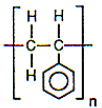
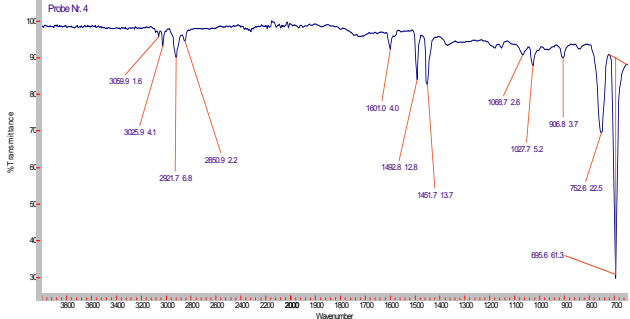
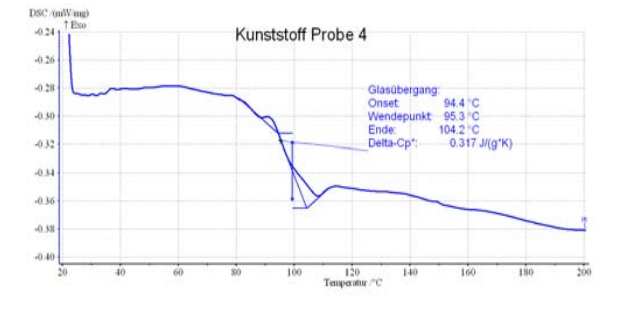
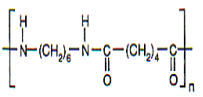
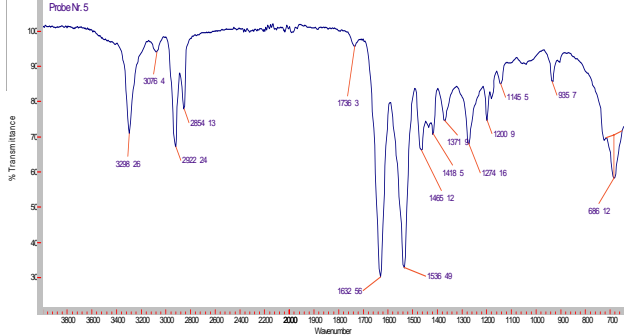
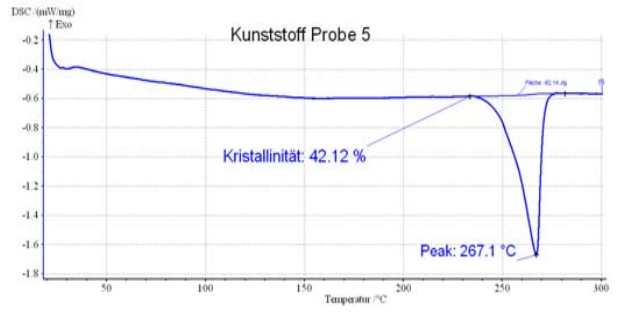

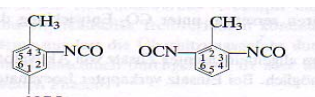
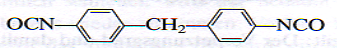
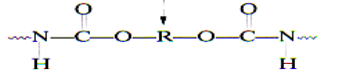
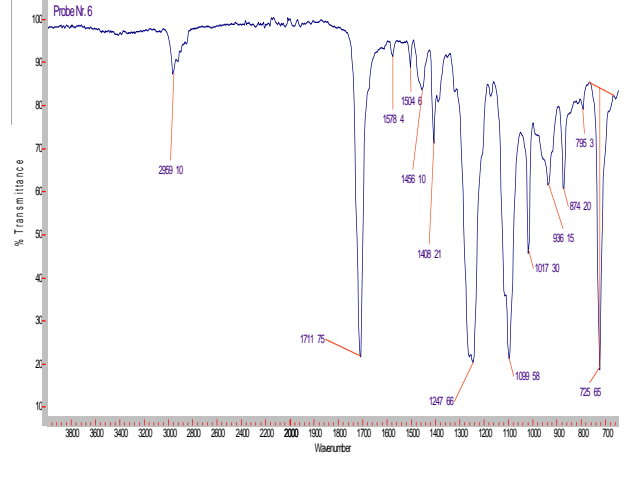
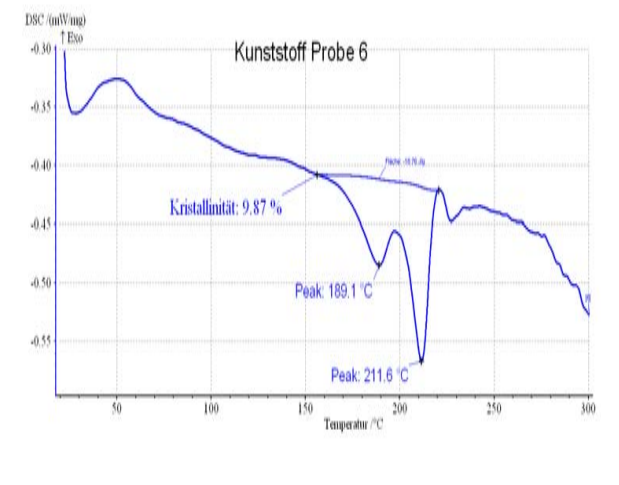
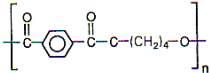
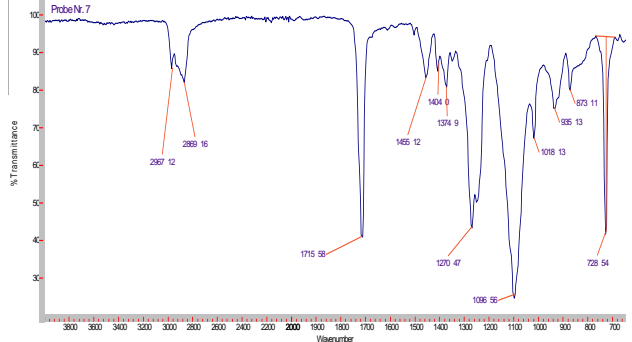
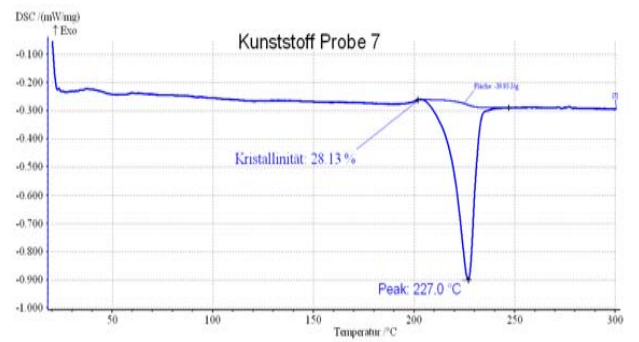
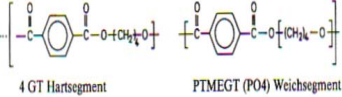
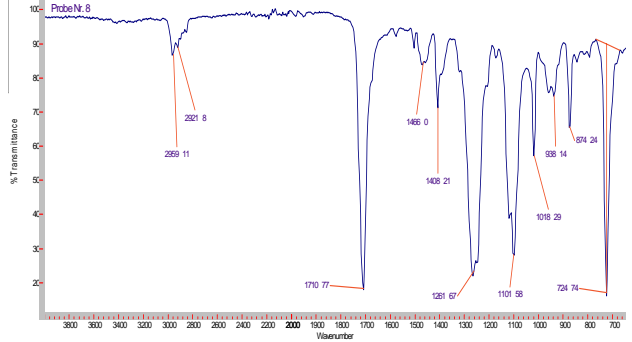
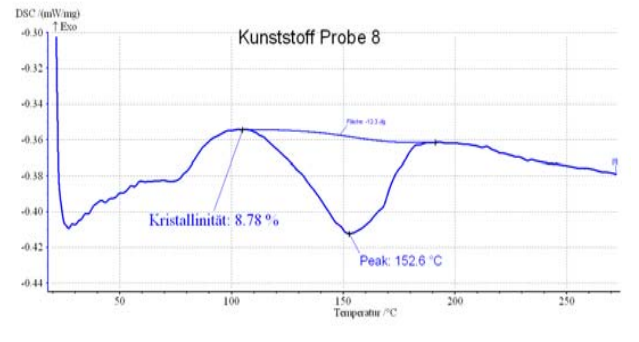
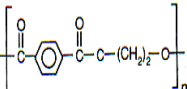
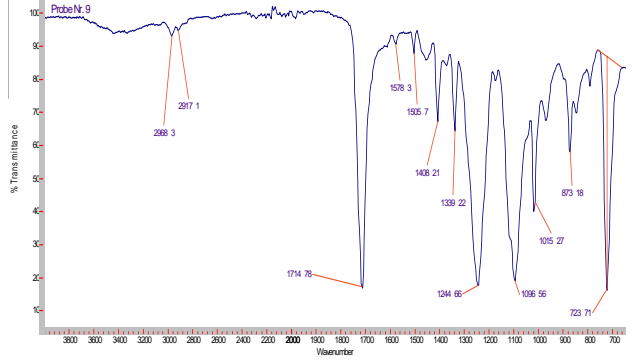
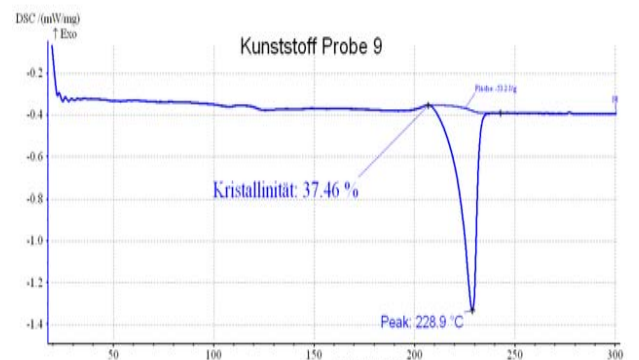


# Bericht 03 - Kunststoff-Erkennung

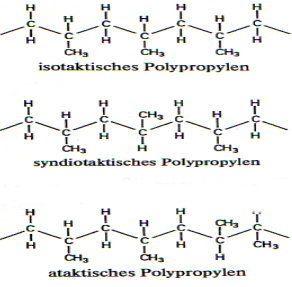
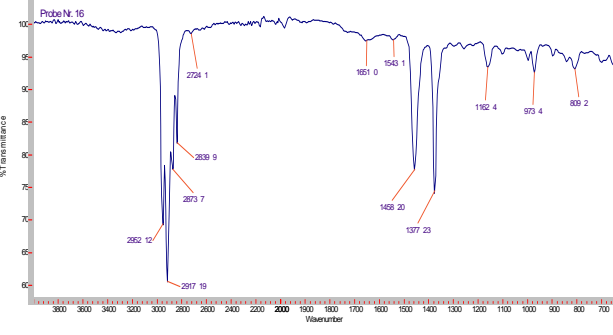
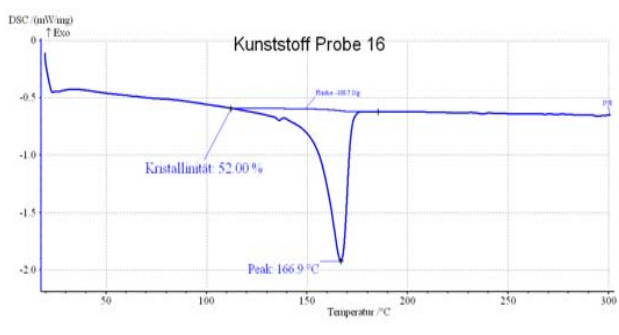
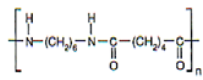
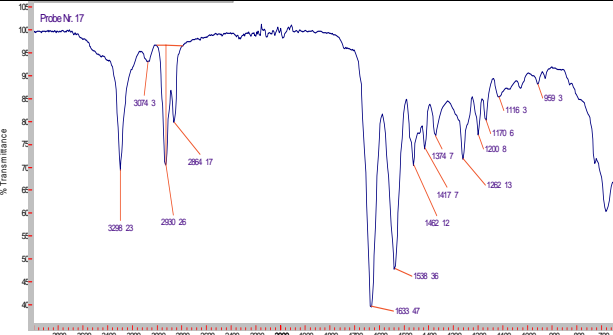
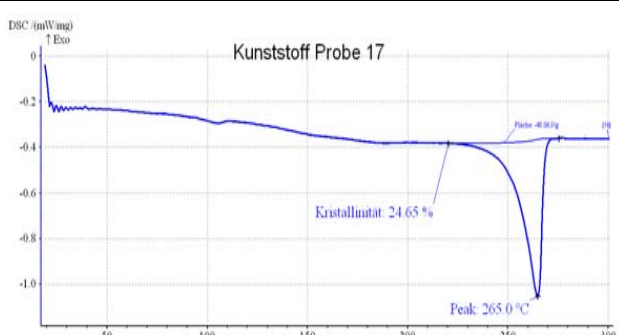
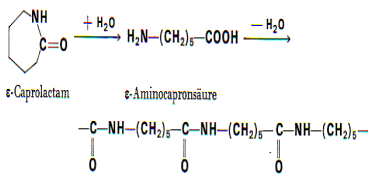
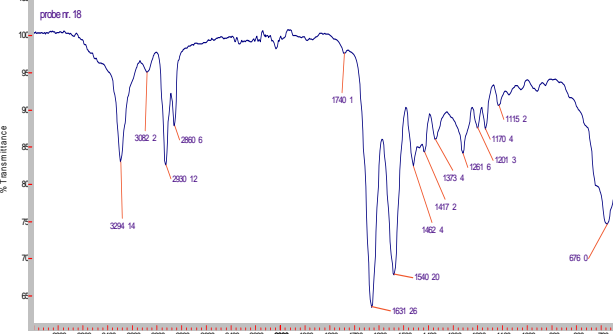
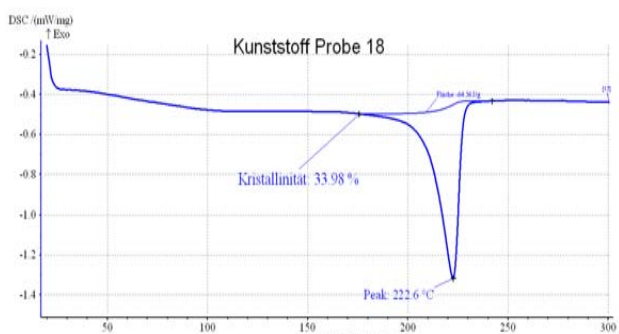
