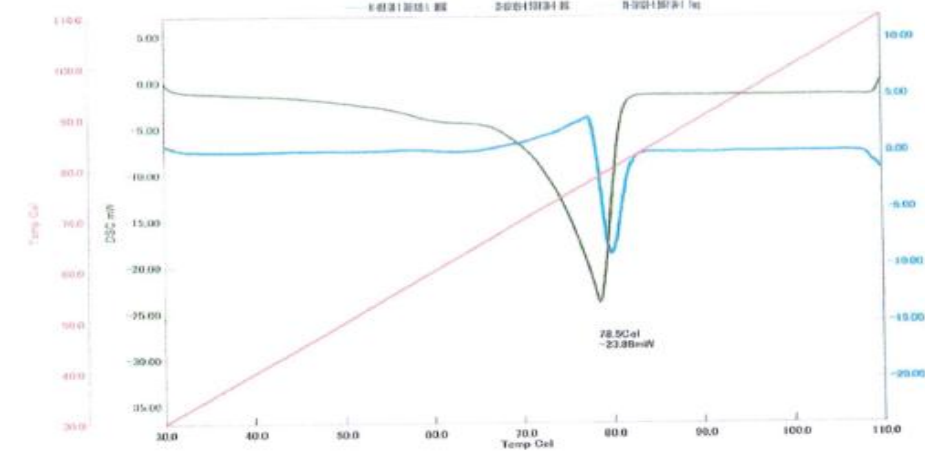


モジュール: DSC
データ名: X1-051120-1 5051120-1
測定日時: 2023/11/30
測定場所: X1-051120-1 5051120-1
サンプル名: X1-051120-1 (10.350 mg)
サンプル質量: 10.350 mg
リファレンス名: blank
リファレンス質量: 10.350 mg

温度プログラム:
1* 30 110 Cel/min 5 2 0.1

コメント:
オペレータ: TA
2023/11/30
製品検査

TOWAX3F19
Rice bran wax



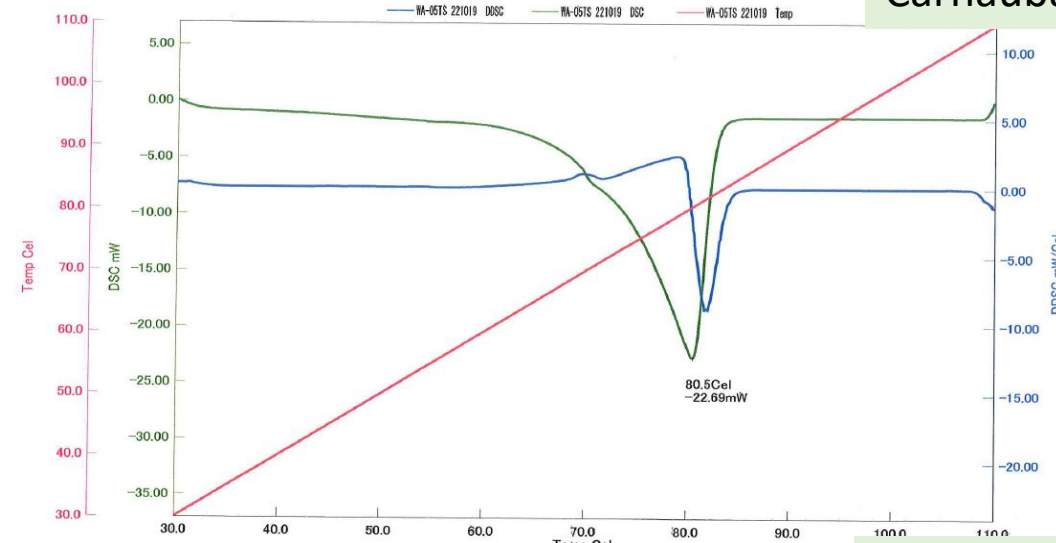
DSC chart 2/2

モジュール: DSC
データ名: TOWAX-125 221019
測定日付: 2022/10/24
サンプル名: TOWAX-125 221019
サンプル質量: 10.690 mg
リファレンス名: blank
リファレンス質量: 10.000 mg

