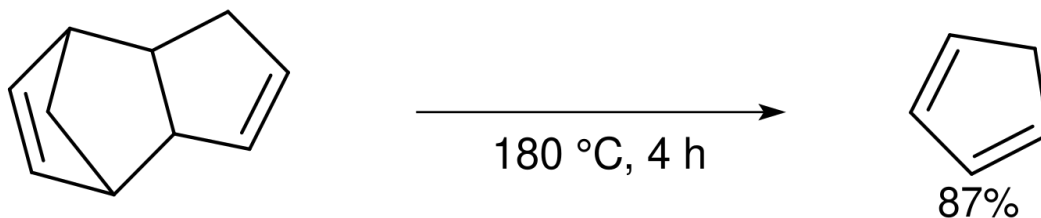


FAF-R14 Reaction: FAF-R14

Done

Collections: Ferrocene



	Formula	Mol mass	Mass	Volume	Density [g/mL]	Amount of Substance	Equiv/yield
S	tricyclo[5.2.1.0.2,6]deca-3,8-diene (FAF-22-1) C₁₀H₁₂	132	147 g	150 ml	0.980	1112 mmol	1.00
P	cyclopenta-1,3-diene (FFI-R77-B) C₅H₆	66.1	64.0 g	80.0 ml	0.800	968 mmol	87%

Description:

Tricyclo[5.2.1.0.2,6]deca-3,8-diene (147 g, 150 mL, 1.11 mol, 1.00 equiv) was cracked at 180 °C in a distillation apparatus to yield cyclopenta-1,3-diene (64.0 g, 80.0 mL, 968 mmol, 87% yield). The obtained cyclopenta-1,3-diene was stored at -30 °C.

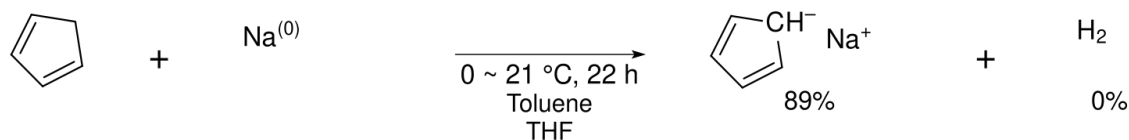
Literature:

FERROCENE. (1956). Organic Syntheses, 36, 31. <https://doi.org/10.15227/orgsyn.036.0031>

FAF-R15 Reaction: FAF-R15

Done

Collections: Ferrocene



	Formula	Mol mass	Mass	Volume	Density [g/mL]	Amount of Substance	Equiv/yield
	cyclopenta-1,3-diene (FFI-R77-A)						
S	C_5H_6	66.1	10.2 g	12.7 ml	0.800	154 mmol	1.00
	sodium (FAF-24)						
S	Na	23.0	3.60 g	0.00 ml	0.00	157 mmol	1.02
	sodium;cyclopenta-1,3-diene (FFI-R78-A)						
P	$\text{C}_5\text{H}_5\text{Na}$	88.1	12.0 g	0.00 ml	0.00	136 mmol	89%
	molecular hydrogen (FFI-R78-B)						
P	H_2	2.02	0.00 g	0.00 ml	0.00	0.00 mmol	0%

Solvent(s): Toluene (100ml), THF (100ml)

Description:

The reaction has been conducted in dry glass ware under inert atmosphere. Sodium (3.60 g, 157 mmol, 1.02 equiv) was heated to $140 \text{ }^\circ\text{C}$ in dry toluene (100 mL) to finely disperse the sodium. After cooling to room temperature, the solvent was removed and tetrahydrofuran (100 mL) was added to the sodium sand. Cyclopenta-1,3-diene (10.2 g, 12.7 mL, 154 mmol, 1.00 equiv) was added dropwise to the cooled solution of sodium in THF (*strong gas evolution observable*). Afterwards, the reaction mixture was stirred at room temperature overnight whereupon no elementary sodium was left.