Kunststoff Nr.	Monomereinheiten und Polymerstruktur	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
1	<p><b>Polyethylen PE</b></p> <p>Monomereinheit</p> $\left[ \begin{array}{c} \text{H} & \text{H} \\   &   \\ -\text{C} & - & \text{C}- \\   &   \\ \text{H} & \text{H} \end{array} \right]_n$		<p>Kunststoff Probe 1</p> <p>Kristallinität: 34.02 %</p> <p>Peak: 111.9 °C</p>
2	<p><b>Polypropylen PP</b></p> <p>Monomereinheit</p> $\left[ \begin{array}{c} \text{H} & \text{H} & \text{H} \\   &   &   \\ -\text{C} & - & \text{C} & - & \text{C}- \\   &   &   \\ \text{H} & \text{H} & \text{H} \end{array} \right]_n$		<p>Kunststoff Probe 2</p> <p>Kristallinität: 29.16 %</p> <p>Peak: 162.5 °C</p>
3	<p><b>Acrylnitril-Butadien-Styrol ABS</b></p> <p>Acrylnitril-Butadien-Styrol-Copolymer ABS</p> <p>Monomereinheit</p> $\left[ \begin{array}{c} \text{H} & \text{H} \\   &   \\ -\text{C} & - & \text{C}- \\   &   \\ \text{H} & \text{C}_6\text{H}_5 \end{array} \right]_{n_1} + \left[ \begin{array}{c} \text{H} & \text{H} & \text{H} & \text{H} \\   &   &   &   \\ -\text{C} & = & \text{C} & - & \text{C} & - & \text{C}- \\   & &   &   \\ \text{H} & & \text{H} & \text{H} \end{array} \right]_{n_2} + \left[ \begin{array}{c} \text{H} & \text{H} \\   &   \\ -\text{C} & - & \text{C}- \\   &   \\ \text{H} & \text{C} & \text{N} \\ &   \\ & \text{H} \end{array} \right]_{n_3}$ <p style="text-align: center;">Styrol      Butadien      Acrylnitril</p>		<p>Kunststoff Probe 3</p> <p>Glasübergang:          Onset: 100.3 °C          Wendepunkt: 105.2 °C          Ende: 109.9 °C          Delta-Cp*: 0.915 J/(g*K)</p>

Kunststoff Nr.	Äußere Merkmale und Brennpote	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
4	<p><b>Polystyrol PS</b></p> <p>Monomereinheit</p> 		
5	<p><b>Polyamid 66 PA 66</b></p> <p>Monomereinheit</p> 		
6	<p><b>Polyol</b></p>  <p><b>MDI</b></p>  <p><b>TDI</b></p>  <p><b>PUR</b></p>  <p>Urethangruppe</p>		

Kunststoff Nr.	Äußere Merkmale und Brennprobe	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
7	<b>Polybutylterephthalat PBT</b> Monomereinheit 		
8	<b>TPE Thermoplastisches Polyester Elastomer PEE</b> 		
9	<b>Polyethylterephthalat PET</b> Monomereinheit 		

Kunststoff Nr.	Äußere Merkmale und Brennprobe	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
10	<p><b>Polyamid PA 6.6</b></p> $\left[ \text{NH}(\text{CH}_2)_6\text{NHCO}(\text{CH}_2)_4\text{CO} \right]_n$ <p>PA 66: x = 6, y = 4            PA 610: x = 6, y = 8            PA 612: x = 6, y = 10            PA 46: x = 4, y = 4</p> <p>Polyamid 66-Typ (zwei Ausgangsstoffe)</p>		