温度プログラム:
1* Cel Cel Cel/min min s
30 110 5 2 0.1

コメント:
オペレータ:
パン: 7ルミ
TOWAX-125
製品検査

TOWAX-125 Carnauba wax

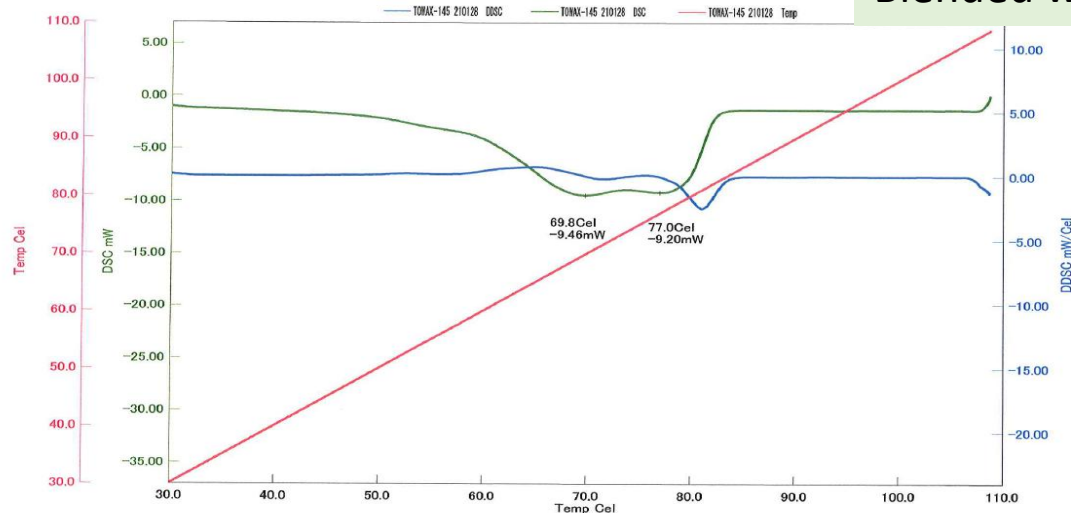


データ名: TOWAX-541 210128
測定日付: 2021/01/29
サンプル名: TOWAX-541 210128
サンプル質量: 9.820 mg (10.000 mg)
リファレンス名: blank
リファレンス質量: 10.350 mg

温度プログラム:
1* Cel Cel Cel/min min s
30 110 5 2 0.1

コメント:
オペレータ:
パン: 7ルミ
TOWAX-541
製品検査

TOWAX-541 Blended wax

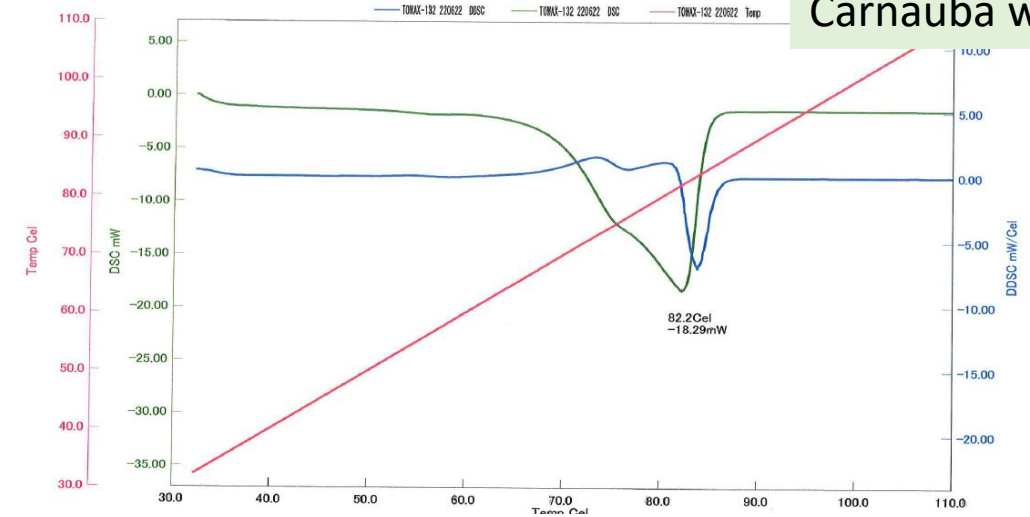


モジュール: DSC
データ名: TOWAX-132 220622
測定日付: 2022/06/22
サンプル名: TOWAX-132 220622
サンプル質量: 10.900 mg
リファレンス名: blank
リファレンス質量: 10.000 mg

