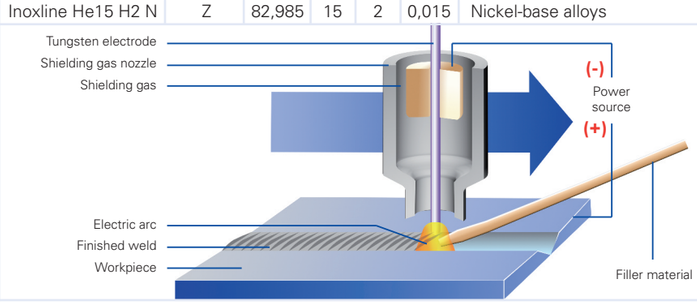
Gases for welding & cutting

MESSER
Gases for Life

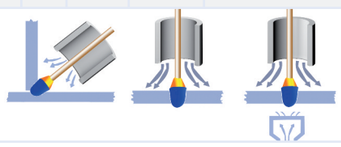
TIG welding

Product	Group ISO 14175	Composite in % - Vol. Ar	He	H_2	N_2	Applications
Welding Argon	I1	100				High and low alloyed steels aluminum + non ferrous metals
Inoxline H2	R1	98,0		2,0		Stainless steels (high alloyed)
Inoxline H5	R1	95,0		5,0		
Inoxline H7	R1	92,5		7,5		
Inoxline He3 H1	R1	95,5	3	1,5		Stainless steels (high alloyed)
Helium	I2		100			(DC-)welding of aluminum
Argon-Helium	I3	10	90			
Aluline He15	I3	85	15			(AC-)welding of aluminum + generally copper and nickel alloys
Aluline He30		70	30			
Aluline He50		50	50			
Aluline He70		30	70			
Aluline N	Z	99,985			0,015	Aluminum-alloys
Aluline He15 N		84,985	15		0,015	
Aluline He30 N		69,985	30		0,015	
Aluline He50 N		49,985	50		0,015	
Welding Argon special	I1	100				Gas sensitive materials like titanium, niobium, tantalium
Inoxline N1	N2	98,75			1,25	Duplex, superduplex
Inoxline N2		97,50			2,50	
Inoxline He15 N1		83,75	15		1,25	
Inoxline He15 H2 N	Z	82,985	15	2	0,015	Nickel-base alloys



Root shielding

Product	Group ISO 14175	Composite in % - Vol. Ar	N_2	H_2	Applications
Argon	I1	100			Steels as: austenitic + ferritic, duplex, superduplex, fine grain structural non ferritic metals, cu-ni
Forming gas H	N5		95 - 80	5 - 20	Stainless steels
Inoxline H2	R1	98		2	Stainless steels, nickel and ni-base alloys
Inoxline H5	R1	95		5	Stainless steels, nickel and ni-base alloys