11	<p><b>Polybutylterephthalat PBT</b></p> <p>Monomereinheit</p> $\left[ \text{C}_6\text{H}_4\text{CO}(\text{CH}_2)_4\text{CO} \right]_n$		
12	<p><b>Polyurethan Elastomer TPU/PUR</b></p> <p>NCO- ~NCO NCO~            Prepolymer            + Diol HO-R-OH</p> $\text{NHCOO}(\text{R})\text{OCNH}$ <p>Urethangruppe</p>		

Kunststoff Nr.	Äußere Merkmale und Brennprobe	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
13	<b>Polystyrol PS</b> Monomereinheit <div style="text-align: center;"> <math display="block">\left[ \begin{array}{c} \text{H} \quad \text{H} \\   \quad   \\ -\text{C} - \text{C}- \\   \quad   \\ \text{H} \quad \text{C}_6\text{H}_5 \end{array} \right]_n</math> </div>		
14	<b>Polyamid 6 PA 6</b> Monomereinheit <div style="text-align: center;"> <math display="block">\left[ \begin{array}{c} \text{H} \\   \\ -\text{N}-(\text{CH}_2)_5-\text{C}- \\   \quad    \\ \text{H} \quad \text{O} \end{array} \right]_n</math> </div>		
15	<b>Polyamid PA 6.6</b> Polyamid 66-Typ (zwei Ausgangsstoffe) <div style="text-align: center;"> <math display="block">\left[ \begin{array}{c} \text{H} \quad \quad \text{H} \\   \quad \quad   \\ -\text{N}-(\text{CH}_2)_4-\text{N}-\text{C}-\text{C}- \\   \quad \quad    \quad   \quad \quad    \\ \text{H} \quad \quad \text{O} \quad \quad \text{O} \end{array} \right]_n</math> </div> PA 66: x = 6, y = 4 PA 610: x = 6, y = 8 PA 612: x = 6, y = 10 PA 46: x = 4, y = 4		

Kunststoff Nr.	Äußere Merkmale und Brennprobe	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
16	<p><b>Polypropylen PP</b></p>  <p>isotaktisches Polypropylen</p> <p>syndiotaktisches Polypropylen</p> <p>ataktisches Polypropylen</p>		
17	<p><b>Polyamid PA 6.6</b></p> <p>Polyamid 66 PA 66</p> <p>Monomereinheit</p> 		
18	<p><b>Polyamid PA 6</b></p>  <p><math>\epsilon</math>-Caprolactam + H<sub>2</sub>O → H<sub>2</sub>N-(CH<sub>2</sub>)<sub>5</sub>-COOH → -H<sub>2</sub>O</p> <p><math>\epsilon</math>-Aminocapronsäure</p> <p><math>-C(=O)-NH-(CH_2)_5-C(=O)-NH-(CH_2)_5-C(=O)-NH-(CH_2)_5-</math></p>		

Kunststoff Nr.	Äußere Merkmale und Brennprobe	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
19	<p><b>Polyoximethylen POM</b></p> <p>Formaldehyd, Methanal <chem>H-C(=O)H</chem></p> <p><chem>[*]C(O)O[*]</chem> Polyoxymethylen</p> <p><math>\bar{P}</math> 1000 bis 1650 <math>\bar{M}</math> 30000 bis 90000</p>		<p>Kunststoff Probe 19</p> <p>Peak: 167.4 °C Kristallinität: 37.73 %</p>