温度プログラム:
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30 110 5 2 0.1

コメント:
オペレータ:
パン: 7ルミ
TOWAX
製品検査

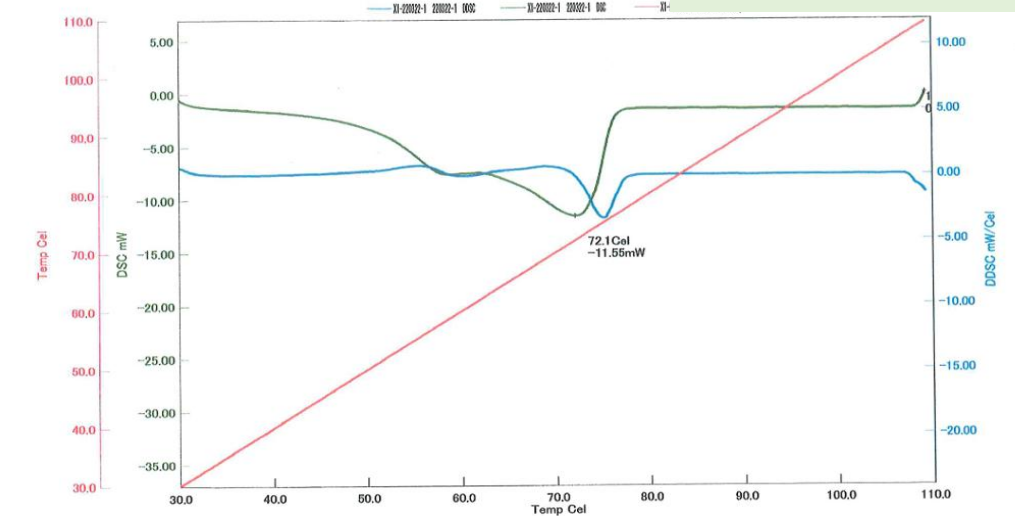
TOWAX-132 Carnauba wax

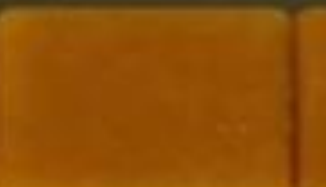
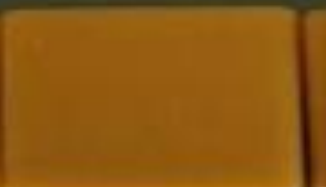


モジュール: DSC
データ名: X1-220322-1 220322-1
測定日付: 2022/04/19
サンプル名: X1-220322-1 220322-1
サンプル質量: 9.970 mg (10.000 mg)
リファレンス名: blank
リファレンス質量: 10.650 mg

温度プログラム:
1* Cel Cel Cel/min min s
30 110 5 2 0.1

TOWAX-3F20 Saponified rice wax



Product	175°C Weight loss(3h)	15min	1h	2h	3h
TOWAX-3F19 (Rice bran wax)	0.74%				
TOWAX-3F17 (Rice bran wax)	0.37%				
TOWAX-541 (Blended wax)	0.34%				
TOWAX-3F20 (Saponified rice wax)	1.95%				

Heat wight loss (%)

	TOWAX-3F17 Rice bran wax	TOWAX-3F19 Rice bran wax	TOWAX-3F20 Saponified rice	TOWAX-132 Carnauba wax	X1-040728-1 Rice and PE wax
230°C			2.3		
240°C			3.5		
250°C		2.4	5.0		
260°C	2.1	3.7	7.0		
270°C	3.4	5.5	9.5		3.2
280°C	5.3	7.8	12.7		4.5
290°C	7.9	11.0	16.0	2.3	6.3
300°C	11.2	15.8	19.2	3.4	8.6
310°C	15.8	23.8	22.4	4.8	11.5
320°C	24.3	49.2	29.6	6.8	22.7
320.8°C					
330°C	46.6	62.6	37.7	13.0	46.2
338.1°C					
340°C	62.8	66.9	50.3	58.3	62.3
343.1		67.3			
346.0°C				65.3	
348.9°C			57.1		
348.9°C	71.6				
350°C					68.5
350.8°C					
減量恒量	525.7°C/99.3	526.2°C/98.7	504.6°C/98.1	535°C/98.8	548.2°C/98.4

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