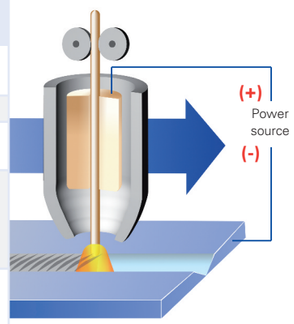
DIN EN ISO 14175

Abbreviation Group	Ident-No.	Components in % - Vol. Oxidizing CO_2	O_2	Inert Ar	He	Reducing H_2	Less-active N_2
I	1			100			
	2				100		
	3			Balance	$0,5 \le He \le 95$		
M1	1	$0,5 \le CO_2 \le 5$		Balance[a]		$0,5 \le H_2 \le 5$	
	2	$0,5 \le CO_2 \le 5$		Balance[a]			
	3		$0,5 \le O_2 \le 3$	Balance[a]			
	4	$0,5 \le CO_2 \le 5$	$0,5 \le O_2 \le 3$	Balance[a]			
M2	0	$5 < CO_2 \le 15$		Balance[a]			
	1	$15 < CO_2 \le 25$		Balance[a]			
	2		$3 < O_2 \le 10$	Balance[a]			
	3	$0,5 \le CO_2 \le 5$	$3 < O_2 \le 10$	Balance[a]			
	4	$5 < CO_2 \le 15$	$0,5 \le O_2 \le 3$	Balance[a]			
	5	$5 < CO_2 \le 15$	$3 < O_2 \le 10$	Balance[a]			
	6	$15 < CO_2 \le 25$	$0,5 \le O_2 \le 3$	Balance[a]			
	7	$15 < CO_2 \le 25$	$3 < O_2 \le 10$	Balance[a]			
M3	1	$25 < CO_2 \le 50$		Balance[a]			
	2		$10 < O_2 \le 15$	Balance[a]			
	3	$25 < CO_2 \le 50$	$2 < O_2 \le 10$	Balance[a]			
	4	$5 < CO_2 \le 25$	$10 < O_2 \le 15$	Balance[a]			
	5	$25 < CO_2 \le 50$	$10 < O_2 \le 15$	Balance[a]			
C	1	100					
	2	balance	$0,5 \le O_2 \le 30$				
R	1			Balance[a]		$0,5 \le H_2 \le 15$	
	2			Balance[a]		$15 \le H_2 \le 50$	
N	1						100
	2			Balance[a]			$0,5 \le N_2 \le 5$
	3			Balance[a]			$5 < N_2 \le 50$
	4			Balance[a]		$0,5 \le H_2 \le 10$	$0,5 \le N_2 \le 5$
	5					$0,5 \le H_2 \le 50$	Rest
O	1		100				
Z	Mixed gases with components not includes in the table or mixed gases with a composition outside of the given areas. [b]						

[a] *For this classification, argon may be replaced in whole or in part by helium.*
[b] *Two mixed gases with the same Z classification may not replace each other.*

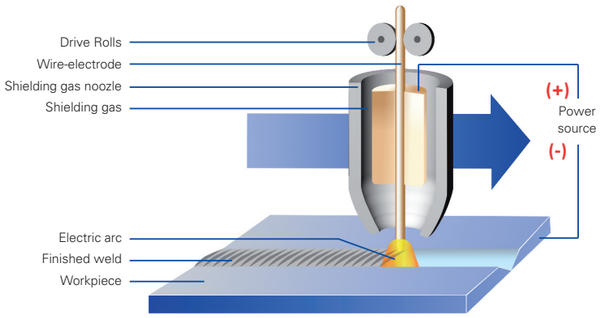
MIG welding

Product	Group ISO 14175	Composite in % -Vol. Ar	He	H_2	N_2	Applications
Welding Argon	I1	100				Aluminum, non ferrous metals
Inoxline He15 H2 N	Z	82,985	15	2	0,015	Ni-base-alloys
Helium	I2		100			Copper
Aluline He15	I3	85	15			Copper, aluminum, nickel + cunife-alloys
Aluline He30		70	30			
Aluline He50		50	50			
Aluline He70		30	70			
Aluline N	Z	99,985			0,015	Aluminum-alloys
Aluline He15 N		84,985	15		0,015	
Aluline He30 N		69,985	30		0,015	
Aluline He50 N		49,985	50		0,015	



MAG welding of mild steel

Product	Group ISO 14175	Composite in % - Vol. Ar	CO_2	O_2	He	Applications
Ferroline C8	M 20	92	8			Mild steel
Ferroline C18	M 21	82	18			Mild steel
Ferroline C25	M 21	75	25			Mild steel
Ferroline X4	M 22	96		4		Low/restr. high alloyed steels
Ferroline X8	M 22	92		8		Low/restr. high alloyed steels
Ferroline C6 X1	M 24	93	6	1		Mild steel
Ferroline C12 X2	M 24	86	12	2		Mild steel
Ferroline C5 X5	M 23	90	5	5		Low/restr. high alloyed steels
Ferroline He20 C8	M 20	72	8		20	Mild steel
Carbon dioxide	C 1		100			Mild steel



MAG welding of stainless steels

Product	Group ISO 14175	Composition in % - Vol. Ar	CO_2	O_2	He	H_2	Applications
Inoxline X2	M13	98		2			High-alloyed steels
Inoxline C2	M12	97,5	2,5				High-alloyed steels
Inoxline He30 H2 C	Z	67,88	0,12		30	2	Ni-alloys
Inoxline He15 C2	M12	83	2		15		High-alloyed steels
Inoxline C3 X1	M14	96	3	1			Low/restr. high alloyed steels

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