20	<p><b>Polycarbonat PC</b></p> <p>Bisphenol A <chem>HO-C6H4-C(CH3)2-C6H4-OH</chem></p> <p>Phosgen <chem>Cl-C(=O)-Cl</chem></p> <p><chem>[*]OC(=O)C(CH3)2C6H4OC(=O)C(CH3)2C6H4OC(=O)O[*]</chem> Polycarbonat</p> <p><math>\bar{P}</math> 100 bis 250 <math>\bar{M}</math> 20000 bis 60000</p>		<p>Kunststoff Probe 20</p> <p>Glasübergang: Onset: 141.8 °C Wendepunkt: 145.8 °C Ende: 148.3 °C Delta-Cp*: 0.236 J/(g·K)</p>
21	<p><b>Polymethylmethacrylat PMMA</b></p> <p>Acrylsäuremethylester <chem>H2C=CHCOOCH3</chem></p> <p>Methacrylsäuremethylester <chem>H2C=C(CH3)COOCH3</chem></p> <p><chem>[*]C(CH3)(COOCH3)C[*]</chem> Polymethylmethacrylat</p> <p><math>\bar{P}</math> 1000 bis 75000 <math>\bar{M}</math> 100000 bis 7,5 Millionen</p>		<p>Kunststoff Probe 21</p> <p>Glasübergang: Onset: 103.7 °C Wendepunkt: 109.1 °C Ende: 113.0 °C Delta-Cp*: 0.246 J/(g·K)</p>

Kunststoff Nr.	Äußere Merkmale und Brennpote	Infrarotspektrogramme FT-IR (ATR)	DSC - Thermogramme Differential-Thermo-Analyse (DTA-DSC)
22	<b>Polyamid PA 6</b> <chem>*NC(=O)CCCCC(=O)N*</chem> PA 6: x = 5 PA 11: x = 10 PA 12: x = 11		
23	<b>Polysulfon PSU</b> <chem>*C(C)(C)c1ccc(Oc2ccc(S(=O)(=O)c3ccc(O)c3)cc2)cc1*</chem>		
24	<b>Polyethersulfon PES</b> <chem>*S(=O)(=O)c1ccc(Oc2ccc(S(=O)(=O)c3ccc(O)c3)cc2)cc1*</chem>		