## CONTENTS

1	Introduction	1
1.1	Carbon Dioxide as a Raw Material	1
1.2	Production and Use of Carbon Dioxide	3
2	Aims of the Present Review	9
3	Stoichiometric Reactions of Carbon Dioxide on Transition Metal Centers	15
3.1	Coordination of Carbon Dioxide to Transition Metal Complexes	15
3.2	Insertion Reactions of Carbon Dioxide	25
	3.2.1 General View	25
	3.2.2 Insertion of Carbon Dioxide into the Transition Metal-Carbon $\eta^1\text{-Bond}$	46
	3.2.3 Insertions of Carbon Dioxide into the Allylic Transition Metal-Carbon Bond	54
	3.2.4 Insertion of Carbon Dioxide into the Transition Metal-Carbon Bond	
	formed in situ	60
3.3	Oxidative Coupling with Carbon Dioxide	67
	3.3.1 General View	67
	3.3.2 Coupling with Cycloalkenes	77
	3.3.3 Comparison: Cycloalkenes/Cycloalkanes	80
	3.3.4 Comparison: Monoenes/1,3-Dienes	82
4	Catalytic Reactions of Carbon Dioxide at Transition Metal Complexes	85
4.1	General View	85
	4.1.1 Reactions of Carbon Dioxide with Hydrogen	85
	4.1.2 Reactions of Carbon Dioxide with Heterocycles	91
	4.1.3 Reactions of Carbon Dioxide with Hydrocarbons	94
4.2	Studies of the Catalyzed Reaction of Monoenes with Carbon Dioxide	100
4.3	Catalyzed Reactions of 1,3-Dienes with Carbon Dioxide	106
	4.3.1 Catalyzed Reactions of Butadiene with Carbon Dioxide	106
	4.3.2 Catalytic Reactions of other Dienes with Carbon Dioxide	127
	4.3.3 Catalytic Reactions of Butadiene with Epoxides and Carbon Dioxide	129
5.	Literature	135
6.	Index	155