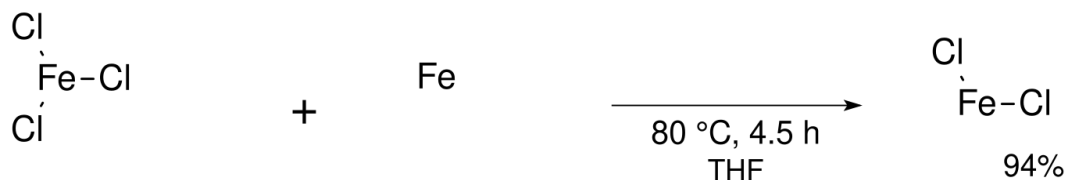
Literature:

FERROCENE. (1956). Organic Syntheses, 36, 31. <https://doi.org/10.15227/orgsyn.036.0031>

FAF-R16 Reaction: FAF-R16

Done

Collections: Ferrocene



Formula	Mol mass	Mass	Volume	Density [g/mL]	Amount of Substance	Equiv/yield
Iron(III) chloride (FAF-29-1) S Cl_3Fe	162	15.6 g	0.00 ml	0.00	96.0 mmol	2.00
iron (FAF-28-1) S Fe	55.8	2.68 g	0.00 ml	0.00	48.0 mmol	1.00
FeCl_2 (FFI-R79-A) P Cl_2Fe	127	17.1 g	0.00 ml	0.00	135 mmol	94%

Solvent(s): THF (80.0ml)

Description:

The reaction has been conducted in dry glass ware under inert atmosphere. Iron (2.68 g, 48.0 mmol, 1.00 equiv) and iron(III) chloride (15.6 g, 96.0 mmol, 2.00 equiv) were suspended in tetrahydrofuran (80.0 mL). The reaction mixture was refluxed for 4.5 hours. After cooling to room temperature, the solvent was removed under reduced pressure. Iron(II) chloride (17.1 g, 135 mmol, 94% yield) was obtained as a gray amorphous solid.

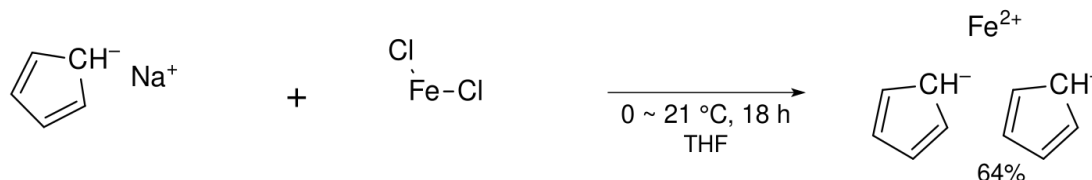
Literature:

FERROCENE. (1956). Organic Syntheses, 36, 31. <https://doi.org/10.15227/orgsyn.036.0031>

FAF-R17 Reaction: FAF-R17

Successful

Collections: Ferrocene



	Formula	Mol mass	Mass	Volume	Density [g/mL]	Amount of Substance	Equiv/yield
	sodium;cyclopenta-1,3-diene (FFI-R78-A)						
S	C ₅ H ₅ Na	88.1	11.5 g	0.00 ml	0.00	130 mmol	1.00
	FeCl ₂ (FFI-R79-A)						
S	Cl ₂ Fe	127	9.13 g	0.00 ml	0.00	72.0 mmol	0.554
	Ferrocene (FFI-R80-A)						
P	C ₁₀ H ₁₀ Fe	186	7.69 g	0.00 ml	0.00	41.3 mmol	64%

Solvent(s): THF (100ml)

Description:

The reaction has been conducted in dry glass ware under inert atmosphere. Sodium cyclopenta-1,3-diene (11.5 g, 130 mmol, 1.00 equiv) was solved in dry tetrahydrofuran (100 mL). The reaction mixture was cooled to 0 °C and iron(II) chloride (9.13 g, 72.0 mmol, 0.55 equiv) was added in small portions. Afterwards, the mixture was slowly warmed up to room temperature and additionally stirred overnight. On the next day, a small amount of isopropanol was added to the mixture to quench the remaining unreacted sodium cyclopenta-1,3-diene. The solvent was removed under reduced pressure, the residue was extracted with pentane (50 mL), filtered through diatomaceous earth and the filter cake was washed with pentane. The solvent was removed under reduced pressure. The crude product was sublimed under static vacuum at 140 °C to yield ferrocene (7.69 g, 41.3 mmol, 64% yield) as an orange-red crystalline solid.

Type of Purification: Sublimation

Analysis:

C₁₀H₁₀Fe (CHMO:0000593 | ¹H nuclear magnetic resonance spectroscopy (¹H NMR))¹H NMR (43 MHz, Chloroform-d [7.27 ppm], ppm) δ = 4.23 (s, 10H).

Literature:

FERROCENE. (1956). Organic Syntheses, 36, 31. <https://doi.org/10.15227/orgsyn.036.0031>